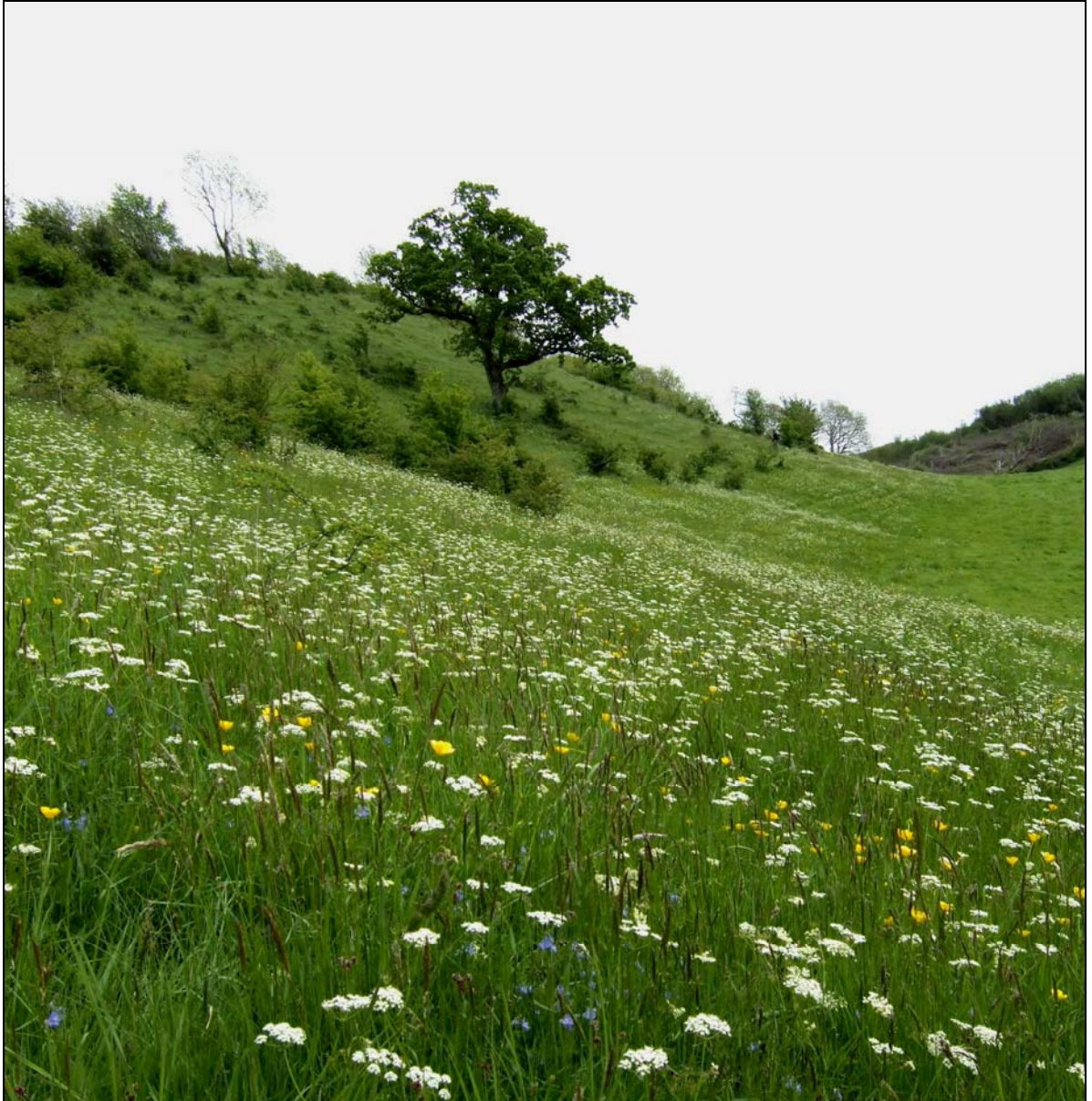


# Grasslands Monitoring Project 2006



Volume I

Project Report

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as part of the Grasslands Monitoring Programme

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## EXECUTIVE SUMMARY

- The overall objective of the European Habitats Directive is to achieve and maintain favourable conservation status for all habitats and species and to contribute towards maintaining biodiversity of natural habitats and of wild flora and fauna in member states.
- In order to fulfil the requirements of the Habitats Directive regarding monitoring and reporting on semi-natural grassland habitats, a Grasslands Monitoring Project was established by the National Parks and Wildlife Service (NPWS) of the Department of Environment, Heritage, and Local Government.
- The Grasslands Monitoring Project 2006 focussed on the assessment of two priority grassland habitats for which Ireland has a responsibility to designate Special Areas of Conservation: (6210) \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (\* important orchid sites); and (6230) \*Species-rich *Nardus* grasslands on siliceous substrates in mountain areas (and submountain areas, in Continental Europe).
- The methodology employed in the assessment follows a reporting structure which is an adaptation and an expansion of the recording and reporting procedures employed by both the Joint Nature Conservancy Council (JNCC) in Britain and that used by the NPWS Coastal Monitoring Project (2003 – 2006).
- Favourable Conservation Status is the overall objective to be reached for all habitat types and species of community interest. EU member states are expected to take all requisite measures to reach and maintain the objective of Favourable Conservation Status for habitats and species. In order to achieve this aim, the Directive's objectives need to be precisely defined for all significant parameters of habitat condition.
- To facilitate the legal necessity for monitoring and reporting on the conservation status of habitats within Member States, a system of assessment has been established where specific habitat parameters or attributes are employed to determine Conservation Status. These habitat parameters include Range, Area, Structures and Functions, and Future Prospects.
- During the course of the Grasslands Monitoring Project, 31 orchid-rich calcareous grassland sites and 7 species-rich *Nardus* grassland sites were surveyed and assessed for Area (Extent), Structures and Functions, and Future Prospects by comparing the site's performance against pre-determined targets for these attributes.
- Using the results of these assessments, an overall Conservation Status for each site was determined, using the 'Traffic Light' system of assessment and reporting developed by the Scientific Working Group of the Habitats Committee. This system describes Conservation Status as being either *Favourable* (Red), *Unfavourable – inadequate* (Amber), or *Unfavourable – bad* (Red).

- The results of the Grassland Monitoring Project indicate that almost all of the sites containing priority grassland habitats are failing to meet the standards necessary for *Favourable* conservation status. Only 2 of the 31 (6%) orchid-rich calcareous grassland sites that were surveyed achieved *Favourable* status. None (0%) of the species-rich *Nardus* sites were of sufficient quality to be described as such.
- 74% of orchid-rich calcareous grasslands are described as having an *Unfavourable – bad* Conservation Status while 86% of species-rich *Nardus* grasslands are also described as such.
- The Conservation Status of 13% of surveyed orchid-rich calcareous grasslands and 14% of surveyed species-rich *Nardus* sites is described as being *Unfavourable – inadequate*. Immediate intervention at these sites with suitable management regimes could halt further deterioration, or even reverse it in some instances.
- Survey results indicate that encroachment of both priority grassland habitats by *Pteridium aquilinum* and woody scrub species is the primary reason for the Irish grassland sites failing to reach *Favourable* Conservation Status. The issue of encroachment is a direct result of insufficient management, whereby mowing and/or grazing patterns are not adequate to maintain good quality grasslands. Other impacts noted during the current survey include the application of fertiliser, abandonment of pastoral systems, insufficient grazing, and quarrying activities.
- This encroachment issue could be seen as one of the indicators of the changes occurring in the agricultural sector as a consequence of the currently buoyant economic climate, whereby the national numbers of farmers are declining and abandonment of land is becoming all too frequent an occurrence. However, the issue of encroachment is not a new one and it had already been highlighted in the original survey notes of many of the grassland sites, notes which date to the mid-1990's in many cases.
- Where habitats are failing to meet the standards necessary for favourable conservation status, it is the responsibility of Member States to implement restoration strategies or management regimes aimed at rectifying this situation.
- Failure to respond to the recorded problem of declining management practices on protected sites will lead to further losses of priority grassland habitats in Ireland.

## 1 INTRODUCTION

### 1.1 BACKGROUND TO CURRENT PROJECT

The 'Interpretation Manual of European Habitats' (2003) lists 19 different grassland habitat types that are known to occur across the range of the NATURA 2000 network. Of these European natural and semi-natural grassland categories, 6 are listed as occurring in Ireland. The 6 Irish Annex I grassland categories, with their respective NATURA 2000 codes, are listed below. Ireland has a responsibility to designate Special Areas of Conservation to protect and maintain these habitats at Favourable Conservation Status.

The two Irish grassland types assigned Annex I priority status are identified by an asterisk. Only these two categories, orchid-rich calcareous grasslands and species-rich *Nardus* grasslands, were surveyed and assessed during this project.

- 6130 Calaminarian grasslands of the *Violetalia calaminariae*
- 6210 \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (\* important orchid sites)
- 6230 \*Species-rich *Nardus* grasslands on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)
- 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
- 6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
- 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

An additional category of non-priority calcareous grassland also occurs on the EU list: (9991) Semi-natural calcareous dry grasslands (orchid-poor). To date, Ireland has not taken the opportunity to list this habitat category as a qualifying interest on any candidate Special Area of Conservation (cSAC). This situation may change as additional survey projects record and validate the presence of this habitat.

The overall objective of the Habitats Directive is:-

- to achieve and maintain favourable conservation status for all habitats and species of community interest
- to contribute towards maintaining biodiversity of natural habitats and of wild flora and fauna in member states.

To this end, EU member states are obliged, as expressed in Article II of the Habitats Directive, to monitor the conservation status of habitats and species. As all habitats (as listed in Annex I) and species of community interest (including Annex II, and also Annex IV & Annex V) are included, the monitoring requirement is not restricted to NATURA 2000 sites. Consequently, data must be collected both within and outside the NATURA



network, so that a full appreciation of the Conservation Status of the total national resource is gained. In addition, member states are obliged, as expressed in Article 17 of the Habitats Directive, to report to the Commission every six years on the implementation of measures taken towards meeting the objectives of the Directive.

The current Grasslands Monitoring Project 2006, carried out on behalf of the National Parks and Wildlife Service (NPWS), is part of a larger project designed to meet the monitoring and conservation objectives of the Habitats Directive with regard to semi-natural grasslands in Ireland. The methodology employed follows a reporting structure which is an adaptation and an expansion of the recording and reporting procedures employed by both the Joint Nature Conservancy Council (JNCC) in Britain (<http://www.jncc.gov.uk/page-2199>) and that used by the NPWS Coastal Monitoring Project (2003 – 2006). The JNCC reporting structure has been published as a series of Common Standards Monitoring (CSM) guidance documents (JNCC, 2004; JNCC, 2005).

This reporting structure employs rapid and simple assessment techniques, deriving data on habitat quality and extent using a range of information sources while also assessing the future prospects of the habitat by assessing any threats or management practices which may be impacting on the site. It uses rapid assessment techniques that local conservation staff who are experienced in the identification of grasslands habitats and the associated plant species, can undertake in the continuing implementation of the programme.

Due to time and resource constraints operating on the 2006 Grasslands Monitoring Project, only the two priority grassland habitats occurring within currently designated Special Areas of Conservation were short-listed for assessment (See Section 2.3 for details).

## **1.2 PRIORITY GRASSLAND HABITATS IN IRELAND**

Only 2 grassland habitats in Ireland are accorded priority status:

- 6210 \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (\* important orchid sites)
- 6230 \*Species-rich *Nardus* grasslands on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)

Ireland has a responsibility to designate Special Areas of Conservation to protect and maintain these habitats at Favourable Conservation Status. To this end, 36 orchid-rich calcareous grassland sites and 10 species-rich *Nardus* grasslands have been designated as cSACs which list these grassland categories as qualifying interests.

The Interpretation Manual of European Habitats –EUR 25 lists the typical species that are most likely to indicate the presence of these grassland categories across the EU Member States (see Appendix 8). A number of the indicator species listed in both grassland types are not part of the national flora for Ireland. Conversely, other species are recognised by experts in this field as being representative of these habitats in the Irish situation.

The classification system for Irish grassland types is based on the work of O'Sullivan (1982). This work outlines the commonly occurring lowland grassland types in Ireland, referring them to the classes Molinio-Arrhenatheretea, Nardetea, and Festuco-Brometea. O'Sullivan indicates that the Molinio-Arrhenatheretea, the 'neutral' lowland meadows and pastures, are by far the most common grassland types in the country. The Festuco-Brometea are described as dry limestone grasslands, typically found on the eskers and moraines of the Irish midlands and in karst dominated landscape of parts of the west of Ireland. The work of Ivimey-Cook and Proctor (1966) also examines the Festuco-Brometea, sourcing data from studies completed in the limestone area of the Burren, County Clare.

The Nardetea represent the acidic grasslands, occurring on podzolised soils on hillsides. This class contains elements of acid grass heathland communities. The classification of this class is problematic and awaits clarification (White and Doyle, 1982). O'Sullivan (1982) suggests that the reason for the unclear situation in relation to these upland communities may be based on the fact that the communities are not generally species rich. In addition, O'Sullivan indicates that some of the species have a broad ecological amplitude and also occur in heathlands.

### **1.2.1 Festuco-Brometea**

Only one order is known to be represented in Ireland, the Festuco-Brometalia. Therefore the species that O'Sullivan lists serve as character species of both the class and the order. O'Sullivan's list includes a number of the indicator species identified in the EU Habitats Manual for the priority grassland category \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (\* important orchid sites). These include *Anthyllis vulneraria*, *Carlina vulgaris*, *Centaurea scabiosa*, *Leontodon hispidus*, and *Sanguisorba minor*. White and Doyle (1982) list additional species following Westhoff and Den Held (1969), which include *Carex caryophyllea*, *Primula veris*, and *Camptothecium lutescens*. White and Doyle also add that differential species of this class include *Avenula pubescens*, *Hieracium pilosella*, *Pimpinella saxifraga*, *Ranunculus bulbosus*, and *Koeleria macrantha*.

Following an assessment of these sources of information, a draft list of species which would adequately reflect the range and uniqueness of the orchid-rich calcareous grassland habitat in Ireland was drawn up and discussed with NPWS staff expert in this area. A final generic list comprising 36 calcareous species was compiled. to reflect the variation in vegetation types. This list includes 15 species more typical of strongly calcareous situations while those with a more western distribution (8) are also highlighted. As such, the list covers a range of calcareous ecological conditions, offering a variety of species which may be visible at different times of the growing season. For the purposes of Conservation Assessment, a target number of 7 species being present was set to indicate good quality calcareous grassland habitat.

The agreed list of 36 typical indicator species for this grassland category is presented on page 2 of the field sheet (see Appendix 2).

A list of possible orchid species that were seen as being typical or representative of the variations observed in this habitat type was also compiled. This included species listed in

the EU Manual such as *Ophrys apifera*, *Orchis mascula*, and *Orchis morio*. A total of 12 orchid species were finally agreed (see page 2 of the field sheet in Appendix 2).

### 1.2.2 Nardetea

O'Sullivan lists the species considered by him to be representative of the only reliably defined association for Nardetalia in Ireland, the Achilleo-Festucetum tenuifoliae. These species, including the class and order diagnostic species as listed by White and Doyle (1982) include the following: *Nardus stricta*, *Danthonia decumbens*, *Luzula multiflora*, *Carex pilulifera*, *Veronica officinalis*, *Festuca vivipara*, *Lathyrus montanus*, *Achillea millefolium*, *Agrostis capillaris*, *Festuca ovina*, and *Viola canina*.

Additional species listed in the EU Habitats Manual occurring in the upland grasslands in Ireland are *Galium saxatile*, *Hypericum maculatum*, *Pedicularis sylvatica*, and *Polygala vulgaris*. The orchid *Pseudorchis albida* is also listed in the Manual as being an indicator species for species-rich *Nardus* grassland. Following discussions with NPWS experts in this area, a final list of 21 species was deemed to be indicative of this grassland type in the Irish context. This list is presented on page 2 of the *Nardus* grassland field sheet in Appendix 2.

To facilitate Conservation Assessment, a target number of 9 species was chosen as the optimum situation to represent species-rich *Nardus* grassland habitat. While this may appear to be a high target to achieve, it takes into account the fact that some of the species listed have a broad ecological amplitude and can weight the results. In addition, the objective in this assessment process is to achieve species-richness in this habitat type. In Ireland, abundant or frequent cover of *Nardus stricta* is more likely to represent poor conditions, reflecting a more over-grazed situation. Therefore, the objective during the current survey is the assessment of species-rich swards, where *Nardus stricta* is present in only a low percentage cover.

## 1.3 CONSERVATION ASSESSMENT

Favourable Conservation Status is the overall objective to be reached for all habitat types and species of community interest. It is defined in positive terms, such that a habitat type or species must be prospering and have good prospects of continuing to do so. It is not, therefore, simply a question of the habitat or species being free from the risk of imminent extinction. EU member states are expected to take all requisite measures to reach and maintain the objective of Favourable Conservation Status for habitats and species. In order to achieve this aim, the Directive's objectives need to be precisely defined for all significant parameters of habitat condition.

### 1.3.1 The Assessment Process

To facilitate the legal necessity for monitoring and reporting on the conservation status of habitats within Member States, the Scientific Working Group of the Habitats Committee have established a system (known as the 'Traffic Light' system) for assessing and reporting on Conservation Status. The latest version of the scheme - DocHab 04-03/03-

rev.3: Annex E, has been employed in the current, initial, phase of the Grasslands Monitoring Project.

Using this system of assessment, specific habitat parameters or attributes are employed to determine Conservation Status. These habitat parameters include Range, Area, the Structures and Functions (*e.g.* the presence or absence of typical indicator species), and Future Prospects (see Section 3.2 for full details on grassland assessment criteria). Each of these parameters is assessed and scored and the following ratings are applied:

- Favourable (Green)
- Unfavourable-Inadequate (Amber)
- Unfavourable-Bad (Red)
- Unknown (insufficient information to make an assessment)

In order to achieve a Favourable (Green) status, the following situations must exist for the habitat parameters:

- **Range** - Stable (where loss and expansion are in balance) or increasing AND not smaller than the 'favourable reference range'\*
- **Area covered by habitat type within range** – Stable (where loss and expansion are in balance) or increasing, AND not smaller than the 'favourable reference range', AND without significant changes in distribution pattern within range (if data available)
- **Specific Structures and Functions (including typical species)** – Structures and functions (including typical species) are in good condition and no significant deterioration/pressures occur.
- **Future Prospects** – The habitat's prospects for its future are excellent/good, and no significant impact from threats are expected: long-term viability is assured.

\* 'Favourable reference range' is the range within which all significant ecological variations of the habitat/species are included for a given bio-geographical region and which is sufficiently large to allow the long term survival of the habitat/species. The favourable reference value must be at least the range (in size and configuration) when the Habitats Directive came into force. If the range was insufficient to support a favourable status, the reference for favourable range should take account of that and should be larger. In such a case, information on historic distribution may be useful when defining the favourable reference range. 'Best expert judgement' may be used to define it in the absence of other data.

Undesirable deviations from the favourable condition are ranked as *unfavourable-inadequate* (amber) or *unfavourable-bad* (red), depending on the degree to which they fail to meet the required condition. For example, Range is considered to be *unfavourable-inadequate* (amber) if both of the criteria for *favourable* status described above are not met. It is described as being *unfavourable-bad* (red) if there has been a large decrease equivalent to a loss of more than 1% per year within the period specified by a member state OR more than 10% below 'favourable reference range'. The overall habitat

Conservation Status assessment depends on the combination of green, amber and red judgements assigned to the parameters, as follows:

<b>Favourable:</b> (Green)	All 'green' <u>OR</u> three 'green' and one 'unknown'
<b>Unfavourable-Inadequate</b> (Amber)	One or more 'amber' but no 'red'
<b>Unfavourable-Bad:</b> (Red)	One or more 'red'
<b>Unknown:</b>	Two or more 'unknown' combined with green, or all 'unknown'.

Where habitats are failing to meet the standards necessary for favourable conservation status, it is the responsibility of Member States to implement restoration strategies or management regimes aimed at rectifying this situation. It is explicitly accepted in the Habitats committee draft documents on reporting formats, that some data required for conservation assessments may not be available for the current reporting cycle. In these cases it is necessary to use the best available information, including that derived from 'expert judgements'.

While the estimation of the Conservation Status for each habitat currently involves the assessment of four parameters (Range, Area, Structures and Functions, and Future Prospects), the Range parameter applies more at a larger, more national, scale and cannot be applied to the assessment of each individual site. The system employed in the current grassland survey involves the consideration of the three remaining criteria as outlined in Table 1.1.

**Table 1.1** Summary matrix of the parameters and conditions required to assess the conservation status of habitats

	<b>Favourable</b>	<b>Unfavourable – Inadequate</b>	<b>Unfavourable – Bad</b>
<b>Area</b>	Stable	1% decline/year	> 1% decline/year
<b>Structure &amp; Functions</b>	Stable	1 – 25% decline	> 25% decline
<b>Future Prospects</b>	Good	Poor	Bad
<b>Overall</b>	All green	Combination of green and amber	One or more red

Area (Extent) and Structure and Functions are considered to be in *favourable* condition if they have remained stable since the previous monitoring or most recent survey. If Future Prospects are thought to be good, then they may be assigned *favourable* status.

A decline in extent of 1% or >1% leads to *unfavourable-poor* or *unfavourable-bad* judgements, respectively, for Area, while Structure and Functions are thought to be *unfavourable – poor* if they have undergone a 1-25% decline, and *unfavourable – bad* if they have undergone a >25% decline, since the previous monitoring phase.

Area (or Extent) includes an appraisal of site diversity and dynamics. Structure and Functions refers to the habitat attributes that are tested at monitoring stops, e.g., (a) percentage of herb cover, (b) presence of typical indicator species, (c) presence of negative indicator species, and (d) presence of scrub/Bracken. Future Prospects, in addition to the criteria outlined above, are also taken to include consideration of the status of features of local distinctiveness at each site.

A *favourable* (green) judgement for each of the 3 main criteria leads to an overall favourable judgement in the Conservation Assessment of the habitat at that site. A combination of *favourable* (green) and *unfavourable-inadequate* (amber) leads to an overall *unfavourable-poor* assessment, while the inclusion of any *unfavourable-bad* (red) assessment results in an overall *unfavourable-bad* (red) judgement (Table 1.2).

Table 1.2 Examples of permutations of the habitat conservation status parameters and the overall conservation status assessment

Habitat	EU Conservation Status			Overall EU Conservation Status assessment
	Favourable	Unfavourable – Inadequate	Unfavourable - Bad	
---			Area/Structure & Functions/Future Prospects	Unfavourable - Bad
---	Area/Structure & Functions	Future Prospects		Unfavourable – Inadequate
---	Area/Structure & Functions/Future Prospects			Favourable
---	Structure & Functions/Future Prospects		Area	Unfavourable-Bad



## **2 GRASSLANDS MONITORING PROJECT**

### **2.1 INTRODUCTION**

In order to meet the monitoring and conservation objectives of the Habitats Directive for the two priority grassland categories occurring in Ireland, a national survey and assessment programme was established. The Grassland Monitoring Project 2006 represents the initial phase of a larger grassland survey which is designed achieve these objectives.

In Ireland, a total of 46 Special Areas of Conservation (SACs) list as qualifying interests the two Annex I grassland categories \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (6210) and \*Species-rich *Nardus* grasslands on siliceous substrates in mountain areas (6230). However, due to time and resource pressures, the Grasslands Monitoring Project was constrained to concentrate only on the assessment of those SACs which record the Representivity of either of those grassland habitats as being C or higher. A final list of 42 sites was selected: 33 sites listing orchid-rich calcareous grassland (6210) and 9 sites recording the presence of species-rich *Nardus* grassland (6230) (see Section 2.3 for details).

The monitoring process itself involves establishing a series of targets that define the desired condition of specific grassland habitat attributes. At a series of Monitoring Stops throughout each site, the condition of the grassland habitat is assessed and scored on its performance in relation to these pre-defined targets. The collected data forms the basis for the determination of the Conservation Status of the relevant grassland habitat, following the EU template (see Section 1.3). This template requires the assessment of habitats under specific attributes such as Area, Structure and Function, and Future Prospects.

*Area* (or Extent) includes an appraisal of site diversity and dynamics. *Structure and Functions* refers to specific habitat attributes or characteristics which are tested against pre-determined targets. For example, in the case of orchid-rich grasslands, this involves determining (a) herb content, (b) presence of typical, positive indicator species, (c) presence of negative indicator species, (d) percentage of scrub or bracken present. The performance of these two attributes, including a consideration of local management, the status of any features of local distinctiveness, and any activities threatening or impacting upon the habitat are taken into account when attempting to determine the *Future Prospects* for the site.

The details of how the Area, Structures and Functions, and Future Prospects were assessed for each of the grassland sites visited during the 2006 Grasslands Monitoring Survey are elaborated upon in Section 3.2

### **2.2 OBJECTIVES OF THE PROJECT**

The current project forms the initial phase of a larger project whose aims are:



- To develop a monitoring programme for Irish grassland habitats
- To evaluate pre-existing grassland monitoring protocols (e.g. those used by the JNCC in Britain) and adapt these, where necessary, to enable a rapid and uncomplicated survey of Irish grasslands
- To assess the current Conservation Status of the two Annex I grassland habitats occurring in Ireland: \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (6210) and \*Species-rich *Nardus* grasslands on siliceous substrates in mountain areas (6230).
- To establish a Grasslands Monitoring Access Database in which the results of this and future grassland monitoring projects could be entered and analysed
- To collect and record plant relevé data from the grasslands visited, so as to contribute to the NPWS grasslands vegetation records.

## 2.3 SURVEY SITES

46 Irish SACs list either 6210 or 6230 grasslands as qualifying interests (see Tables 2.1 and 2.2). However, due to time and resource pressures, the Grasslands Monitoring Project was constrained to concentrate only on the assessment of those SACs which record the Representivity value of C or higher for either of those grassland habitats. This resulted in the removal of 4 sites from the survey list: Bray Head (000714); Clonaslee Eskers and Derry Bog (000859); Urlaur Lakes (001571); and Silvermines Mountains West (002258).

A final list of 42 sites was selected: 33 sites listing orchid-rich calcareous grassland (6210) and 9 sites recording the presence of species-rich *Nardus* grassland (6230).

It can be seen from Tables 2.1 and 2.2 that, of the 42 sites comprising the proposed survey list, 3 sites were not visited due to time constraints: the calcareous grassland site Coole - Garyland Complex (000252); and two species-rich *Nardus* sites, Wicklow Mountains (002122) and Cuilcagh - Anieran Uplands (000584). The Conservation Status of these sites must be assessed via a desktop examination of all data currently available for those SACs. For the Wicklow Mountains SAC, a separate habitat survey had already been commissioned in 2006 by NPWS, which included the use of satellite imagery, aerial photography, vegetation surveys, and soil analysis. The results of that project are forthcoming and may provide relevant up-to-date information on the status of the species-rich *Nardus* grassland within that SAC.

In addition to these 3 unvisited sites, one further site could not be assessed under the current project. All Saints Bog and Esker (000566) was visited but on the day of survey, the fieldworkers were denied access to the esker site. Despite opposition from NPWS, the landowner had successfully appealed the designation of his property as an orchid-rich grassland and had received Ministerial approval to quarry for sand and gravel. On the day of survey, preparatory work had already commenced and the surface of the esker which had supported the habitat had been striped away. Consequently, although the site could

not be surveyed, All Saint's Bog and Esker technically scores an 'Unfavourable-bad' result for all three attributes of Extent, Structures and Functions, and Future Prospects. In addition, the overall Conservation Status of the 6210 habitat at the site can also be described as being Unfavourable-bad.

A total of 38 sites formed the final list of sites surveyed during the 2006 Grasslands Monitoring Project: 31 orchid-rich calcareous sites and 7 species-rich *Nardus* sites.

Table 2.1 Full list of Irish SAC sites for which orchid-rich grassland (6210 habitat) is noted as a qualifying interest.

SITECODE	SITE_NAME	Sites not Surveyed/Assessed
IE0000020	Black Head-Poulsallagh Complex	
IE0000054	Moneen Mountain	
IE0000191	St. John's Point	
IE0000197	West of Ardara/Maas Road	
IE0000212	Inishmaan Island	
IE0000213	Inishmore Island	
IE0000242	Castletaylor Complex	
IE0000252	Coole-Garryland Complex	X
IE0000268	Galway Bay Complex	
IE0000297	Lough Corrib	
IE0000432	Barrigone	
IE0000439	Tory Hill	
IE0000440	Lough Ree	
IE0000566	All Saints Bog and Esker	X
IE0000572	Clara Bog	
IE0000606	Lough Fingall Complex	
IE0000625	Bunduff Lough and Machair/ Trawalua/Mullaghmore	
IE0000714 *	Bray Head	X
IE0000831	Cullahill Mountain	
IE0000849	Spahill and Clomantagh Hill	
IE0000859 *	Clonaslee Eskers and Derry Bog	X
IE0000919	Ridge Road, SW of Rapemills	
IE0000925	The Long Derries, Edenderry	
IE0001209	Glenasmole Valley	
IE0001275	Inisheer Island	
IE0001571 *	Urlaur Lakes	X
IE0001625	Castlesampson Esker	
IE0001656	Bricklieve Mountains & Keishcorran	
IE0001774	Lough Carra/Mask Complex	
IE0001776	Pilgrim's Road Esker	
IE0001831	Split Hills and Long Hill Esker	
IE0001926	East Burren Complex	
IE0002074	Slyne Head Peninsula	
IE0002213	Glenloughaun Esker	
IE0002214	Killeglan Grassland	
IE0002256	Ballyprior Grassland	

\* This identifies those SACs for which a habitat Representivity value of less than C was recorded. These sites were deemed not to contain representative examples of the habitat and were therefore dropped from the survey list.

Table 2.2 Full List of Irish SAC Sites for which species-rich *Nardus* grassland (6230 habitat) is noted as a qualifying interest

SITECODE	SITE_NAME	Sites not Surveyed/Assessed
IE0000584	Cuilcagh - Anierin Uplands	X
IE0000646	Galtee Mountains	
IE0000934	Kilduff, Devilsbit Mountain	
IE0000939	Silvermine Mountains	
IE0001197	Keeper Hill	
IE0002122	Wicklow Mountains	X
IE0002124	Bolingbrook Hill	
IE0002125	Anglesey Road	
IE0002257	Moanour Mountain	
IE0002258 *	Silvermines Mountains West	X

\* This identifies the SACs for which a habitat Representivity value of less than C was recorded. This site was deemed not to contain representative examples of the habitat and was therefore dropped from the survey list.

### **3 METHODOLOGY: SITE MONITORING AND CONSERVATION ASSESSMENT**

#### **3.1 OVERVIEW OF PROCEDURE**

In order to address the requirement to monitor and report on the Conservation Status of the grassland habitats in Ireland, the Grasslands Monitoring Project was established. A short-list of sites for survey was drawn up for the 2 priority grassland habitats (see Section 2.3). Towards determining the Conservation Status of the grasslands at each of these sites, the 3 attributes described in Section 1.3 (Area (Extent), Structures and Functions, and Future Prospects) were examined and assessed.

Field Sheets were devised (see Section 3.3) which would adequately assess the Structures and Functions of the habitats visited (see Section 3.2.2). Following field surveys, indicative grassland habitat maps were digitised which assisted in the estimate of Area (see Section 3.6). These maps are presented in Volume V of this report. Future Prospects were assessed, taking into account the results of the previous 2 attributes and an evaluation of known impacts and threats (see Section 3.2.3). An overall assessment of the Conservation Status of the grassland habitat at each site was then determined (see Section 3.2.4).

An Access database was also constructed to record information such as currently available knowledge relevant to the grassland habitats at each site, the collected survey data, and the assessments results (See Section 3.5.2). From this database, individual summary site reports for each site were produced (see Volumes II, III, and IV of this project report) which contain the results of the field monitoring and the results of the Conservation Status assessments. Additional data recorded in the Grasslands Database but not presented in the summary report is detailed in Section 3.5.2.

#### **3.2 ASSESSMENT OF HABITAT PARAMETERS**

##### **3.2.1 Extent**

The assessment of habitat Extent is based on determining whether or not the grassland habitat has been stable over a specific monitoring period. Technically, according to the EU site monitoring reporting procedure, this is a period of 6 years. However, no previous systematic monitoring programmes for grassland habitats have been undertaken in Ireland. The Grasslands Monitoring Project 2006 is the first of such programmes for this habitat. Therefore, for the purposes of this project, the 'monitoring period' is taken to refer to the period of time since the site was first described or designated. For many of the sites on the 2006 survey list, this corresponds to a period of approximately 10 years. The summary report produced for each site records the date of the first survey, usually the date of the first Natural Heritage Area Survey.

Within each site, if the habitat has been stable *i.e.* with loss and expansion in balance, or if it is increasing, then the Conservation Status is described as being *favourable*. However, a decline in area of up to 1% per year within a reporting period will result in a Conservation Status assessment of *unfavourable-inadequate*, while any greater rate of

decline results in an assessment of *unfavourable-bad*. The broader issue of changes in distribution patterns within the habitat's national Range was not within the scope of this survey.

The assessment of Extent for the 2 priority grassland types within these sites was determined by comparing the 2006 estimated areas with any previous available data. This involved the assembly and the assessment of: any previous surveys such as the NHA surveys; data from any available EIS surveys; information from the NPWS NATURA 2000 site forms; habitat maps and data from MPSU Conservation Plans (whenever available).

Unfortunately, the values presented for grassland areas in these 2 latter sources of information were sometimes seen not to be very reliable. The extensive fieldwork that is required to produce detailed habitat maps exists only for a limited number of habitats in Ireland (mainly raised bogs and coastal sand dune habitats). For many other sites, habitat areas were estimated, mostly by using aerial photographs and often in the absence of sufficient fieldwork.

While this approach may be reasonable for certain habitats, it is not possible to accurately distinguish between the various grassland habitat types from aerial photographs, particularly in the absence of ground-trusting via field surveys. This is particularly true when attempting to distinguish between semi-natural grasslands which may be orchid-rich and semi-improved grassland. In addition, very early estimates for areas were also more than likely made using 1995 aerial photographs (a black and white series), and these would not have been available in digital format at that time. When compared to the resources available today (and in the absence of the necessary levels of fieldwork at the time of site designation), it is understandable why earlier estimates now appear crude, either under-estimating or over-estimating the Extent of the grassland habitats.

During the current survey, geo-referenced ortho-rectified aerial photographs from the OSI 2000 series (a colour series) were used extensively, both to target areas for survey and in the estimation of habitat Extent. Subsequent to the fieldwork, digital versions of some of the 1995 series were also made available. In addition, elements of the recent OSI 2005/2006 series began to come on stream during the latter part of 2006. While full cover for the Republic is not yet available, some counties have been completed. For a number of sites on the project's survey list, therefore, 1995, 2000, and 2006 aerial photographs are available and clear changes in grassland habitat Extent were very noticeable.

While all of the sites visited during the 2006 survey are designated as cSACs, a grassland category usually formed only one habitat, often with a scattered distribution within the total designated area. An initial examination of previous survey notes and habitat maps, as well as all available aerial photographs, facilitated the targeting of possible areas for survey. Depending on the size of the site and the areas of grassland targeted, either all of the target areas or a sub-sample of the targeted units was surveyed. The rationale for these two approaches is discussed in more detail in Section 3.4.1 and 3.4.2.

During the ground survey of each site, GPS data (Irish National Grid) on grassland habitat location and boundary points were gathered using a Trimble GeoExplorer 2005 series. These digitally stored points were later post-processed to reduce satellite errors and were

transferred to the GIS programme ArcView GIS 3.2 for mapping purposes. The resulting indicative grassland habitat maps were then used to calculate current Extent.

The assessment process requires that current Extent be compared with previous Extent in order to determine the performance of this attribute over the monitoring period. As discussed above, there is some doubt regarding the accuracy of some previous estimates. Therefore, '*best expert judgement*' was used as recommended by the EU monitoring manual in comparing current Extent with previous Extent. Whenever possible, previous estimates for area were reassessed using more recently available survey data and resources such as digital aerial photographs for 1995, 2000, and 2006. These adjusted values were then taken as the baseline data against which present estimates were compared. It should be remembered that, in the absence of detailed ground surveys, these adjusted values remain as estimates.

During the 2006 survey, time allowed for the survey of most of the grassland units in smaller sites such as the eskers. Therefore the estimate of priority grassland is a close approximation of the habitat's true Extent on those smaller sites. For larger sites, where only a sub-sample of targeted areas could be visited due to time constraints, the percentage grassland area in the surveyed target areas was calculated. This was then extrapolated to estimate a maximum Extent for the site. This is seen as a general estimate and is more than likely an over-estimation of the true situation. This may be true particularly of the large Burren cSACs, where 6210 habitat occurs in a mosaic situation with more heath-like grassland and with limestone pavement. For each site surveyed during the project, maximum effort was made to reduce this error by taking into account every possible source of information available.

The approach taken at each site in relation to any adjustments made to previous estimates of area, or in relation to the survey and mapping approaches taken, are outlined in detail in each site summary report.

### **3.2.2 Structures and Functions**

The assessment of Structures and Functions is an evaluation of the condition of a habitat. This involves an examination of the different processes which determine the correct functioning of the habitat *e.g.* in the case of a woodland habitat, the sufficient presence of the different biotic and abiotic factors within the different structural layers of the woodland canopy. Grasslands, however, have a very simple structure, consisting of one principal layer of vegetation between 2-100cm. Habitat condition within grasslands is therefore best determined by assessing the *species composition*.

For the current project, this involved the design of field sheets to record the assessment and scoring of attributes such as a) herb content, b) the presence of typical positive indicator species, c) the presence of negative indicator species, and d) the percentage cover of shrubs or Bracken (see Section 3.3 for full details). In the grasslands monitoring procedure employed by the JNCC in Britain, an assessment of the species composition attribute is seen as a mandatory step, the results of which form the basis of the scoring system for the Structures and Functions monitoring process.

Other attributes of the habitat are also recorded but are not included in the scoring process. Sward *structure e.g.* height of vegetation, percentage of litter present, extent of bare

ground etc., is deemed to be a secondary attribute and does not contribute directly to the overall scoring process. These features are noted and recorded nonetheless, as they can often act as early warning signals, heralding a potential deterioration in the quality of the habitat. They can also contribute to the assessment of the site's Future Prospects, by prompting a management response which can prevent further deterioration of the habitat.

One final site feature or attribute which is also recorded (but not scored) is the presence of any *indicators of local distinctiveness*. This category allows for the recording of any site-specific features such as notable plant species or vegetation mosaics. For the purposes of this project, the attribute most often recorded was the presence and abundance of orchid species. For the orchid-rich grassland habitat category, the presence of orchids cannot be guaranteed from year to year, even at well-known and established orchid sites. The assessment requirement to have orchids present was therefore not included in the scoring process. An absence of orchids in any given year may be a result of factors such as unfavourable weather conditions and may not reflect a deterioration of site quality. On a positive note, where an assessment of vegetation structure might suggest an unfavourable structural situation is developing, the presence of orchids may indicate that remedial measures can still be undertaken before loss of habitat actually occurs.

The monitoring process itself involves establishing a series of targets that define the desired condition of the habitat attributes. At specific monitoring stops throughout each site, the condition of the grassland habitat is assessed and scored on its performance in relation to the pre-defined targets. The collected data forms the basis for the determination of the Conservation Status of the relevant grassland habitat, following the template of the EU Monitoring Guidelines.

Structures and Functions were assessed using specifically designed field sheets at specific Monitoring Stops throughout the site (see Section 3.3 for full details). Monitoring Stop locations should adequately represent the habitat type. The four parameters determining the species composition were assessed and an overall score was recorded for each Stop.

#### **3.2.2.1 Analysis of the results of Structures and Functions assessments**

The categories of Conservation Status assessment are based on declines in condition of between 1-25% (*unfavourable-inadequate*) and greater than 25% (*unfavourable-bad*). Ideally, therefore, the Monitoring Stops should be applied in multiples of 4, *e.g.* either 4, 8, 12, 16 etc., according to habitat area and the existence of different management regimes within a site etc. Theoretically, this allows for simple estimates of Conservation Status rating, and facilitates consistency of application at all the sites.

In effect, for the habitat on a site to attain an overall 'Pass' for the Structures and Functions assessment, all of the Monitoring Stops assessed would be required to pass. Where, for example, 8 Stops were assessed, if either 1 or 2 stops fail, then the failure rates at 12.5% and 25% respectively, indicate an *unfavourable-inadequate* Conservation Status. If more than 2 Stops fail, this reflects a failure rate of at least 37.5% and results in an *unfavourable-bad* Conservation Status assessment for the habitat.

While it is ideal to work with multiples of 4 when planning Monitoring Stop locations, in practice, however, some concessions to this recommendation were made during the current survey. It sometimes occurred during the analysis of survey results that individual

Stops were subsequently excluded from the assessment of Structures and Functions as they were deemed, in fact, to be more reflective of loss in Extent *e.g.* where too few indicator species were remaining and where, on reflection, agricultural improvement was seen to be significant. On other occasions, additional information became available after fieldwork which invalidated the choice of the Stop location. In other words, where a Stop had failed (implying, for example, that it had been agriculturally improved to some degree), it was seen from new information that this had been the status of that location when the site was first described/designated. In these cases, the failure of the assessment was not a true reflection of a *change* in Structures and Functions over the monitoring period and a Stop should not have been conducted in that location.

Each site report records the attribute for which Stops were assessed. In all cases, including where the recommendation to assess multiples of 4 did not hold, the percentage of passes and fails was still used to yield the appropriate Conservation Status assessment.

The purpose of the monitoring process is to compare current status with a previously recorded baseline. Very little data exists for many of the sites visited which could be used as a detailed baseline for the current assessment format. Some records are available in previously recorded NHA survey notes or in some cases, Rare Plant surveys. Where these occurred, it was possible to make comparisons between those and the habitat's current status. However, for many sites, the NHA survey was in effect a boundary survey, with generic notes referring to any occurring habitats. The three Aran island cSACs, for example, are mainly boundary surveys, with generic notes describing most of the islands' grasslands habitat. In these instances, in the absence of previous baseline data, '*best expert judgement*' was used and all available information was drawn upon.

In general terms, therefore, the assessment of Structures and Functions during the 2006 Grasslands Monitoring Project was in most cases, an assessment of the *current* status of this attribute. In some instances, some degree of assessment could be achieved where aerial photographs indicated the encroachment of scrub or Bracken over the length of the monitoring period.

It should be noted that while the current survey adds to previously recorded habitat information for the grassland sites, it does not offer a datum baseline for this habitat at all of the sites. This is true especially for the larger cSACs where all possible grassland areas on a site could not be visited due to time constraints. Smaller sites, where most of the grassland areas could be surveyed in more detail, benefited most from the survey. Future monitoring of the Structures and Functions at these smaller sites is likely to be more reliable as a result.

### **3.2.3 Future Prospects**

The determination of the Future Prospects for the 2 priority grassland habitats at each site was based on the evaluation of a number of factors. The results of the assessments of Extent and Structures and Functions were viewed in conjunction with other factors such as perceived threats or potential benefits likely to accrue from various impacts and activities. These often point to issues of habitat management. Also taken under consideration are any noted *indicators of local distinctiveness*, such as orchid-richness.



A list of the broad categories of Impacts and Activities which may influence a site (with their respective NATURA 2000 Codes) are presented in Appendix I. The categories most commonly recorded during the 2006 survey were invasion by a species (encroachment by scrub or Bracken), the abandonment of old pastoral systems, under-grazing, and agricultural improvement (see Section 4.3 for details). An assessment of each recorded or perceived impact or threat, with an evaluation of the intensity of that impact, is included for each site in the project database and in the summary site reports.

For the grassland habitat, the level of grazing or the patterns of mowing are critical factors. The timing of these events can also be crucial. Too high a stock rate can damage the surface of the grasslands, particularly on sloping sites such as on the sides of eskers. Insufficient grazing, on the other hand, can lead to the encroachment of scrub and Bracken at the expense of species which require more open conditions. While scattered, mature individuals of *Crataegus monogyna* or *Prunus spinosa* are not seen as a problem in the overall landscape feature of a grassland, the appearance of numerous young seedlings and saplings heralds a shift towards a scrub-dominated habitat, with the concurrent loss of open grassland areas and the loss of quality habitat. Horses, in particular, are slow to force a way through prickly vegetation, so once scrub seedlings become established and grow to sapling height, the animals will choose not to graze between the shrubs and a whole area will quickly become rank.

Agricultural improvement can take a number of forms, from the application of varying levels of organic or artificial fertiliser to large-scale ploughing and reseedling with aggressive grass species. Where the latter event, in particular, has occurred over significant areas of the site, loss in Extent is deemed to have occurred. If such significant improvements have occurred, it is likely that further attempts to improve remaining grassland areas in the site may be planned. Re-establishment of the original, species-rich habitat is highly unlikely after such improvements. In addition, where fragmentation of semi-natural grassland habitat has occurred on a site as a result of improvements, effective management of the remaining scattered units becomes problematic and the long-term viability of the habitat is severely threatened. In these circumstances, the Future Prospects would therefore be described as being *Unfavourable-bad*.

Certain factors can improve the Future Prospects for a site. For example, even where the Structures and Functions were seen to be challenged, the fact that the landowner was supportive of new management procedures would indicate that remedial measures would be undertaken and that the habitat would most likely improve. Some landowners are also becoming involved in NPWS sponsored Farm Plans, offering significant potential to improve or maintain grassland quality.

On considering the overall affect of all impacts and activities, including the implications of any indicators of local distinctiveness, the Future Prospects of each habitat are rated as *favourable*, *unfavourable-inadequate*, or *unfavourable-bad*. When the habitat is not thought to be under significant threat from the observed impacts, such that its long-term viability is assured and future prospects are excellent or good, then it is assessed as being in *favourable* condition. When under severe threat and rapidly declining from the net affect of impacts at the sites, habitats are assessed as *unfavourable – bad*. These habitats have bad long-term prospects and their long-term viability is not assured. Any situation in which the Future Prospects of the habitat are thought to fall between the above extremes, leads to an *unfavourable – inadequate* assessment.

### 3.2.4 Conservation Assessment

The overall evaluation of the Conservation Status of the 2 priority grassland habitats takes into account the assessment results of the three habitat parameters discussed above *i.e.* variations in Extent (area), the condition of the habitat's Structures and Functions, and an evaluation of the Future Prospects for the habitats based on known impacts and threats. The combination of 'Green', 'Amber', and 'Red' judgements assigned to the 3 parameters is assessed and an overall evaluation is recorded as follows:

<b>Favourable:</b> (Green)	All 'green' <u>OR</u> three 'green' and one 'unknown'
<b>Unfavourable-Inadequate</b> (Amber)	One or more 'amber' but no 'red'
<b>Unfavourable-Bad:</b> (Red)	One or more 'red'
<b>Unknown:</b>	Two or more 'unknown' combined with green, or all 'unknown'.

The objective for each Member State is to achieve 'Favourable Conservation Status' for the habitats and species under their responsibility. This requires that the habitat type must be prospering and have good prospects of continuing to do so. Where habitats are failing to meet the standards necessary for favourable conservation status, it is the responsibility of Member States to implement strategies or management regimes aimed at rectifying this situation.

## 3.3 FIELD SHEETS

Separate field sheets were designed for each of the 2 priority grassland habitats assessed during the 2006 survey. The final design and details on these field sheets was decided upon following a review of a number of information sources including: the monitoring approach taken by the JNCC in Britain which is presented in their Common Standards Monitoring manuals for grassland habitats; the monitoring approach taken by the NPWS Coastal Monitoring Project; the EU Habitats Manual; consultation with NPWS research staff; and available knowledge on the characteristics of Irish grasslands (see Section 1.2).

The format of the field sheet is similar for both grassland categories. Four attributes were assessed and scored against pre-determined targets within 2m<sup>2</sup> quadrats at recorded Monitoring Stops. Additional sward structural features were also recorded, but not scored, at each Stop and any features of local distinctiveness noted. GPS locations (Irish National Grid) of each Monitoring were recorded. The aspect of the site and a general description of the angle of slope was noted *e.g.* Flat, Gentle, Gradual, Steep, Severe. Any noted activities or threats were also recorded.

### 3.3.1 Calcareous Grassland Field Sheet

As described in Section 3.2.2 above, the field sheet is designed specifically to assess the Structures and Functions of the grassland habitat. The attributes chosen to best assess quality calcareous grassland in Ireland were deemed to be a) herb content, b) the presence of typical positive indicator species, c) the presence of negative indicator species, and d) the percentage cover of woody species and/or Bracken. Specific targets were agreed and set for each of these four criteria and the vegetation at each Monitoring Stop was tested against these pre-determined targets. Each attribute was required to Pass its assessment before the Monitoring Stop was deemed to achieve an overall Pass for the Structures and Functions at that location. Appendix 2a presents a blank copy of the Calcareous Field Sheet while a sample version from one of the calcareous grassland sites is presented in Appendix 2b.

Table 3.1 below summarises the targets set for the 4 attributes and the assessment results which would be recorded over a monitoring period. Note that for the 2006 Grasslands Project, the data collected forms the first detailed assessment for these sites in this format, and as such, the assessment criteria listed in column 3 in Table 3.1 will be applied during the next monitoring programme.

Table 3.1 Attributes and targets used in the assessment and scoring of the Structures and Functions of a calcareous grassland Monitoring Stop

Attribute	Target	Monitoring Assessment
Grass:herb ratio	Between 40-90% herb content	A low or decreasing herb cover should be registered as being unfavourable.  Targets can be set to register a 20% decrease or more as being unfavourable.
Positive Indicator Species	At least 7 species present	A loss of 2 or more species over the monitoring period results in an unfavourable assessment. Normally, a decline in species should be accompanied by changes in at least one other key assessment attribute.
Negative Indicator Species	Any one species no more than frequent throughout or singly, or collectively, occupy >5% cover. Non-natives no more than rare.	Any increase in frequency of 10% or more is deemed to be unfavourable.
Scrub, Trees, or Bracken (not including <i>Juniperus communis</i> )	Woody species (plus Bracken) should not exceed 5% cover. Record values within 2m <sup>2</sup> and 5m <sup>2</sup> quadrats.	There should be no increase in scrub or Bracken cover.

a) *grass-herb ratio*

This target requires that herbs account for at least 40% but not more than 90% of the vegetation cover. An assessment of this attribute is useful in that it can be an indicator of soil nutrient status. While grass species are an important component of the grassland vegetation, high nutrient conditions generally result in an excess of grasses over herbs, with a corresponding loss in habitat character and biodiversity. In addition, judgement is required when recording high herb content as the high cover of species such as *Trifolium repens* or *Cirsium arvense* (species which respond positively to nutrient enrichment) would not be desirable.

b) *positive indicator species*

The list of typical indicator species was compiled following: an assessment of the indicator lists presented in the EU Habitats Manual; the *Festuco-Brometalia* categories listed by O'Sullivan (1982) and White and Doyle (1982); and following discussions with research staff in NPWS. Species were selected to best reflect the Irish situation for the 6210 habitat. As the 6210 habitat is likely to occur on a number of landscape units with varying degrees of limestone-richness *e.g.* eskers, limestone pavements, and dry calcareous meadows, a generic list of 36 calcareous species was compiled to reflect the variation in vegetation types. This list includes 15 species more typical of strongly calcareous situations while those with a more western distribution (8) are also highlighted. As such, the list covers a range of calcareous ecological conditions, offering a variety of species which may be visible at different times of the growing season. The agreed list of 36 typical indicator species is presented on page 2 of the field sheet (see Appendix 2).

Initially, a target was set which required that the occurrence of at least 4 species should be seen to be frequent and at least 3 species should be occasional. In practice, however, it became obvious that these targets were seen to be too restrictive, as abundance values were at times more reflective of seasonality rather than of poor habitat quality. The revised target, requiring that at least 7 indicator species be present, was agreed and earlier survey results were amended accordingly. The abundance of all occurring indicator species was recorded on the field sheet using the DAFOR scale. Additional species were also recorded in separate field notebooks.

c) *negative indicator species*

A number of plant species were determined to reflect poor quality or negative trends in the grassland habitat – *Lolium perenne*, *Rumex crispus*, *Rumex obtusifolius*, and *Urtica dioica*. High or increasing frequency or cover of these species usually highlights issues of nutrient enrichment or agricultural disturbance on the site. Initially a target was set which required that any one species should not, singly, be more than frequent (F) or together, should not occupy more than 5% cover.

In practice, during the 2006 survey, the assessment results of this attribute rarely affected whether or not the Monitoring Stop passed or failed. The grass, *Lolium perenne*, is an aggressive agricultural competitor but will sometimes occur in more semi-natural or semi-improved situations without significantly affecting the overall quality of the habitat, particularly when nutrient conditions are poor. A DAFOR abundance value of rare (R) for this species was therefore tolerated in the scoring system. However, it was seen during the survey that an abundance value of occasional (O) was more likely to reflect a true deterioration in site quality as a consequence of agricultural improvement activities.

When this was seen to occur, the assessment of this attribute was deemed to have failed. The 'negative indicators' target was therefore adjusted to reflect this.

The remaining 3 negative indicator species, on their own, hardly ever negatively contributed to the scoring process. On occasion, some of the sites surveyed during the 2006 project presented other, more site-specific species which could be viewed as negative indicators. *Senecio jacobea* was sometimes dominant (D) on parts of certain sites e.g. Bricklieve Mountains and Keishcorran cSAC (001656). Such situations were noted and recorded as a negative '*indicator of local distinctiveness*' and the implications of the feature, if any, were included in the assessment of Future Prospects.

d) *scrub, trees, or Bracken*

The target set for this attribute required that no more than 5% cover should be accounted for by woody species (including Bracken). 'Woody species' does not include *Juniperus communis*, as this species is the component species for another Annex 1 habitat: *Juniperus communis* formations on heaths or calcareous grasslands (Habitat Code 5130).

According to Fossitt (2000), the habitat category Scrub (WS1) occurs where shrub species exceed 50% cover. Likewise, Dense Bracken (HD1) occurs where Bracken cover exceeds 50%, either as patches or as continuous cover. During the 2006 survey, where either scrub or Bracken density was seen to be 50% or greater on a grassland habitat which could otherwise fall within the 6210 habitat category, this was deemed to be a loss in 6210 habitat area. Monitoring Stops were generally not placed in such locations. If such areas were thought to have suffered such encroachment problems over the designated monitoring period (see Section 3.2.1), these areas were included instead in the assessment of habitat Extent.

Scattered, mature individuals of *Crataegus monogyna* or *Prunus spinosa* are not seen as a problem in the overall landscape feature of calcareous grasslands. However, the appearance of numerous young seedlings and saplings of less than 1m in height reflects insufficient management protocols in more recent time and heralds a shift towards a scrub-dominated habitat, with the concurrent loss of open grassland areas and the loss of quality 6210 habitat. Once even a relatively low density of seedlings and saplings become established, often to no more than 0.5m in height, grazing animals such as horses will tend to avoid the prickly vegetation. Grazing patterns will shift away from these areas and the vegetation takes on a more rank appearance.

During the 2006 survey, the recording of this attribute within the designated 2m<sup>2</sup> quadrat was sometimes seen not to adequately reflect the condition of the general habitat in the vicinity of the Monitoring Stop. While a value of 5% cover or lower might be recorded within a quadrat, it was seen that a higher density often occurred over a larger area, more accurately reflecting the broader view over the landscape unit. For this reason, scrub and Bracken cover was additionally recorded over a larger area of 5m<sup>2</sup>. Only the value recorded within the true Monitoring Stop quadrat of 2m<sup>2</sup> was used to score the attribute. The value recorded in the larger quadrat area is used to contribute to the discussion of the habitat's Future Prospects.

These four mandatory attributes were assessed and scored (see completed Field Sheet in Appendix 2b), resulting in an overall Pass or Fail for the Structures and Functions at each

Monitoring Stop location. An overall Pass or Fail result for the entire site was then determined and recorded on the field sheet (see Section 3.2.2.1 for procedure).

In addition to these 4 scored attributes, 5 additional characteristics were recorded as an aid to the description of the Future Prospects for the grassland habitat on the site. These were not included in the scoring process and they are considered to be secondary attributes. The attributes of swards height, litter content, bare ground, and disturbance levels are habitat structural features, which are useful in determining management protocols operating at the site.

a) *indicators of local distinctiveness*

This attribute allows for the recording of any feature which may be specific to the site or to the grassland habitat on a particular site. In general, during the 2006 survey, it was usually employed to record the orchid-rich status of the grassland under investigation. The EU Habitats Manual indicates that orchid-rich status is determined on the basis of one or more of the following criteria:

- The site hosts a rich suite of orchids
- The site hosts an important population of at least one orchid species considered not very common in the national territory
- The site hosts one or several orchid species considered to be rare, very rare, or exceptional in the national territory

Whenever orchids were seen to occur, either within the Monitoring Stop or in the Stop's vicinity, their identity and frequency were recorded. Although the presence of orchids was not included in the scoring process at Monitoring Stops, their presence was seen to be important in that it usually indicated relatively good quality habitat. Therefore, at times, orchid-richness was used to weight the scoring process. For example, if a Monitoring Stop failed the assessment of Structures and Functions because only 6 of the 7 target indicators were present, the presence of orchids both within the Stop and in the habitat as a whole, indicated that the habitat quality was good enough on this occasion to achieve an overall Pass. This concession to achieve a Pass was not made if the Monitoring Stop failed as a result of excessive cover of scrub or Bracken, as encroachment issues are deemed to have more serious implications for the long-term future of the habitat and should not be overlooked.

*Indicators of local distinctiveness* may also be seen in a negative light. For example, the almost dominant nature of *Senecio jacobea* on parts of the grassland habitat at the Bricklieve Mountains and Keishcorran (cSAC 001656) was worthy of note.

b) *height of sward*

This secondary attribute is an attempt to assess grazing intensities on the site. Over- or under-grazing are both detrimental to species diversity, leading to a loss in habitat quality. Of course, where grasslands are subject to mowing, the timing of the survey should be noted, as height will obviously vary according to mowing regimes.

c) *litter*

An evaluation of this structural feature is more useful in determining management protocols. Excessive cover of plant litter on a site reflects an issue of insufficient management, where dead plant material is accumulating rather than being removed by grazing or mowing. The presence of some litter is acceptable but an excess of 25% is deemed to be a threat to the habitat (JNCC, 2005).

d) *extent of bare ground*

While some bare ground is required in a grassland habitat to facilitate seed germination, an excess of open soil is detrimental. More competitive species such as *Senecio jacobea* or *Cirsium arvense* can quickly become established under such circumstances. An excess of bare ground may also infer some degree of disturbance on the site (see next attribute). More than 10% cover of bare ground is thought to be a negative trend indicator.

e) *Grazing and disturbance levels*

This category attempts to measure the degree of disturbance which may occur on a site, due either to grazing pressures or to any other damaging activity. While a threshold of <20m<sup>2</sup> was recommended, in practice this was never recorded. This category was therefore mostly used to describe any overall impression of any management issue (usually grazing pressures) deemed to be negatively impacting on the site.

### 3.3.2 Species-rich *Nardus* Grasslands Field Sheet

The format of the field sheet for this grassland category is similar to that of the calcareous grassland. Four attributes were assessed and scored against pre-determined targets within 2m<sup>2</sup> quadrats at recorded Monitoring Stops. GPS locations of each Monitoring Stop were recorded. The aspect of the site and a general description of the angle of slope was noted *e.g.* Flat, Gentle, Gradual, Steep, Severe. Additional, structural features were also recorded, but not scored, at each Stop and any features of local distinctiveness noted. Any noted activities or threats were also recorded. Appendix 2c presents a blank copy of the species-rich *Nardus* grassland Field Sheet while a sample version from one of the *Nardus* grassland sites is presented in Appendix 2d.

The four attributes assessed and scored for species-rich *Nardus* grasslands were a) herb content, b) the presence of typical positive indicator species, c) the presence of negative indicator species, and d) the percentage cover of woody species and/or Bracken. Specific targets were agreed and set for each of these four criteria and the vegetation at each Monitoring Stop was tested against these pre-determined targets. Each attribute was required to Pass its assessment before the Monitoring Stop was deemed to achieve an overall Pass for the Structures and Functions at that location.

Table 3.2 summarises the targets set for the 4 attributes, with the assessment results which would be recorded over a monitoring period. Note that for the 2006 Grasslands Project, the data collected forms the first detailed assessment for these sites in this format, and as such, the assessment criteria listed in column 3 in Table 3.2 will be applied during the next monitoring programme.

Table 3.2 Attributes and targets used in the assessment and scoring of the Structures and Functions of a species-rich *Nardus* grassland Monitoring Stop

Attribute	Target	Monitoring Assessment
Grass:herb ratio	Herb cover should be >25%	Targets can be set to register a 10% decrease or more as being unfavourable.
Positive Indicator Species	At least 9 species present	A loss of 2 or more species over the monitoring period results in an unfavourable assessment. Normally, a decline in species should be accompanied by changes in at least one other key assessment attribute.
Negative Indicator Species	Non-natives no more than rare. Negative indicators, collectively (apart from 3 specific species – see list), should have <10% cover.	Any increase in frequency of 5% or more is deemed to be unfavourable.
Scrub, Trees, or Bracken	<10% of vegetation cover should consist of Bracken and/or native trees or scrub (ericaceous dwarf-shrub species should not exceed 25% cover)	An increase of 5% cover or more of scrub/trees/Bracken is registered as being unfavourable.

a) *grass-herb ratio*

This target requires that herb cover be greater than 25%. Upland habitats characteristically have a more ‘grassy’ appearance when compared to other habitats at lower altitudes and therefore a lower threshold for herb content is acceptable.

b) *positive indicator species*

The list of typical indicator species was compiled following an assessment of: the indicator lists presented in the EU Habitats Manual; the *Nardetalia* classification listed by O’Sullivan (1982) and White and Doyle (1982), and following discussions with research staff in NPWS. Species were selected to best reflect the Irish situation for the species-rich *Nardus* grasslands (6230) habitat, resulting in a final selection of 21 representative plants. This habitat is seen to occur in Ireland on both upland acid soil and on shallow organic, peaty soils. Therefore, the indicator list was chosen to include the full range of species likely to occur across the varying ecological situations under which the habitat might likely be found in Ireland. The agreed list of 21 typical indicator species for the 6230 habitat is presented on page 2 of the field sheet (see Appendix 2c).

Initially, a target was set which required the presence of at least 7 indicator species. In practice, however, this target threshold was seen to be too low. A number of the species listed will also occur in true dry heath communities: Fossit (2000) indicates dry heath can occur on peaty soils of less than 15cm depth. Therefore in order that the assessment process was seen to be true to its objective regarding the 6230 habitat, the target for the presence of positive indicators was increased to 9. With this increased number, the ‘species-richness’ aspect of the habitat would be addressed by requiring a wider range of



species to be present, including those species which may also be found in heath-like situations. The abundance of indicator species at each Monitoring Stop was recorded on the field sheet using the DAFOR scale. Additional species occurring at each Stop were also recorded on the field sheet.

c) *negative indicator species*

Those species determined to reflect poor quality or negative trends in the grassland habitat are listed as negative indicator species. High or increasing frequency or cover of these species usually highlights issues of nutrient enrichment or agricultural disturbance on the site. For the assessment of species-rich *Nardus* grasslands, a list of 14 such species were selected (see Page 2 of field sheet, Appendix 2c). Individual maximum targets for cover were set for three species: *Holcus lanatus* (<30%); *Juncus effusus* (<10%); and *Trifolium repens* (<10%). For the remaining species on the list, a collective target of <10% cover was set.

d) *scrub, trees, or Bracken*

The target set for the presence of woody species of scrub, trees, and/or Bracken (<10%) is higher than that allowed for orchid-rich grassland (<5%). This is due to the nature of many uplands habitats where conditions often result in a higher presence of these species in the vegetation of those landscapes. Ericaceous dwarf-shrub species such as *Calluna vulgaris* and *Vaccinium myrtillus* were not included in this total. Where these species occurred, they were assessed as *indicators of local distinctiveness* and a separate target was set for them (see (f) below).

These four mandatory attributes were assessed and scored (see completed Field Sheet in Appendix 2d), resulting in an overall Pass or Fail for the Structures and Functions at each Monitoring Stop location. An overall Pass or Fail result for the entire site was then determined and recorded on the field sheet (see Section 3.2.2.1 for procedure).

In addition to these 4 scored attributes, 5 additional characteristics were recorded as an aid to the description of the Future Prospects for the grassland habitat on the site. These were not included in the scoring process and they are considered to be secondary attributes. The attributes of swards height, litter content, bare ground, and disturbance levels are habitat structural features, which are useful in determining management protocols operating at the site.

a) *height*

This structural feature often reflects the intensity of grazing on a site. Over- or under-grazing are both detrimental to species diversity, leading to a loss in habitat quality. In the upland situation, altitude, exposure and other edaphic features must also be taken into account when assessing sward height as such factors can act as limiting influences in some circumstances. In Ireland, mowing is generally not a feature in upland grasslands of the 6230 habitat.

b) *litter*

Excessive cover of plant litter on a site is often a reflection of insufficient grazing. Dead plant material accumulates in the absence of grazing animals. While the presence of some litter is acceptable, an excess of 20% in the upland grassland situation is deemed to indicate unfavourable conditions.

## c) extent of bare ground

An excess of bare ground is not a favourable situation in the uplands. Any prolonged opening-up of the sward has the potential to become a source for more extensive erosion, particularly in the more exposed and harsh environment of the uplands. While some bare ground is often observed due to the steeper slopes characteristic of the habitat, an excess of 20% cover is thought to be a negative trend indicator.

## d) indicators of current grazing patterns

This attribute records visual indicators of current grazing patterns. It assesses grazing intensities by taking into consideration features such as frequency and distribution of animal droppings (both domestic and wild animals), browsing damage both on low vegetation and on any shrubs present, and the overall impression of the habitat's structure. Where over-grazing has occurred, an excess cover of species such as *Juncus squarrosus* and/or *Rhytidiadelphus squarrosus* is noted as reflecting an unfavourable condition.

## e) grazing and disturbance levels

This category attempts to measure the degree of disturbance to the physical structure of the habitat. Disturbance may result from grazing patterns or may occur as a result of activities such as trampling from recreational walkers. Other physical impacts may be observed such as burning, drainage, or drying of the surface. A threshold of <20m<sup>2</sup> was recommended. In practice, during the 2006 survey, grazing patterns were usually the most frequently recorded activity affecting the grassland's physical structure.

## f) indicators of local distinctiveness

This attribute allows for the recording of any feature which may be specific to the site or to the grassland habitat on a particular site. In general, during the 2006 survey, this note was intended to record the presence of the orchid species listed in the EU Habitats Manual as being indicative of the species-rich *Nardus* grassland - *Pseudorchis albida*. However, while this species has been recorded in the past from several of the upland sites on the survey list, these sites were surveyed too late in the 2006 season to detect the orchid. The individual site reports record any previous records for the species.

Another feature considered under this category was the presence of *Calluna vulgaris* and *Vaccinium myrtillus*. These species can reflect increasing soil acidification processes and while a collective percentage cover of <25% was deemed to be acceptable, an excess of these species was seen to reflect more heath-like communities.

### 3.4 SURVEY METHODS

#### 3.4.1 Pre-survey preparations

The following steps were taken prior to the commencement of field survey work.

- All available information on the grassland habitat at each site was compiled. This included examining NPWS files such as NHA survey records, MPSU Conservation Plans for cSAC sites, NATURA 2000 reports, and any other additional miscellaneous reports or information.

- Digital resources were assembled including: OSI 2000 aerial photographs; 1995 and 2006 aerial photographs (when available); 6'' maps; and digital theme files such as site boundaries or previous habitat themes for use in the GIS computer package Arc View.
- A review was undertaken of the JNCC Common Standards Monitoring manuals for lowland and upland grassland habitats. In consultation with NPWS research staff, a monitoring methodology for the two Annex I priority grasslands habitats in Ireland was discussed and proposed.
- Field sheets for each of the Annex I priority grassland types were designed and tested.
- A Grasslands Database was designed and constructed to record a range of data, including the data recorded during the 2006 survey and a selected range of previously available information on the habitats within each site. The details of the Conservation Assessments undertaken for each site are also recorded in the database.
- Local NPWS staff were informed in writing prior to the commencement of the 2006 survey. Whenever possible, local staff were contacted by telephone prior to the date planned for the survey of a site. Where time pressures on local staff and survey workers allowed, contact was made on the ground. In those situations, additional information on recent and current issues affecting the status of the habitats on the site was gathered and the grassland monitoring process was also demonstrated to the local NPWS staff.
- Prior to the survey of each site, aerial photographs, OSI Discovery Maps, and 6''maps were uploaded onto the GPS handset. Printed versions of these were also included in the survey packs.

### **3.4.2 Targeting Areas for Survey**

Prior to each individual site visit, the information sources listed above, including aerial photograph and 6''map overlays, were carefully examined. Areas of grassland interest were noted, taking into consideration any previous records of habitat details or rare plant records. Based on all the available information, specific areas of grassland were targeted for field survey.

For smaller sites such as eskers, it was assumed that while there may be no previous information available for all of the grassland areas currently visible on the aerial photographs of the site, the underlying soil conditions would have originally supported 6210 grassland in these areas. Therefore, any area of esker grassland visible on the aerial photograph would have been targeted for survey and assessment. During the field survey, almost all of these target areas would have been visited, resulting in a relatively complete survey of the grassland habitat on those sites.

For most of the larger orchid-rich grassland sites, no data was available for large portions of the site which, when viewed on aerial photographs, appeared to have semi-natural grassland habitat. In those cases, wherever the 6" map indicated the mapping symbol for 'outcropping rock', this was understood to imply the possible presence of shallow limestone soil. As these are the conditions under which orchid-rich grassland is likely to occur, these areas were also targeted for survey. For the upland species-rich *Nardus* grasslands for which previous details were limited, a combination of altitude information (in the zone around the 900 foot contour on the 6" maps) and habitat details discernable from aerial photographs and from previous records was employed to target areas for survey.

On occasions, however, time constraints during the fieldwork meant that not all of the areas targeted for survey could be visited. When this happened, a sub-sample of the most likely areas was chosen instead, based on best available information.

Prior to arriving at the site, target areas were prioritised and a general survey approach was decided using aerial photographs and 6" maps. Possible access points were assessed and the direction for the survey walks was proposed. An estimate was initially made of the number of Monitoring Stops and Management Units that would be recorded, spacing them at regular intervals throughout the areas of interest at the sites and applying them in multiples of 4 as described in Section 3.2.2.1. This would most likely change once on the ground, however, as local conditions would often have changed since the OSI 2000 photographs were recorded. This would become apparent once on the site and adjustments were made to the survey procedure.

On occasions, area of grassland habitat were noted on the day which were outside of, but directly contiguous with, the boundary of the cSAC site. If these additional areas were deemed to be of significant habitat interest, they were surveyed and a Monitoring Stop was conducted in that area. Recommendations to include the area within the cSAC may also have been made. If these areas are included in the future, the final estimate of Extent for the site will be improved.

### **3.4.2 Data Collection**

At each site, survey data was recorded using the following:

a) *field sheets*

The field sheets used for the two Annex I priority grassland habitats are presented in Appendix 2 and described in detail in Section 3.3. The cards are used to: record site identity and location details; record Monitoring Stop data to assess and score Structures and Functions; evaluate habitat structural details to aid in the determination of current management practices and the habitat's Future Prospects; and to record any noticeable impacts or threats.

b) *handheld GPS recorder*

A GeoExplorer GPS minicomputer (Trimble GeoXT) was used to record the locations of Monitoring Stops, habitat boundary positions, locations of photographs, and the locations of any other points of interest. The positions of these features were logged onto the GPS receiver, which computes the GPS position and stores the information in a file using the

proprietary software package, Terrasync. Additional comments on each feature could also be recorded and stored as text fields in the device, facilitating the direct transfer of such information to the GIS package (see below).

c) *site notes*

Notes at each Monitoring Stop were recorded in a field notebook. The location of each note was recorded using GPS. These notes recorded details such as additional species occurring both within and outside the Stop, or any other habitat features deemed to be relevant to the overall assessment of the grassland at the Stop location.

Additional site notes were taken at other locations on the site to record other habitats or other areas of grassland not included in the Monitoring Stop assessment process. Such additional details aided in the final step of determining the digital extent of grassland on the site. Additional details on site management issues were sometimes received from local NPWS staff who may have accompanied the field worker across all or part of the site. On occasions, fieldworkers sometimes met with the site landowner who also contributed additional information on present and past management practices.

d) *photographs*

A digital photographic record was made of the vegetation at each Monitoring Stop and of the habitat and landscape features in the vicinity of the Stop. The GPS location of each photograph was also recorded.

e) *plant relevées*

Initially, it was planned to record at least 2 relevées from each site visited, to document the characteristics of the priority grassland assessed. In practice, as the survey progressed, it transpired that the detail being recorded at each Monitoring Stop was such that it comprised a relevé in its own right. Therefore, a number of relevées, ranging from 2 to 20, were eventually recorded from the surveyed sites. The location of each relevé was recorded using GPS (Irish National Grid). A copy of the relevé card used during the site survey is presented in Appendix 3.

f) *management units*

Site Monitoring Stops were assigned to 'Management Units' based on the noted field boundaries and management practices observed during the field survey. Notes were taken on the specific management patterns in operation in an attempt to understand more clearly the factors impacting on the condition of the habitat. Such data may also be useful when attempting to address negative monitoring results, as rehabilitation measures may possibly be extrapolated to other similarly managed areas on the site.

## **3.5 DATA PROCESSING**

### **3.5.1 GPS Data**

The GPS data (Irish National Grid) recorded on the Trimble hand-held micro-processor during the fieldwork was 'post-processed' subsequent to the fieldwork. Data collected by the GPS receiver may be subject to errors caused on the day by poor satellite interception or atmospheric noise etc. Corrections are therefore applied to the data after the field survey to account for such anomalies and to improve the accuracy of the data. It is noted

that the accuracy of GPS data recorded using GARMIN cannot be improved using this post-processing procedure.

Post-processing is achieved using a RINEX package (a Receiver Independent Exchange format) downloaded from the Geodetic Services offered by the Ordnance Survey of Ireland (see [www.OSI.ie](http://www.OSI.ie)). This entails downloading hourly RINEX GPS files from one of the 16 permanent GPS Reference Stations located on the island of Ireland and correcting the recorded field data using GPS Pathfinder Office software. In this way, the accuracy of the field GPS points are corrected wherever necessary, thereby potentially increasing the accuracy of the GPS points to approximately less than a metre (see [www.Trimble.com](http://www.Trimble.com) for further details).

### **3.5.2 Database Records**

The data collected during the field survey was transferred to a specifically designed Grassland Monitoring Database. This Access 2000 Database was constructed to record all of the collected field data as well as any previously recorded data relevant to the grassland habitat on the site. The format of the database presents the user with 7 tabbed pages which require data to be added.

This database can be printed in its entirety but given the total volume of the data recorded, a summary report of each site is presented instead. These summary reports offer just the relevant data and background information necessary to present a complete picture of the monitoring process and the results of the assessments involved. It should be noted that, due to the formatting difficulties often experienced with Access 2000 databases, it was not possible to present the scientific (Latin) names of plant species in italics font. Despite efforts to export the summary reports to a Microsoft Word document, the subsequent re-formatting that would be required was deemed to be too time-consuming given the project's time constraints.

The 7 tabbed records pages are described as follows:

#### **Page 1            *Site Information***

Details on the site name and site code, the site location, and its designation status are recorded. Aerial photographs, 6" maps, and OSI Discovery Map details are also listed with the survey date and the identity of field survey workers. The GPS location (Irish Grid reference) of each digital photograph is documented and any site notes recorded (with GPS locations) are presented.

#### **Page 2            *Site Description***

A brief overview description of the site is given, followed by a listing of the grassland habitats of interest. Three separate descriptions are then presented, summarising information on the grassland habitat recorded in the Site Synopsis, the NATURA 2000 form, and the status of the grassland recorded during the 2006 survey.

#### **Page 3            *Information Sources***

Relevant site notes from any previous NHA surveys or Rare Plant Surveys are recorded on this page, along with any other additional data on the survey history of the site. A text box allows for this data to be summarised and this is included in the summary Site Report.

Page 4            *Site Monitoring Stops*

All the data recorded on the field sheets are transferred to this page of the database. Details of the number of Monitoring Stops and Management Units are recorded with an overall Pass/Fail result for the site. Details of all the data recorded at all the Monitoring Stops are noted with their GPS locations (Irish Grid Reference), aspect, and slope. The details of the Structures and Functions assessment (including indicator species present) and the sward structure evaluations are recorded in draw-down tick boxes. Each scored attribute has a Pass/Fail result and an overall Monitoring Stop Pass/Fail result is also recorded. A text box allows for a written summary of the Monitoring Stop data to be presented with any other additional Stop notes recorded on the day of survey. This text box is included in the summary Site Report.

Page 5            *Activities*

This page records the threats and activities impacting on the site. Each activity (with impact and intensity codes as used in the NATURA 2000 Form) is listed in a draw-down tick box. For example, Intensity of Impact is measured using A - High, B - Medium, C - Low or D - Unknown. Influence of impact is assessed using -2 High negative influence, -1 Moderate negative influence, 0 Neutral, +1 Moderate positive influence, +2 High positive influence. Full details of the codes for each activity are given in Appendix 1.

An overall description of the threats and impacts and the overall management issues affecting the habitat are presented in two separate text boxes. These two text boxes, and the table of impacts, are included in the summary site reports.

Page 6            *Relevé data*

This page records all previous relevé data available for the grassland habitat on each site. Any relevé data recorded during the 2006 are also recorded with their GPS location data (Irish National Grid).

Page 7            *Conservation Status*

The four attributes of Extent, Structures and Functions, Future Prospects, and Conservation Assessment, are described in 4 separate text boxes on this page. A draw-down tick box summarises in a table the overall Conservation Status for the grassland at each site. Both the text boxes and the summary assessment table are presented in the summary site report.

### **3.6 GRASSLAND HABITAT MAPS**

The grassland habitat maps were created using GIS - Geographic Information System employing the package View 3.2 (ESRI). These maps were created using a combination of previously available habitat information, aerial photographs, and the habitat boundary data recorded on the handheld GPS device (Trimble micro-processor) during the field survey. This GPS data was transferred to the office computer and imported into the Arc View GIS package for mapping purposes.

The digitised habitat maps created for each site are presented in Volume V of this report. Following the protocol described above in Section 3.4.2, target survey areas were either fully surveyed and mapped or were sub-sampled. Where possible *i.e.* mostly on smaller

sites, priority grassland habitats were digitised and their area measured using Arc View. For those sites with revegetating grassland habitats occurring in old quarry sites, these too were digitised and presented in a contrasting mapping symbol on the site maps. The area of these revegetating communities is also calculated but they are not included in the estimate of extent for the priority 6210 grassland (see Section 1.2 for discussion on revegetating quarry habitats).

For each site, an overview map (Map 1) presents the entire cSAC with target survey areas (where necessary) highlighted and numbered. This map also records the indicative positions of any previously available habitat notes *e.g.* from NHA survey or Rare Plant Survey.

Map 2 presents the mapped extent of priority grassland habitat in each target survey area (when possible), presenting each target area on a separate sheet *e.g.* Map 2, Sheet 1 of 3 *etc.* The locations of Monitoring Stops and current site survey Notes are marked in each target grassland area. Monitoring Stops which passed the assessment of Structures and Functions are presented as yellow dots while those which failed are presented as red dots.

Map 3 presents the locations of digital photographs and any relevées recorded.

### **3.7 SITE REPORTS**

Section 3.5.2 describes the range of data recorded in the Grasslands Monitoring Database. A summary report of this data was printed for each site surveyed. These site reports are presented in Volume II and Volume III (orchid-rich calcareous grasslands) and Volume IV (species-rich *Nardus* grasslands) of the Grasslands Monitoring Project report. Each summary report comprises the following:

- *Site Details:* site name, survey date, total area of the site, the area of priority grassland listed in the NATURA 2000 explanatory forms, and the area estimated during the 2006 survey.
- *Site Location Information:* details of location, relevant maps and aerial photographs.
- *Site Designations:* SAC Site Code, Priority grassland Code.
- *Site Description:* a brief description of site location, underlying geology, and general habitats occurring; description of the priority grassland type as listed in the Site Synopsis and in the NATURA 2000 explanatory forms; description of the grassland based on the 2006 survey.
- *Background Information:* brief description of previous surveys relevant to the priority grassland habitat on the site.
- *Site Monitoring and Management Units:* a description of the Management Units present on the site in relation to the locations of the Monitoring Stops; Pass/Fail results of the Structures and Functions assessment are presented and discussed.



- *Factors Affecting the Conservation Value of the Site*: an overview is presented of the threats or impacts affecting the site and the management issues pertaining to the grassland habitat are discussed.
- *Conservation Status*: the attributes of Extent, Structures and Functions, Future Prospects, and Conservation Assessment are presented and discussed, with an overview table presenting a summary of the final assessments for each.

Two appendices are also included with each summary report. Appendix 1 lists the additional site Notes recorded during the 2006 survey. Appendix II presents a summary description of the data recorded at each Monitoring Stop and indicates whether a Pass or a Fail resulted from the assessment. A summary Table of the results of the 4 assessed and scored attributes (grass:herb content, positive indicator species, negative indicator species, presence of scrub/Bracken) follows this description.

The details of the GPS locations (Irish Grid Reference) of the Monitoring Stops and site Notes are recorded in the Grasslands Monitoring database and are visible on the site maps as described above (Section 3.6).

The site reports are printed directly from the Grasslands Monitoring Project database. Restrictions within Access databases can sometimes prevent the use of some standard formatting procedures such as the use of italics for plant scientific (Latin) names and the preservation of Tables structure across page breaks. Both of these issues were encountered during the production of these summary reports.

## **4 RESULTS**

### **4.1 INTRODUCTION**

A total of 38 sites were visited and assessed in the field (see Section 2.3). Site monitoring was conducted using the field sheets described in Section 3.3 and following the survey methods described in Section 3.4. All data collected in the field were processed and recorded in the Grasslands Monitoring Project database as described in Section 3.5. Grassland habitat maps were constructed following the process outlined in Section 3.6.

Habitat Extent was determined by evaluating the results of the field survey, in addition to desktop assessment of aerial photographs and prior recorded knowledge of the sites. The Structures and Functions of the habitat were determined using the field data collected at each Monitoring Stop and recorded on the field sheets. An evaluation of the site's Future Prospects involved the assessment of the results of Structures and Functions and an assessment of known or perceived impacts and threats on the site. Any indicators of local distinctiveness were also taken into account. The combined results of Extent, Structures and Functions, and Future Prospects delivered an overall assessment of the Conservation Status of the grassland habitat (see Section 3.2.4 for protocol).

Summary site descriptions for each of the 38 sites visited (as outlined in Section 3.7) are presented in Volume II, Volume III, and Volume IV of this report. Maps of each site, recording the locations and Monitoring Stops, site notes, photographs, previously recorded site survey notes, relevé locations, and an estimate of grassland extent (where possible), are presented in Volume V.

### **4.2 MONITORING STOP RESULTS**

#### **4.2.1 Structures and Functions**

The site monitoring conducted in the field involved the scoring and assessment of the habitat's Structures and Functions. As described in Section 3.3, four priority attributes were assessed in the field against pre-determined targets within 2m<sup>2</sup> quadrats. These attributes were grass:herb ratio, presence of positive indicator species, presence of negative indicator species, and presence of scrub, trees, or Bracken. The performance of the grassland habitat in relation to the targets set was scored at each Monitoring Stop, using these four attributes. Each of the attributes were required to reach the pre-determined target and result in a pass before an overall 'Pass' result was assigned to that Monitoring Stop. All Stops assessed at a site were required to 'Pass' before a *Favourable* result was determined for Structures and Functions at that site (see Section 3.2.2.1 for procedure).

A summary of the results of the assessment of these four attributes for orchid-rich calcareous grasslands and species-rich *Nardus* grasslands presented in Appendix 4a and 4b respectively. These summary Tables also include a column listing whether Stops were assessed for Structures and Functions or another attribute such as Extent. In some cases, while field data was being assessed subsequent to the field survey, the availability of additional sources of information shed further light on the existence and condition of the grassland habitat prior to the current survey. In such cases, the assessment of the

Structures and Functions attribute at some Monitoring Stops would then be seen to be invalid and these Stops were included instead in the assessment of Extent. Some Stops were excluded completely from the assessment process as the habitat was subsequently deemed not to be representative of the relevant grassland habitat under study. Those Monitoring Stops listed as not being assessed for Structures and Functions, were naturally excluded from the calculation of percentage failure values when the Pass/Fail results for a site were being determined (see Section 3.2.2.1 for procedure regarding the analysis of Structures and Functions).

The Tables in Appendix 4 show that of the entire number of 38 sites visited during the Grasslands Monitoring Project, Structures and Functions were seen to 'Pass' the assessment at only 2 sites. These are the calcareous grassland sites of St. John's Point (000191) and Slyne Head Peninsula (002074). The latter site represents a distinctive calcareous grassland type where the site is located on acid bedrock and where the calcareous influence derives from wind-blown sand originating from adjacent areas of low-lying machair. Structures and Functions were seen to fail at all of the species-rich *Nardus* grassland sites visited.

Of the 36 sites that failed the assessment of Structures and Functions, some sites were seen to fail badly. For the calcareous grassland sites, Inishmore Island (000213), Barrigone (000432), and Inisheer Island (001275) presented with significant numbers of Fail results. Other calcareous sites failed to reach the target set in only one or two attributes *e.g.* West of Ardara/Maas Road (000197), Inishmaan Island (000212), Lough Corrib (000297), Lough Fingall Complex (000606), and Castlesampson Esker (001625).

For the species-rich *Nardus* sites, a high number of Fail results were recorded at all sites. Some sites were particularly disappointing *e.g.* Kilduff, Devilsbit Mountain (00934) and Bolingbrook Hill (002125), where a significant number of 'Fail' results were recorded for a combination of the four assessed attributes. The assessment of Structures and Functions at Keeper Hill (001197), however, was seen to be problematic. While the assessment process was seen to result in a failure for Structures and Functions, it is doubtful whether the habitat that was assessed could be truly described as being species-rich *Nardus* grassland (habitat category 6230). The abundance of *Juncus effusus* across much of the site and the widespread occurrence of true heath communities makes a fair assessment of the 6230 habitat difficult without a more detailed phytosociological survey.

#### **4.3 SITE IMPACTS AND ACTIVITIES**

During the field survey, any activity or threat noted to be impacting (or have the potential to impact) on either the area of the Monitoring Stop or upon the site as a whole were recorded in the field notebook. Sward structural features (see description in Section 3.2.2 and 3.3) were also recorded directly onto the field sheet at each Monitoring Stop and were inputted in to the project's database. These features, such as sward height and percentage of litter and bare ground, were not included in the scoring process. They are seen as 'early warning signals', heralding a potential deterioration in habitat quality as a result of the impact of inadequate or incorrect management patterns.

The presence and intensity of all noted Activities and Impacts at the survey sites was recorded using NATURA 2000 codes. A list of the Impacts and Activities recorded as occurring at the calcareous grassland sites and at the species-rich *Nardus* sites is presented

in Appendix 5a and Appendix 5b respectively. Appendix 5c and Appendix 5d summarises these Impacts and Activities, listing them by their NATURA 2000 code.

#### 4.3.1 Impacts on orchid-rich calcareous sites

A summary of the percentages of calcareous grassland sites influenced by the listed Impacts and Activities is presented below in Table 4.1

Table 4.1 Summary of percentages of the 31 surveyed calcareous grassland sites which presented with various Impacts and Activities.

Code	Impact and Activity	No. of Sites Affected	% of sites surveyed
954	Biocenotic evolution: invasion by a species	29	94
149	Grazing: undergrazing	26	84
120	Fertilisation	23	74
103	Cultivation: agricultural improvement	18	58
140	Grazing	12	39
141	Grazing: abandonment of pastoral systems	10	32
171	Animal breeding: stock feeding	7	23
102	Cultivation: mowing/cutting	5	16
301	Sand & gravel extraction: quarries	5	16
152	Restructuring agricultural land holding: removal of scrub	4	13
990	Other natural processes	3	10
511	Energy transport: electricity lines	3	10
142	Grazing: overgrazing by sheep	2	6
104	Cultivation: removal of limestone pavement	2	6
180	Burning	2	6
900	Erosion	2	6
160	General Forestry management	1	3
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	1	3
101	Cultivation: modification of cultivation practices	1	3
146	Grazing: overgrazing by hares, rabbits, small mammals	1	3
148	Grazing: overgrazing, general	1	3
150	Restructuring agricultural land holding	1	3
161	General Forestry management: forestry planting	1	3
168	General Forestry management: felling of native or mixed woodland	1	3
190	Agriculture & forestry activities not referred to above	1	3
220	Leisure fishing	1	3
230	Hunting	1	3
300	Sand & gravel extraction	1	3
390	Mining & extraction activities not referred to above	1	3
402	Urbanised areas, human habitation: discontinuous urbanisation	1	3
412	Industrial or commercial areas: industrial stockage	1	3
422	Discharges: disposal of industrial waste	1	3
502	Communication networks: routes, autoroutes	1	3
530	Improved access to site	1	3
604	Sport & leisure structures: circuit, track	1	3
609	Sport & leisure structures: other sport/leisure complexes	1	3
621	Outdoor sports & leisure activities: nautical sports	1	3
623	Outdoor sports & leisure activities: motorised vehicles	1	3
629	Outdoor sports & leisure activities: other outdoor sports & leisure activities	1	3
690	Other leisure & tourism impacts not referred to above	1	3

This Table highlights the significant threat posed by species invasion (Activity Code 954) to the majority of the calcareous grassland sites on the survey list. The spread of *Pteridium aquilinum* and scrub species such as *Prunus spinosa*, *Crataegus monogyna*, and *Ulex* spp. was noted at 94% of sites (29 of the 31 surveyed sites). Of these 29 sites, an intensity of A was noted at 6 (21%), an intensity of B at 12 (41%), and an intensity of C at 11 (38%). The 2 calcareous grassland sites which did not register a threat from the spread of either *Pteridium aquilinum* or scrub species, were St. John's Point (000191) and Bunduff Lough and Machair/Trawalua/Mullaghmore (000625).

While positive grazing pressures (Activity Code 140) were noted to be in operation over parts of 12 sites (39%), the primary reason for the extensive threat from encroachment can be deduced from Table 4.1a, where undergrazing (Activity Code 149) was seen to be an issue in some areas at 26 of the sites (84%). An intensity of A was noted at 6 of these 26 sites (23%), an intensity of B at 15 (58%), and an intensity of C at 5 (19%).

The general abandonment of pastoral systems (Activity Code 141) was also noted in parts of 10 sites (32%). Where insufficient or inconsistent grazing levels occur at a site, even over a short period of time, changes in vegetation patterns and compositions become evident. With longer time frames, scrub species and *Pteridium aquilinum* have the opportunity to invade and spread, with the consequence of seriously altering the nature of grassland habitats.

An assessment of the more detailed database records for the individual Monitoring Stop results which failed as a result of encroachment, indicate that percentage cover of these species only just exceeds the target set of no more than 5% cover at calcareous grassland sites or 10% at species-rich *Nardus* sites. This suggests that encroachment is only at the early stages at many sites. In these cases, immediate management of such areas would prevent further encroachment and prevent the future loss of grassland habitat extent.

While the application of fertilisers (Activity Code 120) was noted as occurring at 23 of the sites (74%), the relative intensity of this activity appears to be less than that resulting from invasion by scrub or *Pteridium aquilinum*. 2 sites (9%) recorded an intensity level of A for fertilisation (see Appendix 5c). One of these sites, Lough Ree (000440), records that the impact from this activity was severe enough to be accorded a value of -2, indicating 'an irreparable negative influence' has occurred. 9 other calcareous sites (39%) presented with intensity levels of B for fertilisation while 12 (52%) recorded a value of C. These values reflect a general perception noted by field workers on the ground, that while a degree of agricultural improvement was still occurring at grassland sites, the consequences of the reduction or even the abandonment of farming and of old farming practices were much more noticeable as an impact on current calcareous grassland quality.

Nonetheless, agricultural improvement activity was seen to result in the presence of negative indicator species in a total of 20 (65%) calcareous grassland sites (see Appendix 6 a). These negative indicator species included species such as *Lolium perenne*, *Rumex crispus*, *Rumex obtusifolius*, and *Urtica dioica*. While all 20 sites recorded the presence of *Lolium perenne*, 11 (35%) of those sites recorded values of Rare (R) for this species. For these sites, *Lolium perenne* was therefore not influential in resulting in a 'Fail' at those Monitoring Stops for the presence of negative indicator species (see Section 3.3.1).

The previous impacts are all mostly defined in terms of a negative impact on the grassland habitat. Activity 102 (Cultivation: mowing/cutting) records all positive impacts (see Appendix 5c). Grazing (Activity Code 140) will also register positive impacts. Correct timing and extent of mowing, often combined with adequate grazing pressures, are all essential for the maintenance of good quality calcareous grasslands. These conditions were noted to occur on parts of only 5 (16%) sites: Inishmaan Island (000212), Lough Fingall Complex (000606), Culahill Mountain (000831), Spahill and Clomantagh Hill (000849), and Glenasmole Valley (001209).

Another activity which registered as a positive impact at 2 sites was Activity Code 152 (Restructuring agricultural land holding: removal of scrub). The active removal of scrub was noted at two sites, Castlesampson Esker (001625) and Split Hills and Long Hill Esker (001831). At Castlesampson Esker, the landowner had commenced a programme of scrub removal from calcareous grassland as part of a new Farm Plan. At Split Hills and Long Hill Esker, NPWS had begun to remove scrub from the esker bordering the main Dublin to Galway road. This activity will ultimately benefit the grassland habitat at both sites.

#### 4.3.2 Impacts on species-rich *Nardus* grassland sites

A summary of the percentages of species-rich *Nardus* grassland sites influenced by the listed Impacts and Activities is presented below in Table 4.2.

Table 4.2 Summary of percentages of the 7 surveyed species-rich *Nardus* grassland sites which presented with various Impacts and Activities.

Code	Impact and Activity	No. of sites affected	% of sites surveyed
954	Biocœnotic evolution: invasion by a species	6	86
149	Grazing: undergrazing	6	86
140	Grazing	5	71
120	Fertilisation	5	71
102	Cultivation: mowing/cutting	1	14
103	Cultivation: agricultural improvement	1	14
990	Other natural processes	1	14
141	Grazing: abandonment of pastoral systems	1	14
142	Grazing: overgrazing by sheep	1	14
160	General Forestry management	1	14
171	Animal breeding: stock feeding	1	14
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	1	14
810	Drainage	1	14

As was the situation with orchid-rich calcareous grasslands, the spread of *Pteridium aquilinum* and scrub species was seen to be impacting severely on species-rich *Nardus* grasslands. 6 of the 7 (86%) surveyed sites recorded the consequences of this process on parts of the cSAC. The Galtee Mountains (000646) was the only site not to present with the problem. Appendix 5d indicates that for the 6 sites that showed evidence of encroachment, 3 (50%) registered an Intensity level of A. These were Bolingbrook Hill (002124), Anglesey Road (002125), and Moanour Mountain (2257). 2 registered a level of B (33%), and 1 (17%) shows an intensity of C. Undergrazing (149) is implicated as a

significant factor in the spread of these invasive species, with 6 of the 7 sites recording this impact.

Positive grazing pressures, however, were noted to occur on parts of 5 of the 7 sites (71%). The application of fertiliser was also noted at 5 of the 7 sites. Intensity levels were seen to be relatively low, however, being recorded as C for all 5 sites and with no site indicating that the impact was irreparable (see Appendix 5d).

Species-rich *Nardus* grassland sites also recorded the presence of negative indicator species (see Appendix 6b), some of which reflect that a degree of agricultural activity has occurred. This list indicates that the most frequently occurring negative indicator species on the species-rich *Nardus* sites was *Holcus lanatus*, occurring at 6 of the 7 sites surveyed (86%). *Juncus effusus*, *Ranunculus repens*, *Trifolium repens*, and *Cynosurus cristatus* were present at 5 sites (71%), while *Lolium perenne* was noted at only 2 (29%) sites, Kilduff, Devilsbit Mountain (000934) and Keeper Hill (001197).

#### 4.4 EXTENT

As described in Section 3.2, the determination of Extent was not as straightforward a process as the evaluation of other attributes such as Structures and Functions. Habitat Extent was derived from a comparison of the 2006 estimated areas with any previously available data. Previously available data, however, was not always seen to be accurate or reliable as full habitat surveys had not been completed at the time estimates were made. In most cases, due to the absence of site survey data, estimates of area were mostly calculated using the black and white series of aerial photographs, which are not of sufficient quality to distinguish between grassland habitats.

Where such uncertain estimates of original Extent were deemed to have occurred, ‘*best expert judgement*’ was used during the current project when evaluating those values. The current availability of up-to-date, digital aerial photographs (both black and white and colour series) made improved estimates of area more possible. Therefore, it will be seen in some of the Site Summary Reports (Volumes II, III, and IV) that original estimates are now thought to have been either over- or under-estimated.

In some instances *e.g.* West of Ardara/Maas Road (000197), no estimate of area was provided in the NATURA 2000 notes. In these cases, an overall evaluation of the current site quality and the activities impacting upon the site was made, in conjunction with all possible sources of data available on the site. For West of Ardara/Maas Road, the current estimate of Extent centred on the previously noted location of *Neotinea maculata*. As habitat quality was seen to be good in that location during the field survey and as no loss in habitat area appeared to have occurred in recent times, Extent was therefore deemed to be *Favourable*.

Most of the smaller sites visited during the present survey were more-or-less extensively surveyed. The Extent of the habitat at these sites could be determined to a degree of accuracy that was not possible for the larger sites. Most of the larger sites could not be extensively surveyed during the current project due to time and resource constraints. Therefore, once again, only estimates of Extent could be made, albeit this time availing of more modern techniques and resources.

The results of the assessment of habitat Extent for the orchid-rich calcareous grassland sites are presented in Table 4.3 below. This Table suggests that of the 31 calcareous grassland sites assessed for habitat Extent, 10 sites (32%) were described as being *Favourable*. This would indicate that habitat extent has either been maintained or has expanded at those sites since they were first designated. However, as outlined above, this general implication should not be drawn from this data, without first examining how both the original and the current estimates were calculated.

Table 4.3 Summary results of the assessment of Extent for orchid-rich calcareous grassland sites, sorted by Extent category

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000020	Green	Amber	Amber	Amber
000191	Green	Green	Green	Green
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
000242	Green	Red	Amber	Red
000606	Green	Red	Amber	Red
000831	Green	Red	Amber	Red
001656	Green	Red	Amber	Red
002074	Green	Green	Green	Green
002214	Green	Red	Amber	Red
000054	Amber	Red	Amber	Red
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
000625	Amber	Red	Red	Red
000849	Amber	Red	Amber	Red
001625	Amber	Amber	Amber	Amber
001774	Amber	Red	Amber	Red
001926	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000440	Red	Red	Red	Red
000572	Red	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
002213	Red	Red	Amber	Red
002256	Red	Red	Amber	Red

For example, in the Bricklieve Mountains and Keishcorran (001626), NATURA 2000 forms did not give an estimate of the previous Extent of calcareous grassland habitat at the site, other than to indicate, "the area of the habitat at this site is very small and is confined to pockets at the south-east". As a result of the current survey, 5ha of the habitat was mapped within the cSAC. This included areas which had not been identified prior to the current survey. A further 1ha was mapped in an area adjacent to the SAC, close to Lough Gowra in the southwest of the site.



However, the field survey results for this site indicate that the calcareous habitat occurs in close association with calcareous heath and it is thus difficult to accurately assess its full Extent. It is thought likely therefore, that the Extent of habitat 6210 has been slightly overestimated, since all of the area mapped also contains elements (sometimes strong elements) of calcareous heath. While there are also some signs of agricultural improvement, the improvement was not of a very intensive nature and may, in fact, have preceded the site's designation as an SAC. Hence, the Extent of the calcareous grassland habitat, estimated to be up to 45ha, appears to have been maintained and the Conservation Status of the habitat's Extent is therefore considered to be Favourable.

An explanation of how values for Extent were derived for each of the sites is provided in the individual Site Summary Reports (see Volumes II, III, and IV). Nonetheless, for those 13 (42%) sites registering as being *Unfavourable – bad* for the assessment of Extent, the observed loss of habitat as a result of factors such as agricultural improvement would have been clear to see during the field survey. Areas which would have previously been described and recorded in NHA survey notes as being good quality calcareous grassland or semi-natural grassland, and which currently present as agriculturally improved pasture, leave no doubt as to the status of the habitat's Extent.

For 11 of the 13 sites registering as being *Unfavourable – bad*, the condition of the remaining grassland area was also seen to be very bad (*Unfavourable – bad*). Only 2 sites, Tory Hill (439) and Ridge Road, SW of Rapemills (00919) recorded a corresponding *Unfavourable – inadequate* result for Structures and Functions. Tory Hill is an unusual site in that while there has been a notable loss in habitat to scrub encroachment, the potential for future areas of orchid-rich grassland to develop in the revegetating quarry offers a more positive prospect for the future of the habitat at this site. At Ridge Road, SW of Rapemills, loss of habitat area to scrub encroachment was also noted. However, the continued presence of good indicator species on the site would suggest that rehabilitation measures could be successful if more suitable management protocols were to be put in place.

## **4.5 FUTURE PROSPECTS**

The determination of a site's Future Prospects (see Section 3.2.3) involves an evaluation of the assessment results for Structures and Functions combined with any recorded activity or impact noted as occurring while on the site. The results of the recorded (but not scored) sward structural evaluation (see Section 3.3 for description) are also taken into account, as they can highlight issues in current or recent management practices which may potentially lead to either positive or negative outcomes for the grassland habitat in the future. Any other information collected from previous reports or from local NPWS staff is also evaluated.

### **4.5.1 Orchid-richness**

Another factor taken into account when determining the Future Prospects is the category of '*Indicators of local distinctiveness*' (see description of field sheet categories in Section 3.3.1 and 3.3.2). This was generally taken to refer to the presence of orchids on the site. Although the presence of orchids was not included in the scoring process, this factor could have a positive influence in determining the Future Prospects for the grassland habitat at a

site. For example, where a Monitoring Stop may not have reached the target that was set for positive indicators or herb content, but it displays good populations of one or more orchids, then the presence of these orchids was taken to suggest good quality grassland existed nonetheless. In these circumstances, prospects for improvement in the habitat were deemed to be reasonably good, if adequate management procedures were to be put in place.

9 species of orchids were recorded during the current survey (see Table 4.4 below). Orchids were noted as occurring at a total of 140 Stops, with the most frequently occurring identified species being *Dactylorhiza fuchsii*. Only 8 sites of the total number of sites visited (38) did not record the presence of orchids. This is not to imply, however, that these sites are not of sufficient quality to maintain orchid population. Factors such as the timing of the survey and the fact that some of the larger sites could not be extensively surveyed, should be taken into account. In addition, at times, emerging or fruiting orchids could not be fully identified and examples of these were noted as occurring across 19 sites. The orchid *Pseudorchis albida*, seen as a typical indicator species of the species-rich *Nardus* grassland category, was not recorded at a Monitoring Stop but was noted as occurring elsewhere on one upland site, Silvermine Mountain (000939). No more than 3 species of orchid were noted at any one site at the time of survey.

Table 4.4 Summary of orchid species recorded during the 2006 survey

	No. of Stops	No. of Sites
Coeloglossum viride	9	4
Dactylorhiza fuchsii	27	12
Dactylorhiza maculata	5	2
Gymnadenia conopsea	9	3
Listera ovata	8	7
Orchis mascula	8	2
Orchis morio	2	2
Platanthera chlorantha	15	6
Spiranthes spiralis	6	3
Unidentified orchid species	51	19
None	-	8

#### 4.5.2 Future Prospects for the surveyed Orchid-rich calcareous grasslands (6210)

The results of the Future Prospects assessment for the orchid-rich calcareous grassland sites are presented in Table 4.5 below.

This Table indicates that the Future Prospects for only 4 of the 31 calcareous grassland sites can be described as being *Favourable*. These sites are St. John's Point (000191), West of Ardara/Maas Road (000197), Inishmaan Island (000212), and Slyne Head Peninsula (002074). While the Table also indicates that the Structures and Functions of Inishmaan Island and West of Ardara/Maas Road were not seen to be *Favourable*, the current condition of the habitat was not thought to be very bad. In addition, the overall impression from both sites was that only very small alterations in current grazing practices

were required to significantly benefit the sites. So for these, sites, their Future Prospects were deemed to be good.

Table 4.5 Summary results of the Future Prospects assessment of orchid-rich calcareous grassland sites, sorted by Future Prospects category

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000191	Green	Green	Green	Green
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
002074	Green	Green	Green	Green
000020	Green	Amber	Amber	Amber
000054	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000242	Green	Red	Amber	Red
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000572	Red	Red	Amber	Red
000606	Green	Red	Amber	Red
000831	Green	Red	Amber	Red
000849	Amber	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001625	Amber	Amber	Amber	Amber
001656	Green	Red	Amber	Red
001774	Amber	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
001926	Amber	Red	Amber	Red
002213	Red	Red	Amber	Red
002214	Green	Red	Amber	Red
002256	Red	Red	Amber	Red
000440	Red	Red	Red	Red
000625	Amber	Red	Red	Red

Green = *Favourable*

Amber = *Unfavourable – inadequate*

Red = *Unfavourable – bad*

Two other sites, Lough Ree (000440) and Bunduff Lough and Machair/Trawalua/Mullaghmore (000625) register an *Unfavourable – bad* assessment. For these two sites, both the poor condition of the habitat and the loss of habitat extent were deemed to be significant enough to suggest that the Future Prospects for the priority grassland habitat at both cSACs was not good. For Bunduff Lough and Machair/Trawalua/Mullaghmore, levels of fertiliser application, in particular, were seen to have resulted in irreparable damage. Orchid-rich grassland now exists only on shallow

soil surrounding outcropping limestone rock. Rehabilitation of the priority grassland on this site would be costly and would require significant effort and partnership agreements. As such a situation is deemed to be unlikely, the Future Prospects for the calcareous grassland at this site were described as being *Unfavourable – bad*.

The Future Prospects for the majority of the sites (25 of 31, or 81%) are described as being uncertain, or *Unfavourable – inadequate*. For 19 of these 25 sites (76%), the Structures and Functions of the habitat were seen to have failed the assessment process and were thus described as being *Unfavourable – bad*. With small alterations in management, these sites were deemed to show good potential for improvement in overall quality and were therefore not described as *Unfavourable – bad*.

#### 4.5.3 Future Prospects for the surveyed Species-rich *Nardus* grasslands (6230)

The results of the Future Prospects assessment for the species-rich *Nardus* grassland sites are presented in Table 4.6 below.

Table 4.6 Summary results of the Future Prospects assessment of species-rich *Nardus* grassland sites, sorted by Future Prospects category

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000939	Green	Red	Amber	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red
000934	Red	Red	Red	Red
001197	Green	Red	Red	Red

Green = *Favourable*

Amber = *Unfavourable – inadequate*

Red = *Unfavourable – bad*

This Table indicates that the Future Prospects for only 1 of the upland grassland sites, the Galtee Mountains (000646), can be described as being *Favourable*. Additional areas of priority habitat were identified as a result of the 2006 survey and it is assumed that further survey would identify other areas of grassland. Although the Structures and Functions were described as being *Unfavourable – bad*, in reality the condition of the grassland was not seen to be excessively poor. A reasonable number of indicator species occurred in those Monitoring Stops that were seen to fail, with 7 or 8 species being recorded instead of the target number of 9 or more. Therefore it is believed that minor adjustments to grazing pressures could improve the grassland quality in a relatively short time. In addition, apart from a slight problem of undergrazing, there are currently no other significant threats to the grassland on the site *e.g.* encroachment by *Pteridium aquilinum* or scrub species.

The Future Prospects for 2 sites were seen to be very bad - Kilduff, Devilsbit Mountain (000934) and Keeper Hill (001197). Kilduff, Devilsbit Mountain was particularly disappointing, showing an *Unfavourable – bad* result for all attributes assessed. This site had been highlighted in the past as containing a good example of the priority grassland

habitat. However, the results of the current survey suggest that there has been considerable loss of habitat extent and quality. What had been seen as the largest area of species-rich *Nardus* grassland within the site was seen during the survey to have been lost as a result of agricultural improvements.

The condition of remaining areas of the habitat on the site was also seen to be poor as a result of a combination of agricultural improvement activities, undergrazing and inappropriate management. It is therefore likely that the once healthy population of the orchid *Pseudorchis albida* known to have occurred on the site has also been greatly diminished or may even have been completely lost. The Future Prospects for the grassland habitat within the site are therefore worrying and would depend upon the possibility of partnership management agreements between NPWS and the landowners. Even if significant levels of active management were to be put in place, recovery of the habitat would not be guaranteed. The Future Prospects for this once good example of upland grassland are therefore deemed to be *Unfavourable – bad*.

For Keeper Hill (001197), the *Favourable* result registered for Extent is misleading. It is doubtful that the habitat on the site truly represents species-rich *Nardus* grassland but as no loss in the extent of the habitat was deemed to have occurred, a *Favourable* result must be recorded nonetheless.

For the remaining 4 upland sites surveyed, the Future Prospects are described as being uncertain (*Unfavourable – inadequate*). For 3 of these, loss in habitat extent was also recorded in addition to poor condition of the remaining areas of grassland. However, as good indicator species still occurred at all three sites, it is believed that significant improvements could still occur with immediate and more correct management protocols. Also, at Moanour Mountain (002257), the landowner who owns the entire site is very supportive of the designation of this site and could be willing to implement any suggested management changes. Therefore, although the Structures and Functions are currently seen to be poor and some loss of habitat may have occurred, the Future Prospects would be seen to be good.

## **4.6 CONSERVATION ASSESSMENTS**

The overall determination of the Conservation Status of the 2 priority grassland habitats requires the evaluation of the results of the assessments for Extent, Structures and Functions, and Future Prospects (see description of this process in Section 3.2.4). The overall results of the Conservation Status assessment is presented on the distribution map in Figure 2a for orchid-rich calcareous sites and in Figure 2b for species-rich *Nardus* sites.

### **4.6.1 Orchid-rich calcareous grasslands (6210)**

Appendix 7a lists the detailed results of the assessment of the orchid-rich calcareous grassland sites sorted by Site Code, Extent, Structures and Functions, and Future Prospects. Table 4.7 below, summarises the overall Conservation Status results, listing the sites in order by EU Conservation Status.

Table 4.7 indicates that only 2 of the 31 (6%) calcareous grassland sites visited during the 2006 Grasslands Monitoring Project can be described as having a *Favourable*

Conservation Status (Green). St. John's Point (000191) and Slyne Head Peninsula (002074) were seen to present *Favourable* assessment results for all three attributes of Extent, Structures and Functions, and Future Prospects.

Table 4.7 Summary results of Conservation Assessment for Orchid-rich calcareous grassland sites, sorted by the results of EU Conservation Status assessment

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000191	Green	Green	Green	Green
002074	Green	Green	Green	Green
000020	Green	Amber	Amber	Amber
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
001625	Amber	Amber	Amber	Amber
000054	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000242	Green	Red	Amber	Red
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000440	Red	Red	Red	Red
000572	Red	Red	Amber	Red
000606	Green	Red	Amber	Red
000625	Amber	Red	Red	Red
000831	Green	Red	Amber	Red
000849	Amber	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001656	Green	Red	Amber	Red
001774	Amber	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
001926	Amber	Red	Amber	Red
002213	Red	Red	Amber	Red
002214	Green	Red	Amber	Red
002256	Red	Red	Amber	Red

Green = *Favourable*

Amber = *Unfavourable – inadequate*

Red = *Unfavourable – bad*

6 of the 31 (13%) sites surveyed can be described as having an *Unfavourable – inadequate* Conservation Status. Two of these sites, West of Ardara/Maas Road (000197) and Inishmaan Island (000212) presented with *Favourable* results for both Extent and Future Prospects but failed Structures and Functions to a minor degree so as to result in an overall assessment of *Unfavourable – inadequate*. Minor changes in the management practices at these two sites could significantly improve the overall assessment of this site to a *Favourable* result.

The Conservation Status of the majority of the calcareous grassland sites (23 of 31, or 74%) visited during the survey is described as being *Unfavourable – bad*. Lough Ree (000440) presented with *Unfavourable – bad* descriptions for all three attributes of Extent, Structures and Functions, and Future Prospects. Another site, Bunduff Lough and Machair/Trawalua/Mullaghmore (000625) presented with *Unfavourable – inadequate* for Extent and two assessments of *Unfavourable – bad* for Structures and Functions and Future Prospects. Two further sites, Tory Hill (000439) and Ridge Road, SW of Rapemills (000919) both presented with *Unfavourable – inadequate* for Structures and Functions and Future Prospects. The loss in habitat Extent at both of these sites (*Unfavourable – bad*) consigns these cSACs to the *Unfavourable – bad* category.

A summary of the percentage results for all attributes assessed at the 31 calcareous grassland sites surveyed is presented in Table 4.8 below.

Table 4.8 Summary of results of Conservation Status assessment in surveyed Orchid-rich Calcareous Grassland sites

	<b>Favourable (%)</b>	<b>Unfavourable-inadequate (%)</b>	<b>Unfavourable-bad (%)</b>
<b>Extent</b>	32	26	42
<b>Structures and Functions</b>	6	26	68
<b>Future Prospects</b>	13	81	6
<b>Overall Conservation Status</b>	6	13	74

This Table suggests that significant loss of Extent in calcareous grassland habitat has occurred, with 42% of sites presenting an *Unfavourable – bad* assessment for this attribute. The condition of the habitat is also seen to be quite unsatisfactory, with 68% of sites registering an *Unfavourable – bad* assessment for Structures and Functions. The Future Prospects for the calcareous grassland sites are seen to be uncertain, with 81% of sites surveyed resulting in an *Unfavourable – inadequate* assessment for this attribute and 6% presenting with an *Unfavourable – bad* result.

When the results of these assessments are combined and evaluated, the overall Conservation Status for the calcareous grassland sites is very unsatisfactory, with 74% of all Irish orchid-rich calcareous grassland sites surveyed during the current project being described as *Unfavourable – bad*.

#### 4.6.2 Species-rich *Nardus* grasslands (6230)

Appendix 7b lists the results of the assessment of the species-rich *Nardus* grassland sites sorted by Site Code, Extent, Structures and Functions, and Future Prospects. The results of the overall Conservation Assessment for the habitat is presented in Table 4.9 below.

This Table indicates that all of the species-rich *Nardus* grasslands sites that were assessed during this current survey have failed the assessment process. 6 of the 7 sites visited (86%) are described as being *Unfavourable – bad*.

Table 4.9 Summary results of Conservation Assessment for species-rich *Nardus* grassland sites, sorted by the results of EU Conservation Status assessment

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000934	Red	Red	Red	Red
000939	Green	Red	Amber	Red
001197	Green	Red	Red	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red

Green = *Favourable*

Amber = *Unfavourable – inadequate*

Red = *Unfavourable – bad*

Only 1 site, the Galtee Mountains (000646) could be described as being *Unfavourable – inadequate*, due primarily to the failure of the Structures and Functions assessment (*Unfavourable – bad*). This site also presented with *Favourable* results for both Extent and Future Prospects. Technically, an *Unfavourable – bad* result for one of these three attributes should automatically consign a site to an overall Conservation Status of *Unfavourable – bad*. However, in the case of the Galtee Mountains site, the failure of the Structures and Functions was seen not to be as a result of agricultural improvement or serious mismanagement of the grassland habitat. Although not sufficient to pass the assessment, reasonably good herb content and numbers of indicator species were seen to occur and no negative indicators or scrub/Bracken occurred at any of the survey locations.

Natural processes of soil development have resulted in the occurrence of a mosaic of mineral soils and peaty soils of varying depths occurring. *Nardus* grassland was seen to occur across this range of soil types, with the variation in vegetation composition relating more to underlying conditions than to management practices. Minor adjustments to current grazing patterns could assist in both improving the herb content and increasing the numbers of indicator species to the predetermined targets set for Structures and Functions. For this reason, the overall Conservation Assessment of the species-rich *Nardus* habitat at this site is described as *Unfavourable - inadequate*, rather than *Unfavourable – bad*.

Kilduff, Devilsbit Mountain (00934), presented with *Unfavourable – bad* descriptions for all three attributes of Extent, Structures and Functions, and Future Prospects. Another site, Keeper Hill (001197), records *Unfavourable – bad* for Structures and Functions and Future Prospects but *Favourable* for Extent. However, as already discussed in the analysis of the results of Structures and Functions above (see Section 4.2.1), the nature of the grassland habitat at Keeper Hill is problematic. Although some characteristics of species-rich *Nardus* grassland were noted on that site during the survey, no significant areas of the habitat were seen to occur.

In addition, the NATURA 2000 Explanatory Notes do not indicate precisely that the habitat actually occurs on the site and state that "the only reference to *Nardus* grassland (in the site files) is in the context of upland grassland on mineral soil, which forms a mosaic



with heath, rushes and gorse". Such a mosaic was detected and described at Keeper Hill during the current survey, with a resulting estimate of <1ha for the Extent of the habitat on the site. As it was assumed that no loss of habitat had occurred since the site was first surveyed, the only possible description for the Extent of the habitat at this site has to be *Favourable*.

A summary of the percentage results for the assessments of Extent, Structures and Functions, and Future Prospects at the species-rich *Nardus* grasslands is presented in Table 4.10 below.

Table 4.10 Summary of results of Conservation Status assessment in the 7 species-rich *Nardus* Grassland sites surveyed

	<b><i>Favourable</i> (%)</b>	<b><i>Unfavourable- inadequate</i> (%)</b>	<b><i>Unfavourable- bad</i> (%)</b>
<b>Extent</b>	43	-	57
<b>Structures and Functions</b>	-	-	100
<b>Future Prospects</b>	14	57	29
<b>Overall Conservation Status</b>	-	14	86

This Table shows that significant loss of Extent in upland grassland habitat has occurred, with 57% of sites presenting an *Unfavourable – bad* assessment for Extent. The 43% of sites that recorded *Favourable* for Extent, however, is misleading. These three sites are Galtee Mountains (000646), Silvermine Mountains (000939), and Keeper Hill (001197). Good examples of the habitat were found in the Galtee Mountains site and it is believed that the original calculation of ‘tens of hectares’ was a gross underestimation its true extent. Therefore, the value of between 200-400 ha of habitat currently estimated to occur can only be seen as a *Favourable* result, particularly when no loss of habitat was deemed to have occurred. The nature of the habitat at Keeper Hill, however, is more problematical as described earlier (see Section 4.2.1), and it is doubtful whether the habitat that was assessed could be truly described as being species-rich *Nardus* grassland. The Extent of habitat assessed at this site and at Silvermine Mountains was also very small (< 2 ha between the two sites).

The condition of the upland grassland habitat at all the sites surveyed is also seen to be very unsatisfactory, with 100% of sites registering an *Unfavourable – bad* assessment for Structures and Functions. The Future Prospects for the species-rich *Nardus* grassland sites are therefore seen to be very uncertain, with 57% of sites resulting in an *Unfavourable – inadequate* assessment for this attribute.

When the results of these assessments are combined and evaluated, the overall Conservation Status for the Irish species-rich *Nardus* grassland sites is very unsatisfactory, with 86% of the sites surveyed described as being *Unfavourable – bad*. No site can be described as being *Favourable* while 14% of sites present with an *Unfavourable – inadequate* assessment.

## 5 DISCUSSION

The objectives of the Grasslands Monitoring Project were outlined in Section 2.2. The discussion of the results of the field survey undertaken in 2006 will be broadly considered under these objectives.

### 1 *To develop a monitoring programme for Irish grassland habitats by evaluating pre-existing grassland monitoring protocols and adapting these to suit the Irish situation*

The assessment of the two priority grassland habitats occurring in Ireland was the focus of this study. However, one of the primary objectives of this project was to design and test a field monitoring methodology which could also be adapted to monitor and assess other grassland habitat types found in Ireland. Programmes for habitat monitoring at a national scale have been developed for only two other habitat types in Ireland, raised bogs and coastal habitats.

The methodology used during the current project was devised following an assessment of the reporting structure employed by both the Joint Nature Conservancy Council (JNCC) in Britain and the NPWS Coastal Monitoring Project. The structure used by the JNCC has been reported in a series of Common Standards Monitoring (CSM) guidance documents, where assessment protocols are outlined for a significant number of British habitats. Data on habitat quality and extent is gathered using a range of information sources. An assessment is also made of the future prospects of the habitat by assessing any threats or management practices which may be impacting on the site.

A considerable volume of floristic data exists in Britain, describing a wide range of habitats and plant communities. Ireland lacks an equivalent source of habitat and species distribution data. The expansion and refinement of a national grassland phytosociological classification has also not received focussed attention since the 1970s. Many of the grassland habitat types listed in the JNCC monitoring documents either do not occur in Ireland or there is little data in Ireland to validate their presence in this country. The westerly location of Ireland has also produced several distinctive communities which would be highly unusual in Britain. The targets set in the JNCC monitoring protocols were thus mostly not relevant to the Irish situation and a new set of targets, specific to the Irish grasslands categories, needed to be devised. New field sheets were therefore designed to record and assess those habitat characteristics deemed to best represent the nature of the 2 priority grassland habitats in the Irish situation.

#### *( i ) Field Sheets and Structures and Functions*

Indicator lists to represent the two priority grassland categories were assembled using all possible sources of floristic information available. The work of O'Sullivan (1982) and White and Doyle (1982) continues to be the primary source of data in this area. There has been some study on the Festuco-Brometalia in the context of the unique environment of the karstic landscape of the Burren (Ivimey-Cook and Proctor (1966)). More recent studies have involved the use of satellite imagery coupled with ground-truthing to produce a habitat distribution map for the Burren. This project was nearing completion during the course of the Grasslands Monitoring Project.

The classification of the Nardetea, however, is problematic and awaits clarification (White and Doyle, 1982). O'Sullivan (1982) suggests that the reason for the unclear situation in relation to these upland communities may be based on the fact that the communities are not generally species rich. In addition, O'Sullivan indicates that some of the species have a broad ecological amplitude and also occur in heathlands. This situation was encountered during the current survey. In the absence of a national survey and assessment of the uplands in Ireland, future monitoring projects for this habitat type will continue to face this lack of clarity in relation to this habitat.

(ii) *indicator species*

Lists of potential indicator species for both grassland habitats were drawn up using the sources outlined above, while also making reference to the grasslands indicator lists presented in the EU Habitats Manual. Additions or subtractions to the lists was made by NPWS research staff, based on their expert knowledge of the range of variations known to occur in the Irish landscape. Similarly, lists of negative indicators and typical orchid species were compiled.

Following the procedure described by the JNCC, optimum targets were discussed and agreed for a set of 4 attributes which best assessed the Irish grassland habitats. These agreed attributes were herb content, positive indicator species, negative indicator species, and the presence of scrub or *Pteridium aquilinum*.

During the field survey, these targets were generally seen to be valid and achievable ones. Some changes were made initially, soon after fieldwork commenced. For example, the target for positive indicators in orchid-rich calcareous grasslands had originally been set to require specific frequency values for species *i.e.* 4 frequent and 4 occasional. However, this was altered to simply record the presence of 7 indicator species, as frequency of occurrence was seen to vary depending on the timing of the survey. This target was often achieved at calcareous sites. Where sites failed to reach the required number of species, it was usually seen to be a consequence of some external influence impacting upon the habitat.

The original target number of indicator species for species-rich *Nardus* grasslands was also altered during the fieldwork, increasing from 7 to 9. A target of 9 species was deemed to better assess a habitat in which a number of the species occurring have broad ecological amplitudes. This was seen to be a more practical approach also because this grassland category can occur across varying soil conditions. Examples of the habitat, with differing suites of species, were found both on mineral soil (Anglesey Road (2125)) and on more peaty soils (Moanour Mountain (2257)).

Achieving as high a target as was realistically possible, was also deemed to best fulfil the objective of correctly identifying and assessing 'species-rich' upland grassland. The higher target, however, naturally resulted in a higher failure rate for the assessment of positive indicators at some of the upland sites which would have passed using the lower target. Further discussion and possible modification of this aspect of the survey might be beneficial to future assessment of this habitat category. The presence of *Nardus stricta* was also assessed carefully, as high frequencies of this species in the Irish situation usually reflects overgrazed conditions. Thus, some of the better examples of this grassland category recorded during the survey did not present with this species at all.

The value of the listed negative indicator species varied. These species were not often encountered on the orchid-rich calcareous grasslands, apart from the occurrence of *Lolium perenne* in situations where agricultural improvements were noticeably obvious. Where this occurred, and where disturbance was seen to be extensive, the habitat was usually considered for inclusion in the assessment of loss in Extent and further field sheet evaluation was unnecessary. For orchid-rich calcareous grasslands, poor quality was usually reflected in either low values for herb content or insufficient occurrence of indicator species rather than an excessive presence of negative indicator species.

Negative indicator targets were generally more useful on the upland grassland sites, highlighting the presence of species such as *Holcus lanatus*, *Trifolium repens*, *Senecio jacobea*, and *Juncus effusus*. The presence of these more than other negative indicators, usually reflected a degree of poor habitat quality. *Bellis perennis* hardly featured in the list of recorded negative species.

(iii) *encroachment by Pteridium aquilinum and scrub species*

The assessment of encroachment by *Pteridium aquilinum* or other scrub species was central to the overall evaluation of habitat quality. While low percentage cover (5% for calcareous grassland and 10% for upland habitat) was deemed not to adversely affect the functioning of a grassland habitat, values higher than this were seen to genuinely reflect deteriorating conditions on a site. This was seen to be particularly true on the calcareous grasslands, where significant problems of encroachment were noted. In the upland sites, few Monitoring Stops failed due to encroachment issues.

During the field survey it was seen to be beneficial to also record percentage cover of invasive species in a larger quadrat size (5m<sup>2</sup>), in addition to the standard monitoring plot (2m<sup>2</sup>). While only the value recorded in the smaller quadrat area was scored, the value derived from the larger area was seen to be very useful in assessing the overall problem on the site. Often, while only 10% was recorded at 2m<sup>2</sup>, 20% cover would be noted over the larger area.

Finally, when assessing this attribute in the field, distinction should be made on the field sheet between the presence of *Pteridium aquilinum* and scrub species. During the overall description and assessment of the site's condition and future prospects, it should be clear which of the two encroachment issues occur, as remedial management measures to deal with the problem may differ.

(iv) *orchid-richness*

The inclusion of information on the presence of orchids was also useful to the overall assessment process. While their presence was not scored, their occurrence was often used to indicate that reasonable quality existed, even if Monitoring Stops were seen to fail in the assessment of one of the scored attributes. This offered a minor degree of flexibility to the assessment process. For example, on some occasions orchid species were seen to be still plentiful even when percentage cover of *Pteridium aquilinum* exceeded the target set, or when insufficient numbers of positive indicator species were recorded. Where the latter situation occurred, if the recorded number of species was 1 short of the target figure of 7, and if no negative indicators or invasive species were present and if the herb content was sufficient, then the presence of orchids weighted the scoring process and the Monitoring Stop was deemed to be of sufficient quality to pass the assessment. The presence of orchids did not favourably weight the assessment process where

encroachment was seen to be an issue, as a more serious problem of insufficient management was deemed to be operating in those instances.

(v) *sward structural features*

The recording of the non-scored sward structural characteristics was also seen to be of use. While the scored attributes will either Pass or Fail the overall assessment of the site, the sward structural features can offer some insight into current or recent management practices, a factor that may be either beneficial or detrimental to the future quality of the habitat. The recording of these and any other features of note, both on the field sheet and as a general note in a field note book, was often a very useful reminder when finalising the site assessment report, a task which could sometimes occur some months after the field work was completed.

## **Conclusions**

In general, the overall result of this aspect of the project was the development of a very practical and usable assessment system for the two priority grassland habitats. A degree of flexibility in the process allowed for the alterations described and also facilitated the weighting of some aspects of the data *e.g.* orchid-richness. With some alterations of targets and indicator species, the field sheet could potentially be adapted for use in the assessment of other grassland habitats known to occur in Ireland.

## **2     *To assess the current Conservation Status of the two priority grassland habitats occurring in Ireland: \*Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (6210) and \*Species-rich Nardus grasslands on siliceous substrates in mountain areas (6230).***

The assessment of the two priority grasslands habitats above was a major objective of this monitoring programme. An additional category of non-priority calcareous grassland also occurs on the EU habitats list: (9991) Semi-natural calcareous dry grasslands (orchid-poor). To date, Ireland has not taken the opportunity to list this habitat category as a qualifying interest for any candidate Special Area of Conservation (cSAC). This situation may change as additional survey projects record and validate the presence of this habitat.

In order to determine the overall Conservation Status of the 2 grassland categories at a total of 38 cSACs, the current project employed a combination of field survey (with specifically designed field sheets), examination of aerial photography, and an evaluation of all other possible sources of information. While EU Member States are required to report on the status of the national resource for habitats and species, time and resource constraints operating on this project restricted the assessment to designated SACs. In addition, only those cSACs that recorded a Representativity value of C or higher for the priority grassland habitats were surveyed. The attributes of Extent, Structures and Functions, and Future Prospects were assessed in order to determine an overall evaluation of Conservation Status.

a) *Extent*

While the assessment of Structures and Functions was relatively straightforward and successful in the use of the specifically designed field sheets as described above, the assessment of habitat Extent for both grassland categories presented significant problems.

As outlined above, correctly establishing that either of these two habitat categories was occurring on the study site offered ample opportunity for discussion on the site! This was particularly the case for those sites where priority grassland often occurs in close association with heath communities, making an accurate evaluation of its current extent on a site difficult.

Attempting to establish whether any changes in Extent had occurred since sites were originally surveyed or designated was even more problematic. There has been no systematic survey of upland habitats in particular. In most cases, original site notes for those cSACs listed for species-rich grassland refer only to the general presence of 'upland grassland'. The presence of this habitat is not clearly elucidated from aerial photography, particularly the older black and white series. In the absence of sufficient field survey data, the true Extent of this habitat both in the country and within those cSACs listing this category as a qualifying interest, is not known. It can be assumed that the current estimated national Extent is more than likely underestimated.

Similar problems determining habitat Extent were also encountered in the large calcareous grassland sites in the Burren. For those sites, orchid-rich grassland occurs in a very close mosaic with heath communities. In addition, previous estimates of Extent were calculated in the absence of field survey using the then available series of black and white aerial photography. It is likely that the original Extent on some of these sites was over-estimated as a result. Detailed and extensive survey of these sites was also not possible during the current survey, therefore an approach was taken which targeted areas for survey, using all available information to direct survey locations. Smaller sites were usually surveyed more extensively, resulting in a value for current Extent which is most likely representative of the true situation.

It is also worth noting that on occasions, additional areas of calcareous grassland habitat were observed to occur outside the boundaries of designated sites. During the current survey, some of these areas were included in the assessment process if their location was contiguous to or in the immediate vicinity of the cSAC under study. Recommendations for inclusion into the site are made for these areas where excellent habitat quality was noted. Such inclusions could potentially add additional areas to the estimation of habitat Extent. Likewise, it is very likely that additional areas of species-rich *Nardus* grassland occurs in areas of the Galtee Mountains cSAC.

Another topic which had to be considered at some of the calcareous sites was the issue of revegetating quarries. While a number of calcareous grassland indicator species can also be found on the strongly-calcareous, revegetating substrates of a disused quarry, such communities are not strictly 6210 habitat (orchid-rich calcareous grasslands). While these areas were not included in the estimate of Extent, their presence was noted and estimates of their area were recorded. With correct management, these areas can offer the potential to evolve into established 6210 habitat at some stage in the future.

For both grassland categories, all possible sources of previously recorded data and habitat maps for the sites were examined and evaluated. Unfortunately, the usefulness of a number of these sources was limited. For a number of sites, very little data was available to assist in the planning of an assessment for those locations. While information from the 2006 survey may contribute information to this discussion, it does not serve as a base line

survey. In most cases, particularly for the larger sites, time constraints prevented the carrying out of an extensive site survey. In these cases, 'target survey areas' were chosen based on all previously available sources of information while also drawing on the availability of up-to-date aerial photography.

*b) Future Prospects*

The determination of Future Prospects involved the assessment of the results of Extent and Structures and Functions, while also taking into account any impacts or activities noted to be influencing the site. The threat to the calcareous grassland in particular, from the spread of *Pteridium aquilinum* and scrub species such as *Prunus spinosa*, *Crataegus monogyna*, and *Ulex* spp. was seen to be severe, with 94% of sites recording the problem. Only 2 of the 31 sites visited did not show encroachment. This bodes badly for many of the sites, as grassland areas were seen to have been lost and further losses will occur in the absence of remedial management.

The abandonment of traditional farming and the concurrent failure to put replacement management procedures in place, are the key factors involved. Encroachment as a result of abandonment is not a new issue. Reference to the potential for such problems to expand was flagged in many of the original survey notes from the NHA survey undertaken in the 1990's. Unfortunately, the rate at which farming is declining on a national level has increased in recent years. Without a focussed programme to target this issue on protected sites, further losses are expected, thereby negatively influencing the Future Prospects of a significant number of sites.

A degree of agricultural improvement was also noted on some sites. While this is having a lesser impact than the encroachment issue, grassland areas were seen to have been lost. At the very least, quality at some sites has significantly suffered as a result of these and other agricultural improvements. Positive impacts and activities at a small number of sites offer better prospects for those areas where correct management regimes are in place or where landowners are known to be participating in Farm Plans e.g. Castlesampson Esker. Correct timing and extent of mowing, often combined with adequate grazing pressures, are all essential for the maintenance of good quality calcareous grasslands. These conditions were noted to occur on parts of only 5 (16%) sites surveyed. As with the issue of encroachment, correct management programmes are urgently required on protected sites.

The majority of both grassland habitat sites fell into the *Unfavourable – inadequate* (Amber) category for the assessment of their Future Prospects. 2 calcareous sites and 2 upland grassland sites were described as being *Unfavourable – bad* (Red).

In general, when arriving at an overall estimation of a site's Future Prospects, an 'optimistic' approach was taken. In other words, if comparatively little effort was thought to be required to bring the grassland habitat back to *Favourable* conservation status, the Future Prospects were seen to be more positive. However, this approach also generally assumed that the effort to correct the management problems *would* be taken on board. For a small number of sites, it would have been clear from recent experience that remedial measures would not be undertaken. In those cases, Future Prospects were deemed to be poor or even bad.

c) *Overall Conservation Status*

The results of the overall assessment of Conservation Status for the 2 priority grassland habitats occurring in Ireland are cause for considerable concern. Only 6% (2 cSACs) of surveyed calcareous grassland sites reached the optimal condition of *Favourable*. 74% recorded an *Unfavourable – bad* (Red) assessment.

No species-rich *Nardus* grasslands achieved *Favourable* status and in fact, 86% of these upland sites were described as being *Unfavourable – bad*. Only one of the upland sites, the Galtee Mountains (000646) presented with an *Unfavourable – inadequate* result. On this site, while Structures and Functions were seen to fail, the failure was not seen to be a consequence of mismanagement but appeared to be the result of natural soil developmental processes in operation on the slopes.

Unfortunately, due to time and resource constraints, two of the largest upland sites on the survey list were not visited during the survey *i.e.* Wicklow Mountains (002122) and Cuilcagh-Anieran Mountains (000584). It is possible that good areas of quality grassland habitat may very well occur on these sites and their field survey and assessment is recommended. It is also recommended that other cSACs which have the potential to contain this habitat on the basis of altitude, soil, and topography, are reassessed for this grassland category, as it is likely that its presence may have been overlooked in the past. During the current survey, the majority of locations with this habitat occurred on acidic soils around the 300m contour, above the limit of agricultural activity and below the level at which heath communities become dominant.

There is considerable potential for these poor results to show improvement. 81% of orchid-rich calcareous grasslands and 57% of species-rich *Nardus* sites registered an *Unfavourable – inadequate* (Amber) assessment for Future Prospects, suggesting that while inadequate management issues certainly occurred, there was some hope that changes could be implemented to achieve more positive results. If this were to occur, it would be expected that future assessments would be more encouraging.

### **Conclusions**

In general, the process of determining the overall Conservation Status was found to be fair. At times, however, the process appeared a little too severe. For example, a failure of one attribute (usually Structures and Functions) necessitates the overall failure of the Conservation Status assessment. It sometimes occurred that this failure was the consequence of only minor target insufficiencies *e.g.* 6 of the target number of 7 indicator species being recorded on a calcareous site. This would appear harsh, particularly if the site had been perceived on the day of survey to be a site of reasonable quality. Nonetheless, the process does appear to signal problems which need to be attended to before further damage follows.

### **3 To establish a Grasslands Monitoring Access Database in which the results of this and future grassland monitoring projects could be entered and analysed**

This objective was achieved with the design and construction of the project's grassland database. Background data on grassland habitats for 31 calcareous grassland sites and 7 upland grassland sites are contained in this database, along with the results of the field



survey and the assessment of conservation status. The database offers the facility for further data fields to be added to those already occurring, thereby expanding the range of grassland habitat data that can be stored and queried.

Only those sites surveyed and assessed are included in this database. For various reasons, 8 sites were not surveyed during the current project. Most of the background data for these sites had initially been collated in preparation for their survey but, due to time constraints, this information was not recorded in the database when these sites were removed from the survey list.

Full site reports, containing all recorded data, can be printed directly from the database for each grassland site. As the Monitoring Stop data for many of the sites is quite extensive, summary reports were designed which extracted and presented more salient information. A drawback to printing directly from an Access database was noted, however, in that normal formatting protocols such as the use of plant scientific names (Latin names) were not possible within the database text fields. In addition, the structure of Tables was not always maintained over page breaks. While in theory, the database records can be exported to a Microsoft Word document, in practice an excessive level of reformatting would have been required. The use of more up-to-date versions of computer packages may overcome some of these issues. It is recommended that these factors regarding the flexibility or otherwise of database systems be considered in the early stages of future projects, when clear requirements for final reporting formats are best tested and agreed.

### **Conclusions**

As well as recording the details of the Conservation Status assessments, the Grasslands Database also offers a very useful source of background information for those cSACs listed as having priority grassland habitats. The dataset also stores additional site information gathered on other habitats during the field survey occurring on the sites. Of significant importance is the large number of grassland relevés recorded (see below).

#### **4     *To collect and record plant relevé data from the grasslands visited, so as to contribute to the NPWS grasslands vegetation records.***

A potentially important source of data included in the database is the extensive record of relevé information gathered during the current project. Initially, 1 or 2 representative relevés were expected to be recorded at each site. In practice, however, it transpired that as detailed information was being recorded at each Monitoring Stop, only minor additional efforts were required to record relevés at almost every Monitoring Stop.

Floristic data was recorded using the DAFOR scale. While this was initially chosen as a quick means by which to generally record floristic composition, in retrospect, however, it is probably true to say that a more detailed recording system such as the Braun-Blanquet method would provide more useful floristic data. This is likely to be a factor if, or when, the TURBOVEG database management system becomes more widely used in Ireland. This computer software package was developed in the Netherlands to facilitate the processing of phytosociological data and has been used in continental studies for a number of years. Future grassland habitat surveys here in Ireland should consider this point when deciding botanical recording methods.

## **Conclusions**

The little additional time taken to record relevé data at most Monitoring Stops was justified. As the grassland dataset grows with further additional grassland projects, the prospects of providing modern phytosociological classifications for these understudied habitats are promising.

## RECOMMENDATIONS:

- An upland survey, including the extensive recording of floristic data, is needed to begin to deal with the lack of clarity in relation to the classification of the Nardetea. This would also greatly assist in the establishment of a true baseline for this and other upland habitats in Ireland. In the absence of such a survey, cSACs listing this habitat as a qualifying interest should be surveyed more extensively, as additional areas are likely to exist *e.g.* in the Galtee Mountains cSAC (000646). Other cSACs with the required altitude, soil type, and topography should also be assessed, as the habitat may have been overlooked in the past.
- To avoid encountering similar problems of Extent determination in the next EU reporting process, detailed surveys are required for a number of the larger cSAC sites. While data from the 2006 survey may contribute information to this debate, it does not serve as a base line survey. Many of the smaller sites visited could be surveyed sufficiently, but time constraints prevented the carrying out of an extensive site survey for larger cSACs.
- In order to target the issue of encroachment by *Pteridium aquilinum* and scrub species on designated Irish grassland sites (particularly the orchid-rich grassland category) a focussed programme of removal is essential. This should be followed by a programme of correct grazing or mowing regimes in order to prevent further encroachment problems. Without such programmes, further losses of grassland habitat to scrub and dense bracken are inevitable.
- The establishment and monitoring of correct grazing and/or mowing patterns are central to the maintenance of good quality grassland. These must be promoted on all NPWS protected sites, perhaps as partnership agreements between NPWS and landowners. Considering that the decline in farming has escalated in recent years, failure to introduce funded programmes to deal with the well-highlighted problem of abandonment at this stage will increase the rate at which grassland habitats are being lost.
- Those additional areas of calcareous grassland which were noted as occurring outside but adjacent to the boundary of cSACs, should be considered for inclusion, particularly when good quality grassland was recorded.
- It is recommended that the calcareous grassland category 9991, 'orchid-poor' calcareous grassland, should be examined with the intention of adding this category as a qualifying interest in Irish cSACs.
- The 2006 survey was restricted to grasslands occurring only within cSACs. In order to assess the national resource accurately, it is recommended that a similar survey be undertaken in those NHAs which list either of the priority grasslands or the orchid-poor category.
- The Grasslands Database can be easily adapted to facilitate additional data from other grassland sites. However, solutions to the difficulties experienced while printing site summary reports directly from the database, need to be addressed in any future project.

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## IMPACTS AND ACTIVITIES

- Intensity of the influence of an activity is rated as: **A** = high, **B** = medium and **C** = low influence.
- Indicate if the influence is positive or negative using the following rating: **-2** = irreparable negative influence, **-1** = repairable negative influence, **0** = neutral, **+1** = natural positive influence and **+2** = strongly managed positive influence.

[illegible]

[illegible]

Appendix 1b				
Activities and threats noted as impacting upon calcareous grassland sites				
Activities Code	Activity description	Site Code	Intensity	Impact
101	Cultivation: modification of cultivation practices	000213	A	-1
102	Cultivation: mowing/cutting	000212	C	2
102	Cultivation: mowing/cutting	000606	C	1
102	Cultivation: mowing/cutting	000831	C	2
102	Cultivation: mowing/cutting	000849	C	1
102	Cultivation: mowing/cutting	001209	C	1
103	Cultivation: agricultural improvement	000020	C	-1
103	Cultivation: agricultural improvement	000054	B	-1
103	Cultivation: agricultural improvement	000213	B	-1
103	Cultivation: agricultural improvement	000242	C	-1
103	Cultivation: agricultural improvement	000268	B	-1
103	Cultivation: agricultural improvement	000297	C	-1
103	Cultivation: agricultural improvement	000440	B	-1
103	Cultivation: agricultural improvement	000572	B	-1
103	Cultivation: agricultural improvement	000849	C	-1
103	Cultivation: agricultural improvement	000919	B	-1
103	Cultivation: agricultural improvement	001209	B	-1
103	Cultivation: agricultural improvement	001275	B	-1
103	Cultivation: agricultural improvement	001774	B	-2
103	Cultivation: agricultural improvement	001776	B	-1
103	Cultivation: agricultural improvement	001926	A	-1
103	Cultivation: agricultural improvement	002074	C	-1
103	Cultivation: agricultural improvement	002214	C	-1
103	Cultivation: agricultural improvement	002256	A	-2
104	Cultivation: removal of limestone pavement	000213	C	-2
104	Cultivation: removal of limestone pavement	001275	C	-2
120	Fertilisation	000020	C	-1
120	Fertilisation	000054	B	-1
120	Fertilisation	000191	C	-1
120	Fertilisation	000197	C	-1
120	Fertilisation	000212	C	-1
120	Fertilisation	000213	B	-1
120	Fertilisation	000242	C	-1
120	Fertilisation	000268	B	-1
120	Fertilisation	000297	C	-1
120	Fertilisation	000432	C	-1
120	Fertilisation	000440	A	-2
120	Fertilisation	000625	B	-2
120	Fertilisation	000831	C	-1
120	Fertilisation	000849	B	-1
120	Fertilisation	000919	B	-1
120	Fertilisation	001275	B	-1
120	Fertilisation	001656	C	-1
120	Fertilisation	001774	B	-2
120	Fertilisation	001776	B	-1
120	Fertilisation	001926	A	-1
120	Fertilisation	002074	C	-1
120	Fertilisation	002213	C	0
120	Fertilisation	002214	C	-1

Activities Code	Activity description	Site Code	Intensity	Impact
140	Grazing	000212	B	2
140	Grazing	000242	B	1
140	Grazing	000440	B	1
140	Grazing	000606	B	1
140	Grazing	000831	B	1
140	Grazing	000849	B	1
140	Grazing	000919	C	1
140	Grazing	001656	B	1
140	Grazing	001831	C	1
140	Grazing	002074	B	1
140	Grazing	002213	C	1
140	Grazing	002214	B	1
141	Grazing: abandonment of pastoral systems	000020	C	-1
141	Grazing: abandonment of pastoral systems	000054	B	-1
141	Grazing: abandonment of pastoral systems	000213	B	-1
141	Grazing: abandonment of pastoral systems	000268	C	-1
141	Grazing: abandonment of pastoral systems	000440	B	-1
141	Grazing: abandonment of pastoral systems	001209	B	-1
141	Grazing: abandonment of pastoral systems	001275	B	-1
141	Grazing: abandonment of pastoral systems	001625	B	-1
141	Grazing: abandonment of pastoral systems	001774	A	-1
141	Grazing: abandonment of pastoral systems	001926	A	-1
142	Grazing: overgrazing by sheep	000440	C	-1
142	Grazing: overgrazing by sheep	001209	B	-1
146	Grazing: overgrazing by hares, rabbits, small mammals	001776	B	-1
148	Grazing: overgrazing, general	000849	B	-1
149	Grazing: undergrazing	000020	C	-1
149	Grazing: undergrazing	000054	B	-1
149	Grazing: undergrazing	000197	C	-1
149	Grazing: undergrazing	000212	C	-1
149	Grazing: undergrazing	000213	B	-1
149	Grazing: undergrazing	000268	C	-1
149	Grazing: undergrazing	000297	B	-1
149	Grazing: undergrazing	000432	A	-1
149	Grazing: undergrazing	000439	B	-1
149	Grazing: undergrazing	000572	B	-1
149	Grazing: undergrazing	000606	B	-1
149	Grazing: undergrazing	000831	B	-1
149	Grazing: undergrazing	000849	B	-1
149	Grazing: undergrazing	000919	A	-1
149	Grazing: undergrazing	000925	A	-1
149	Grazing: undergrazing	001209	B	-1
149	Grazing: undergrazing	001275	B	-1
149	Grazing: undergrazing	001625	B	-1
149	Grazing: undergrazing	001656	B	-1
149	Grazing: undergrazing	001774	A	-1
149	Grazing: undergrazing	001776	B	-1
149	Grazing: undergrazing	001831	A	-1
149	Grazing: undergrazing	001926	A	-1
149	Grazing: undergrazing	002213	B	-1
149	Grazing: undergrazing	002214	B	-1
149	Grazing: undergrazing	002256	C	-1
150	Restructuring agricultural land holding	000212	C	-2
152	Restructuring agricultural land holding: removal of scrub	000606	C	-1
152	Restructuring agricultural land holding: removal of scrub	001625	C	1
152	Restructuring agricultural land holding: removal of scrub	001831	B	2
152	Restructuring agricultural land holding: removal of scrub	002256	C	-1



Activities Code	Activity description	Site Code	Intensity	Impact
160	General Forestry management	000197	B	1
161	General Forestry management: forestry planting	000849	C	0
168	General Forestry management: felling of native or mixed woodland	001831	C	-1
171	Animal breeding: stock feeding	000020	C	-1
171	Animal breeding: stock feeding	000268	C	-1
171	Animal breeding: stock feeding	000297	C	-1
171	Animal breeding: stock feeding	000572	C	-1
171	Animal breeding: stock feeding	001774	C	-1
171	Animal breeding: stock feeding	001776	B	-1
171	Animal breeding: stock feeding	001926	B	-1
180	Burning	000440	C	0
180	Burning	002256	C	0
190	Agriculture & forestry activities not referred to above	000242	C	-1
220	Leisure fishing	000297	A	-1
230	Hunting	000925	C	0
300	Sand & gravel extraction	000439	B	-2
301	Sand & gravel extraction: quarries	000432	C	-2
301	Sand & gravel extraction: quarries	000572	D	0
301	Sand & gravel extraction: quarries	000925	A	-2
301	Sand & gravel extraction: quarries	001625	C	0
301	Sand & gravel extraction: quarries	001831	A	-2
390	Mining & extraction activities not referred to above	000213	C	-1
402	Urbanised areas, human habitation: discontinuous urbanisation	001209	B	-1
412	Industrial or commercial areas: industrial stockage	000925	C	0
422	Discharges: disposal of industrial waste	000268	C	-1
502	Communication networks: routes, autoroutes	001831	B	-2
511	Energy transport: electricity lines	000191	C	-1
511	Energy transport: electricity lines	000432	C	1
511	Energy transport: electricity lines	001831	C	-1
530	Improved access to site	001275	C	0
604	Sport & leisure structures: circuit, track	000432	C	1
609	Sport & leisure structures: other sport/leisure complexes	000297	C	-1
621	Outdoor sports & leisure activities: nautical sports	000191	C	0
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	000191	C	0
623	Outdoor sports & leisure activities: motorised vehicles	000925	A	-1
629	Outdoor sports & leisure activities: other outdoor sports & leisure activities	000191	B	0
690	Other leisure & tourism impacts not referred to above	001831	C	0
900	Erosion	001776	C	-1
900	Erosion	001831	C	-1
954	Biocœnotic evolution: invasion by a species	000020	B	-1
954	Biocœnotic evolution: invasion by a species	000054	A	-1
954	Biocœnotic evolution: invasion by a species	000197	C	-1
954	Biocœnotic evolution: invasion by a species	000212	C	-1
954	Biocœnotic evolution: invasion by a species	000213	B	-1
954	Biocœnotic evolution: invasion by a species	000242	B	-1
954	Biocœnotic evolution: invasion by a species	000268	B	-1
954	Biocœnotic evolution: invasion by a species	000297	C	-1
954	Biocœnotic evolution: invasion by a species	000432	A	-1
954	Biocœnotic evolution: invasion by a species	000439	B	-1
954	Biocœnotic evolution: invasion by a species	000440	C	-1
954	Biocœnotic evolution: invasion by a species	000572	A	-1
954	Biocœnotic evolution: invasion by a species	000606	B	-1
954	Biocœnotic evolution: invasion by a species	000831	B	-1
954	Biocœnotic evolution: invasion by a species	000849	C	-1
954	Biocœnotic evolution: invasion by a species	000919	C	-1
954	Biocœnotic evolution: invasion by a species	000925	B	-1
954	Biocœnotic evolution: invasion by a species	001209	C	-1

Activities Code	Activity description	Site Code	Intensity	Impact
954	Biocœnotic evolution: invasion by a species	001275	B	-1
954	Biocœnotic evolution: invasion by a species	001625	B	-1
954	Biocœnotic evolution: invasion by a species	001656	C	-1
954	Biocœnotic evolution: invasion by a species	001774	C	-1
954	Biocœnotic evolution: invasion by a species	001776	B	-1
954	Biocœnotic evolution: invasion by a species	001831	A	-1
954	Biocœnotic evolution: invasion by a species	001926	C	-1
954	Biocœnotic evolution: invasion by a species	002074	C	-1
954	Biocœnotic evolution: invasion by a species	002213	A	-1
954	Biocœnotic evolution: invasion by a species	002214	A	-1
954	Biocœnotic evolution: invasion by a species	002256	B	-1
990	Other natural processes	000439	A	2
990	Other natural processes	001656	B	-1
990	Other natural processes	001831	B	2

# Calcareous Grasslands Monitoring Field Sheet

Site Name \_\_\_\_\_ Site Code (SAC/ NHA) \_\_\_\_\_ Date \_\_\_\_\_ Recordors \_\_\_\_\_

	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Reference no. (GPS)								
Easting								
Northing								
Slope								
Aspect								

Attribute	Target		P/F		P/F		P/F		P/F		P/F		P/F		P/F		P/F
Grass:herb ratio	Between 40-90% herb cover																
Positive Indicator Species (see list)	At least 7 species present																
Negative Indicator Species (see list)	Any one species no more than frequent throughout the sward or singly, or collectively, occupy >5% cover. Non-natives no more than rare.																
Scrub, trees, or bracken (not including <i>Juniperus communis</i> )	Woody species (plus bracken) should not exceed 5% cover. Record within 2x2m and 5x5m quadrat																

Site  
Pass/ Fail

Estimate of Attributes																	
------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## Indicators of local distinctiveness

Note presence of any distinctive local features e.g.orchid-rich areas or rare plants	Determine if 'orchid-rich', following the criteria outlined overleaf.																
--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

## Sward Structure

Height (record height in cm)	30-70% of the sward should be between 2-50cm																
Litter (record %)	Total extent should not exceed 25% cover																
Extent of bare ground (record %)	Total extent should not exceed 10% cover																
Grazing and disturbance levels	No more than 20m <sup>2</sup> should show signs of disturbance																

Note:

**Sward Composition:** frequency of *positive indicator* species**Generic Calcareous Grassland Indicator Species***(includes dry calcareous meadows, eskers, & limestone pavement grasslands)*

Species with \* indicate strongly calcareous conditions.

Stop #									
<i>Anacamptis pyramidalis</i> *									
<i>Antennaria dioica</i> *									
<i>Anthyllis vulneraria</i> *									
<i>Avenula pubescens</i>									
<i>Blackstonia perfoliata</i> *									
<i>Briza media</i> *									
<i>Bromus erectus</i> *									
<i>Campanula rotundifolia</i>									
<i>Camptothecium lutescens</i> *									
<i>Carex caryophylla</i>									
<i>Carex flacca</i>									
<i>Carlina vulgaris</i> *									
<i>Centaurea scabiosa</i> *									
<i>Conopodium majus</i>									
<i>Daucus carota</i> *									
<i>Galium verum</i>									
<i>Gentianella campestris</i> *									
<i>Hieracium pilosella</i>									
<i>Knautia arvensis</i> *									
<i>Koeleria macrantha</i> *									
<i>Leontodon hispidus</i>									
<i>Linum catharticum</i>									
<i>Lotus corniculatus</i>									
<i>Origanum vulgare</i>									
<i>Primula veris</i>									
<i>Ranunculus bulbosus</i>									
<i>Sanguisorba minor</i> *									
<i>Trisetum flavescens</i> *									
<b>Burren and western species</b>									
<i>Asperula cynanchica</i>									
<i>Dryas octopetala</i>									
<i>Filipendula vulgaris</i>									
<i>Geranium sanguineum</i>									
<i>Gentiana verna</i>									
<i>Helianthemum canum</i>									
<i>Neotinea maculata</i>									
<i>Sesleria albicans</i>									

**Sward Composition:** frequency and % cover of *negative indicator* species

High or increasing frequency/cover of these species generally indicates a level of nutrient enrichment or agricultural disturbance on the site, indicating an unfavourable condition.

Stop #									
<i>Lolium perenne</i>									
<i>Rumex crispus</i>									
<i>Rumex obtusifolius</i>									
<i>Urtica dioica</i>									

**Orchid-rich status'** is determined on the basis of one or more of the following criteria:

- 1 the site hosts a rich suite of orchid species
- 2 the site hosts an important population of at least one orchid species considered not very common in the national territory
- 3 the site hosts one or several orchid species considered to be rare, very rare, or exceptional in the national territory.

Stop #									
<i>Anacamptis pyramidalis</i>									
<i>Dactylorhiza fuchsii</i>									
<i>Dactylorhiza maculata</i>									
<i>Gymnadenia conopsea</i>									
<i>Listera ovata</i>									
<i>Neotinea maculata</i>									
<i>Ophrys apifera</i>									
<i>Orchis mascula</i>									
<i>Orchis morio</i>									
<i>Platanthera bifoliata</i>									
<i>Platanthera chlorantha</i>									
<i>Spiranthes spiralis</i>									

**DAFOR** 1-20% = Rare; 21-40% = Occasional; 41-60% = Frequent; 61-80% = Abundant; 81-100% = Dominant**DOMIN** 91-100% = 10; 76-90% = 9; 51-75% = 8; 34-50% = 7; 26-33% = 6; 11-25% = 5; 4-10% = 4; Many Individuals = 3; Several = 2; Few = 1

# Species-rich *Nardus* Grasslands Monitoring Field Sheet

Site Name \_\_\_\_\_ Site Code (SAC/NHA) \_\_\_\_\_ Date \_\_\_\_\_ Recordors \_\_\_\_\_

	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Easting								
Northing								
Slope								
Aspect								

Attribute	Target	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F
Grass:herb ratio	Herb cover should be >25%									
Positive Indicator Species (see list)	At least 9 Indicator species should be present									
Negative Indicator Species (see list)	Non-natives no more than rare. Negative indicators, collectively, should have <10% cover. <i>Juncus effusus</i> cover should be <10%.									
Scrub, trees, or bracken	<10% of vegetation cover should consist of bracken and/or native trees or scrub									
Assessment of Attributes										

Site  
Pass/Fail

## Sward Structure

Height	At least 25% of leaves/flowering shoots should be >5cm tall.								
Litter	Felts' or 'thatches' of dead plant litter of more than 2cm across should not cover more than 20% of ground area.								
Extent of bare ground	<20% of the ground cover should be disturbed bare ground								
Indicators of current grazing pattern	Vegetation composed of <i>J. squarrosus</i> and/or <i>Rhyt. squarrosus</i> should be <33%.								
Grazing and disturbance levels	No more than 20m2 should show signs of major disturbance								

## Indicators of local distinctiveness

Note presence of any distinctive local features e.g. rare plants, orchids									
---	--	--	--	--	--	--	--	--	--

Note: \_\_\_\_\_

**Sward Composition:** frequency and % cover of *negative indicator* species

*High or increasing frequency/cover of these species generally indicates a level of nutrient enrichment or agricultural disturbance on the site, indicating an unfavourable condition.*

Stop #

[illegible]

Stop #	Stop Name	Stop Type	Stop Location	Stop Status
1	Stop 1	Stop 1	Stop 1	Stop 1
2	Stop 2	Stop 2	Stop 2	Stop 2
3	Stop 3	Stop 3	Stop 3	Stop 3
4	Stop 4	Stop 4	Stop 4	Stop 4
5	Stop 5	Stop 5	Stop 5	Stop 5
6	Stop 6	Stop 6	Stop 6	Stop 6
7	Stop 7	Stop 7	Stop 7	Stop 7
8	Stop 8	Stop 8	Stop 8	Stop 8
9	Stop 9	Stop 9	Stop 9	Stop 9
10	Stop 10	Stop 10	Stop 10	Stop 10
11	Stop 11	Stop 11	Stop 11	Stop 11
12	Stop 12	Stop 12	Stop 12	Stop 12
13	Stop 13	Stop 13	Stop 13	Stop 13
14	Stop 14	Stop 14	Stop 14	Stop 14
15	Stop 15	Stop 15	Stop 15	Stop 15
16	Stop 16	Stop 16	Stop 16	Stop 16
17	Stop 17	Stop 17	Stop 17	Stop 17
18	Stop 18	Stop 18	Stop 18	Stop 18
19	Stop 19	Stop 19	Stop 19	Stop 19
20	Stop 20	Stop 20	Stop 20	Stop 20
21	Stop 21	Stop 21	Stop 21	Stop 21
22	Stop 22	Stop 22	Stop 22	Stop 22
23	Stop 23	Stop 23	Stop 23	Stop 23
24	Stop 24	Stop 24	Stop 24	Stop 24
25	Stop 25	Stop 25	Stop 25	Stop 25
26	Stop 26	Stop 26	Stop 26	Stop 26
27	Stop 27	Stop 27	Stop 27	Stop 27
28	Stop 28	Stop 28	Stop 28	Stop 28
29	Stop 29	Stop 29	Stop 29	Stop 29
30	Stop 30	Stop 30	Stop 30	Stop 30
31	Stop 31	Stop 31	Stop 31	Stop 31
32	Stop 32	Stop 32	Stop 32	Stop 32
33	Stop 33	Stop 33	Stop 33	Stop 33
34	Stop 34	Stop 34	Stop 34	Stop 34
35	Stop 35	Stop 35	Stop 35	Stop 35
36	Stop 36	Stop 36	Stop 36	Stop 36
37	Stop 37	Stop 37	Stop 37	Stop 37
38	Stop 38	Stop 38	Stop 38	Stop 38
39	Stop 39	Stop 39	Stop 39	Stop 39
40	Stop 40	Stop 40	Stop 40	Stop 40
41	Stop 41	Stop 41	Stop 41	Stop 41
42	Stop 42	Stop 42	Stop 42	Stop 42
43	Stop 43	Stop 43	Stop 43	Stop 43
44	Stop 44	Stop 44	Stop 44	Stop 44
45	Stop 45	Stop 45	Stop 45	Stop 45
46	Stop 46	Stop 46	Stop 46	Stop 46
47	Stop 47	Stop 47	Stop 47	Stop 47
48	Stop 48	Stop 48	Stop 48	Stop 48
49	Stop 49	Stop 49	Stop 49	Stop 49
50	Stop 50	Stop 50	Stop 50	Stop 50
51	Stop 51	Stop 51	Stop 51	Stop 51
52	Stop 52	Stop 52	Stop 52	Stop 52
53	Stop 53	Stop 53	Stop 53	Stop 53
54	Stop 54	Stop 54	Stop 54	Stop 54
55	Stop 55	Stop 55	Stop 55	Stop 55
56	Stop 56	Stop 56	Stop 56	Stop 56
57	Stop 57	Stop 57	Stop 57	Stop 57
58	Stop 58	Stop 58	Stop 58	Stop 58
59	Stop 59	Stop 59	Stop 59	Stop 59
60	Stop 60	Stop 60	Stop 60	Stop 60
61	Stop 61	Stop 61	Stop 61	Stop 61
62	Stop 62	Stop 62	Stop 62	Stop 62
63	Stop 63	Stop 63	Stop 63	Stop 63
64	Stop 64	Stop 64	Stop 64	Stop 64
65	Stop 65	Stop 65	Stop 65	Stop 65
66	Stop 66	Stop 66	Stop 66	Stop 66
67	Stop 67	Stop 67	Stop 67	Stop 67
68	Stop 68	Stop 68	Stop 68	Stop 68
69	Stop 69	Stop 69	Stop 69	Stop 69
70	Stop 70	Stop 70	Stop 70	Stop 70
71	Stop 71	Stop 71	Stop 71	Stop 71
72	Stop 72	Stop 72	Stop 72	Stop 72
73	Stop 73	Stop 73	Stop 73	Stop 73
74	Stop 74	Stop 74	Stop 74	Stop 74
75</				

<i>Pseudorchis albida</i>							

## Stop #

[illegible]

**DOMIN** 91-100% = 10: 76-90% = 9: 51-75% = 8: 34-50% = 7: 26-33% = 6: 11-25% = 5: 4-10% = 4: Many Individuals = 3: Several = 2: Few = 1

# NPWS Grasslands Monitoring Project

Site Name:

Site Code:

Date:

Recorders:

<b>Relevee no:</b>						
<b>Quadrat Area:</b>						
<b>GPS Reference #</b>						
<b>Easting:</b>						
<b>Northing:</b>						

	Stop Number						Stop Number						Stop Number				
Agrostis canina						Crepis capillaris						Rumex acetosa					
capillaris						Cuscuta epithymum						Rumex crispus					
stolonifera						Dactylorhiza fuchsii						obtusifolius					
Aira caryophyllea						maculata						Sanguisorba minor					
praecox						Daucus carota						officinalis					
Alopecurus pratensis						Dryas octopetala						Saxifraga hypnoides					
Anthoxanthum odoratum						Epipactis palustris						tridactylites					
Arrhenatherum elatius						Euphrasia sp						Sedum acre					
Avena stringosa						Filipendula vulgaris						Senecio jacobea					
Avenula pubescens						Galium sternerii						Sherardia arvensis					
Brachypodium pinnatum						verum						Spiranthes spiralis					
Briza media						Gentiana verna						Stellaria media					
Bromus hordeaceus						Gentianella campestris						graminea					
racemosus						Geranium lucidum						Succisa pratensis					
Bromopsis erecta						molle						Taraxacum sp					
Cynosurus cristatus						robertianum						Teucrium scorodonia					
Dactylis glomerata						sanguineum						Thalictrum minus					
Danthonia decumbens						Gymnadenia conopsea						Thymus praecox					
Deschampsia cespitosa						Hedera helix						Trifolium arvense					
Festuca ovina						Helianthemum canum						campestris					
rubra						nummularium						pratensis					
Holcus lanatus						Heracleum sphondylium						repens					
Koeleria macrantha						Hieracium pilosella						Ulex europaeus					
Lolium perenne						Hypericum perforatum						gallii					
tremulatum						Hypochoeris radicata						Urtica dioica					
Nardus stricta						Juniperus communis						Veronica arvensis					
Phleum pratense						Knautia arvensis						chamaedrys					
Poa annua						Lathyrus pratensis						officinalis					
pratensis						Leontodon autumnalis						serpyllifolia					
trivialis						hispidus						Vicia cracca					
Sesleria albicans						saxatilis						hirsuta					
Trisetum flavescens						taraxacoides						orobus					
						Leucanthemum vulgare						sativa					
						Linum catharticum						sepium					
						Listera ovata						Viola hirta					
Achillea millefolium						Lotus corniculatus											
Acinos arvensis						uliginosus											
Ajuga reptans						Medicago lupulina											
Alchemilla filicaulis						Myosotis discolor											
xanthochlora						Neotinia maculata											
Anacamptis pyramidalis						Ophioglossum vulgatum											
Antennaria dioica						Ophrys apifera											
Anthriscus sylvestris						Orchis mascula											
Anthyllis vulneraria						morio											
Aphanes arvensis						Origanum vulgare											
Arabis hirsuta						Pimpinella major											
Arenaria serpyllifolia						saxifraga											
Asperula cynanchica						Plantago lanceolata											
Astragalus danicus						major											
Bellis perennis						media											
Blackstonia perfoliata						Plantanthera bifolia											
Campanula rotundifolia						chlorantha											
Carex caryophyllea						Polygala vulgaris											
flacca						Potentilla anserina											
pulicaris						erecta											
Carlina vulgaris						reptans											
Centaurea cyanus						Primula veris											
nigra						vulgaris											
scabiosa						Prunella vulgaris											
Centaureum erythraea						Prunus spinosa											
Cerastium arvense						Pteridium aquilinum											
fontanum						Quercus sp											
Cirsium arvense						Ranunculus acris											
dissectum						bulbosus											
vulgare						repens											
Coeloglossum viride						Rhinanthus minor											
Conopodium majus						Rosa pimpinellifolia											
Corylus avellana						Rubia peregrina											
Crataegus monogyna						Rubus fruticos											

## Appendix 4a

Summary of Monitoring Stop Results for the Four Scored Attributes at the orchid-rich calcareous grassland sites

Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
000020	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000020	Stop 02	Fail	Pass	Pass	Fail	Structures and Functions	
000020	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000020	Stop 04	Fail	Fail	Fail	Pass	Extent	
000020	Stop 05	Pass	Pass	Pass	Fail	Structures and Functions	
000020	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000020	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000020	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000020	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000020	Stop 10	Pass	Pass	Pass	Pass	Structures and Functions	
000020	Stop 11	Pass	Fail	Pass	Pass	Not used in assessment	
000020	Stop 12	Pass	Pass	Pass	Pass	Structures and Functions	
000054	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000054	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000054	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000054	Stop 04	Pass	Fail	Fail	Pass	Extent	
000054	Stop 05	Pass	Pass	Pass	Fail	Structures and Functions	
000054	Stop 06	Pass	Pass	Pass	Fail	Structures and Functions	
000054	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000054	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000054	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000054	Stop 10	Pass	Fail	Pass	Pass	Extent	
000054	Stop 11	Pass	Pass	Pass	Fail	Structures and Functions	
000054	Stop 12	Pass	Fail	Pass	Pass	Structures and Functions	
000191	Stop 01	Pass	Fail	Pass	Pass	Not used in assessment	PASS
000191	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 04	Fail	Fail	Pass	Pass	Not used in assessment	
000191	Stop 05	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 07	Pass	Fail	Pass	Pass	Not used in assessment	
000191	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 10	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 11	Pass	Pass	Pass	Pass	Structures and Functions	
000191	Stop 12	Pass	Pass	Pass	Pass	Structures and Functions	
000197	Stop 01	Pass	Fail	Pass	Pass	Not used in assessment	FAIL
000197	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000197	Stop 03	Pass	Pass	Pass	Fail	Structures and Functions	
000197	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000212	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 04	Pass	Fail	Pass	Pass	Structures and Functions	
000212	Stop 05	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 10	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 11	Pass	Fail	Pass	Pass	Structures and Functions	
000212	Stop 12	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 13	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 14	Pass	Pass	Pass	Pass	Structures and Functions	



Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
000212	Stop 15	Fail	Fail	Pass	Fail	Structures and Functions	
000212	Stop 16	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 17	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 18	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 19	Pass	Pass	Pass	Pass	Structures and Functions	
000212	Stop 20	Pass	Pass	Pass	Pass	Structures and Functions	
000213	Stop 01	Pass	Fail	Pass	Pass	Structures and Functions	FAIL
000213	Stop 02	Pass	Fail	Pass	Pass	Structures and Functions	
000213	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000213	Stop 04	Pass	Fail	Pass	Pass	Structures and Functions	
000213	Stop 05	Pass	Pass	Pass	Fail	Structures and Functions	
000213	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000213	Stop 07	Fail	Fail	Pass	Pass	Structures and Functions	
000213	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000213	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000213	Stop 10	Pass	Pass	Pass	Pass	Structures and Functions	
000213	Stop 11	Fail	Fail	Fail	Pass	Structures and Functions	
000213	Stop 12	Pass	Fail	Pass	Pass	Structures and Functions	
000242	Stop 01	Fail	Fail	Pass	Fail	Structures and Functions	FAIL
000242	Stop 02	Pass	Fail	Pass	Pass	Structures and Functions	
000242	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000242	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
000242	Stop 05	Pass	Pass	Pass	Fail	Structures and Functions	
000242	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000242	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000242	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000268	Stop 01	Pass	Pass	Fail	Pass	Structures and Functions	FAIL
000268	Stop 02	Pass	Fail	Fail	Pass	Not used in assessment	
000268	Stop 03	Pass	Fail	Pass	Pass	Not used in assessment	
000268	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
000268	Stop 05	Fail	Fail	Fail	Pass	Extent	
000268	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000268	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000268	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000268	Stop 09	Fail	Fail	Fail	Pass	Extent	
000268	Stop 10	Pass	Pass	Pass	Fail	Structures and Functions	
000268	Stop 11	Pass	Pass	Pass	Pass	Structures and Functions	
000268	Stop 12	Pass	Pass	Pass	Fail	Structures and Functions	
000297	Stop 01	Pass	Pass	Pass	Pass	Not used in assessment	FAIL
000297	Stop 02	Pass	Fail	Pass	Pass	Not used in assessment	
000297	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000297	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
000297	Stop 05	Pass	Fail	Pass	Pass	Structures and Functions	
000297	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000297	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000297	Stop 08	Pass	Pass	Pass	Pass	Not used in assessment	
000297	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000297	Stop 10	Pass	Fail	Fail	Pass	Extent	
000297	Stop 11	Pass	Fail	Pass	Pass	Structures and Functions	
000297	Stop 12	Fail	Pass	Pass	Pass	Not used in assessment	
000297	Stop 13	Pass	Pass	Pass	Pass	Structures and Functions	
000297	Stop 14	Fail	Fail	Pass	Pass	Not used in assessment	
000297	Stop 15	Fail	Pass	Pass	Pass	Not used in assessment	
000297	Stop 16	Pass	Pass	Pass	Pass	Structures and Functions	

Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
000432	Stop 01	Fail	Fail	Fail	Pass	Not used in assessment	FAIL
000432	Stop 02	Pass	Pass	Pass	Fail	Structures and Functions	
000432	Stop 03	Fail	Fail	Fail	Pass	Extent	
000432	Stop 04	Pass	Pass	Pass	Fail	Structures and Functions	
000432	Stop 05	Pass	Pass	Pass	Fail	Structures and Functions	
000432	Stop 06	Fail	Fail	Pass	Fail	Structures and Functions	
000432	Stop 07	Fail	Fail	Pass	Fail	Structures and Functions	
000432	Stop 08	Fail	Fail	Pass	Fail	Structures and Functions	
000432	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
000432	Stop 10	Fail	Fail	Pass	Fail	Structures and Functions	
000432	Stop 11	Pass	Pass	Pass	Fail	Structures and Functions	
000432	Stop 12	Fail	Fail	Pass	Pass	Not used in assessment	
000432	Stop 13	Fail	Fail	Pass	Pass	Structures and Functions	
000432	Stop 14	Pass	Pass	Pass	Pass	Structures and Functions	
000432	Stop 15	Pass	Pass	Pass	Fail	Structures and Functions	
000432	Stop 16	Pass	Pass	Pass	Fail	Structures and Functions	
000439	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000439	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000439	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000439	Stop 04	Fail	Pass	Pass	Pass	Structures and Functions	
000440	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000440	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000440	Stop 03	Pass	Fail	Pass	Pass	Structures and Functions	
000440	Stop 04	Pass	Fail	Fail	Fail	Structures and Functions	
000572	Stop 01	Fail	Pass	Pass	Fail	Structures and Functions	FAIL
000572	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000572	Stop 03	Pass	Fail	Pass	Pass	Structures and Functions	
000572	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
000606	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000606	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000606	Stop 03	Fail	Pass	Pass	Fail	Structures and Functions	
000606	Stop 04	Pass	Pass	Pass	Fail	Structures and Functions	
000606	Stop 05	Fail	Pass	Pass	Pass	Structures and Functions	
000606	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000606	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
000606	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
000625	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000625	Stop 02	Pass	Fail	Pass	Pass	Structures and Functions	
000625	Stop 03	Pass	Fail	Pass	Pass	Extent	
000625	Stop 04	Pass	Fail	Fail	Pass	Extent	
000831	Stop 01	Pass	Fail	Pass	Fail	Structures and Functions	FAIL
000831	Stop 02	Pass	Fail	Pass	Fail	Structures and Functions	
000831	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000831	Stop 04	Pass	Fail	Pass	Fail	Structures and Functions	
000831	Stop 05	Pass	Pass	Pass	Pass	Structures and Functions	
000831	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000831	Stop 07	Pass	Pass	Pass	Fail	Structures and Functions	
000831	Stop 08	Pass	Pass	Pass	Fail	Structures and Functions	
000849	Stop 01	Pass	Pass	Pass	Fail	Structures and Functions	FAIL
000849	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000849	Stop 03	Fail	Fail	Fail	Pass	Structures and Functions	
000849	Stop 04	Pass	Fail	Pass	Pass	Structures and Functions	
000849	Stop 05	Fail	Fail	Pass	Pass	Extent	
000849	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
000849	Stop 07	Pass	Fail	Pass	Pass	Structures and Functions	
000849	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	

Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
000919	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000919	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
000919	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
000919	Stop 04	Fail	Fail	Pass	Pass	Structures and Functions	
000925	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
000925	Stop 02	Pass	Fail	Pass	Pass	Structures and Functions	
000925	Stop 03	Fail	Fail	Pass	Pass	Structures and Functions	
000925	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
001209	Stop 01	Pass	Pass	Pass	Fail	Structures and Functions	FAIL
001209	Stop 02	Fail	Fail	Pass	Pass	Structures and Functions	
001209	Stop 03	Fail	Fail	Pass	Fail	Extent	
001209	Stop 04	Pass	Fail	Pass	Pass	Structures and Functions	
001209	Stop 05	Fail	Fail	Pass	Pass	Extent	
001209	Stop 06	Pass	Fail	Pass	Pass	Structures and Functions	
001209	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
001209	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
001275	Stop 01	Pass	Fail	Fail	Pass	Extent	FAIL
001275	Stop 02	Pass	Fail	Fail	Pass	Extent	
001275	Stop 03	Pass	Fail	Pass	Pass	Structures and Functions	
001275	Stop 04	Pass	Pass	Pass	Fail	Structures and Functions	
001275	Stop 05	Pass	Fail	Pass	Pass	Extent	
001275	Stop 06	Pass	Fail	Pass	Pass	Structures and Functions	
001275	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
001275	Stop 08	Fail	Fail	Pass	Fail	Extent	
001275	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
001275	Stop 10	Pass	Pass	Pass	Pass	Structures and Functions	
001275	Stop 11	Fail	Fail	Fail	Pass	Extent	
001275	Stop 12	Pass	Fail	Fail	Pass	Extent	
001275	Stop 13	Pass	Fail	Pass	Pass	Extent	
001275	Stop 14	Fail	Fail	Fail	Pass	Extent	
001275	Stop 15	Pass	Fail	Pass	Pass	Structures and Functions	
001275	Stop 16	Fail	Fail	Pass	Pass	Structures and Functions	
001275	Stop 17	Pass	Fail	Pass	Pass	Structures and Functions	
001275	Stop 18	Pass	Fail	Pass	Pass	Structures and Functions	
001275	Stop 19	Pass	Pass	Pass	Pass	Structures and Functions	
001275	Stop 20	Pass	Pass	Pass	Pass	Structures and Functions	
001275	Stop 21	Pass	Fail	Pass	Pass	Structures and Functions	
001275	Stop 22	Fail	Pass	Pass	Pass	Structures and Functions	
001275	Stop 23	Fail	Fail	Pass	Pass	Structures and Functions	
001275	Stop 24	Pass	Pass	Pass	Pass	Structures and Functions	
001625	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
001625	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
001625	Stop 03	Pass	Pass	Pass	Fail	Structures and Functions	
001625	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
001656	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 05	Fail	Fail	Pass	Pass	Structures and Functions	
001656	Stop 06	Pass	Fail	Pass	Pass	Structures and Functions	
001656	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 11	Pass	Fail	Pass	Pass	Structures and Functions	
001656	Stop 12	Pass	Fail	Pass	Pass	Structures and Functions	
001656	Stop 13	Pass	Fail	Pass	Pass	Structures and Functions	

Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
001656	Stop 14	Pass	Fail	Pass	Pass	Structures and Functions	
001656	Stop 15	Fail	Fail	Pass	Pass	Structures and Functions	
001656	Stop 16	Pass	Fail	Pass	Pass	Structures and Functions	
001656	Stop 17	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 18	Pass	Pass	Pass	Pass	Structures and Functions	
001656	Stop 19	Pass	Fail	Pass	Pass	Structures and Functions	
001656	Stop 20	Pass	Fail	Fail	Pass	Structures and Functions	
001774	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
001774	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
001774	Stop 03	Pass	Fail	Pass	Pass	Not used in assessment	
001774	Stop 04	Fail	Fail	Fail	Pass	Extent	
001774	Stop 05	Pass	Fail	Pass	Pass	Structures and Functions	
001774	Stop 06	Fail	Fail	Pass	Pass	Structures and Functions	
001774	Stop 07	Fail	Fail	Pass	Pass	Structures and Functions	
001774	Stop 08	Pass	Fail	Pass	Pass	Structures and Functions	
001776	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
001776	Stop 02	Fail	Pass	Pass	Pass	Structures and Functions	
001776	Stop 03	Fail	Pass	Pass	Fail	Structures and Functions	
001776	Stop 04	Pass	Pass	Fail	Pass	Structures and Functions	
001831	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
001831	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
001831	Stop 03	Fail	Fail	Pass	Fail	Structures and Functions	
001831	Stop 04	Pass	Fail	Pass	Fail	Structures and Functions	
001831	Stop 05	Pass	Pass	Pass	Pass	Structures and Functions	
001831	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
001831	Stop 07	Fail	Fail	Pass	Pass	Extent	
001831	Stop 08	Pass	Fail	Pass	Pass	Structures and Functions	
001831	Stop 09	Pass	Pass	Pass	Pass	Structures and Functions	
001831	Stop 10	Fail	Fail	Pass	Pass	Structures and Functions	
001831	Stop 11	Pass	Pass	Pass	Pass	Structures and Functions	
001831	Stop 12	Pass	Fail	Pass	Fail	Structures and Functions	
001926	Stop 01	Pass	Fail	Fail	Pass	Extent	FAIL
001926	Stop 02	Pass	Fail	Pass	Pass	Structures and Functions	
001926	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 05	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 06	Fail	Fail	Fail	Pass	Extent	
001926	Stop 07	Pass	Fail	Pass	Pass	Structures and Functions	
001926	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 09	Fail	Pass	Pass	Pass	Structures and Functions	
001926	Stop 10	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 11	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 12	Pass	Fail	Pass	Fail	Structures and Functions	
001926	Stop 13	Pass	Fail	Pass	Fail	Structures and Functions	
001926	Stop 14	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 15	Pass	Pass	Pass	Pass	Structures and Functions	
001926	Stop 16	Fail	Fail	Pass	Pass	Structures and Functions	
002074	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	PASS
002074	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
002074	Stop 03	Pass	Pass	Pass	Pass	Structures and Functions	
002074	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	

Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
002213	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
002213	Stop 02	Pass	Pass	Pass	Fail	Extent	
002213	Stop 03	Pass	Fail	Pass	Fail	Structures and Functions	
002213	Stop 04	Pass	Fail	Pass	Pass	Structures and Functions	
002213	Stop 05	Pass	Fail	Pass	Fail	Extent	
002213	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
002213	Stop 07	Fail	Fail	Fail	Fail	Extent	
002213	Stop 08	Fail	Fail	Pass	Pass	Structures and Functions	
002214	Stop 01	Pass	Pass	Pass	Pass	Structures and Functions	FAIL
002214	Stop 02	Pass	Pass	Pass	Pass	Structures and Functions	
002214	Stop 03	Pass	Pass	Fail	Fail	Structures and Functions	
002214	Stop 04	Pass	Pass	Pass	Fail	Structures and Functions	
002214	Stop 05	Fail	Fail	Pass	Pass	Structures and Functions	
002214	Stop 06	Fail	Pass	Pass	Fail	Structures and Functions	
002214	Stop 07	Pass	Pass	Pass	Pass	Structures and Functions	
002214	Stop 08	Pass	Pass	Pass	Fail	Structures and Functions	
002256	Stop 01	Fail	Fail	Fail	Fail	Structures and Functions	FAIL
002256	Stop 02	Fail	Fail	Fail	Pass	Extent	
002256	Stop 03	Fail	Pass	Fail	Pass	Structures and Functions	
002256	Stop 04	Pass	Pass	Pass	Pass	Structures and Functions	
002256	Stop 05	Pass	Pass	Pass	Fail	Structures and Functions	
002256	Stop 06	Pass	Pass	Pass	Pass	Structures and Functions	
002256	Stop 07	Pass	Fail	Pass	Pass	Structures and Functions	
002256	Stop 08	Pass	Pass	Pass	Pass	Structures and Functions	

## Appendix 4b

Summary of Monitoring Stop Results for the Four Scored Attributes at the species-rich *Nardus* grassland sites

Site Code	Stop Number	Grass/ Herb Ratio	Positive Indicator Species	Negative Indicator Species	Scrub/ Trees/ Bracken	Stop assessed for:	Overall Result of Assessment of Structures and Functions for Site
000646	Stop 01	Fail	Fail	Pass	Pass	Structures	FAIL
000646	Stop 02	Fail	Fail	Pass	Pass	Structures	
000646	Stop 03	Fail	Fail	Pass	Pass	Structures	
000646	Stop 04	Fail	Fail	Pass	Pass	Structures	
000646	Stop 05	Pass	Pass	Pass	Pass	Structures	
000646	Stop 06	Pass	Pass	Pass	Pass	Structures	
000646	Stop 07	Pass	Pass	Pass	Pass	Structures	
000646	Stop 08	Pass	Pass	Pass	Pass	Structures	
000646	Stop 09	Pass	Pass	Pass	Pass	Structures	
000646	Stop 10	Pass	Pass	Pass	Pass	Structures	
000646	Stop 11	Pass	Pass	Pass	Pass	Structures	
000646	Stop 12	Pass	Pass	Pass	Pass	Structures	
000646	Stop 13	Pass	Fail	Pass	Pass	Structures	
000646	Stop 14	Fail	Fail	Pass	Pass	Structures	
000934	Stop 01	Pass	Fail	Fail	Fail	Structures	FAIL
000934	Stop 02	Pass	Fail	Fail	Pass	Structures	
000934	Stop 03	Fail	Fail	Fail	Pass	Structures	
000934	Stop 04	Pass	Fail	Fail	Pass	Structures	
000934	Stop 05	Fail	Fail	Fail	Fail	Structures	
000934	Stop 06	Pass	Pass	Pass	Pass	Structures	
000934	Stop 07	Fail	Fail	Fail	Pass	Structures	
000934	Stop 08	Fail	Fail	Fail	Pass	Extent	
000939	Stop 01	Pass	Pass	Pass	Pass	Structures	FAIL
000939	Stop 02	Pass	Fail	Pass	Pass	Structures	
000939	Stop 03	Fail	Fail	Fail	Pass	Not used	
000939	Stop 04	Pass	Pass	Fail	Pass	Structures	
001197	Stop 01	Fail	Pass	Fail	Pass	Not used	*
001197	Stop 02	Fail	Fail	Fail	Pass	Not used	
001197	Stop 03	Fail	Fail	Pass	Pass	Not used	
001197	Stop 04	Pass	Fail	Fail	Pass	Not used	
002124	Stop 01	Pass	Fail	Fail	Pass	Structures	FAIL
002124	Stop 02	Pass	Pass	Fail	Pass	Structures	
002124	Stop 03	Pass	Fail	Pass	Fail	Structures	
002124	Stop 04	Pass	Fail	Pass	Pass	Structures	
002124	Stop 05	Pass	Pass	Fail	Pass	Structures	
002124	Stop 06	Pass	Fail	Fail	Pass	Structures	
002124	Stop 07	Pass	Pass	Fail	Pass	Structures	
002124	Stop 08	Pass	Pass	Pass	Pass	Structures	
002124	Stop 09	Fail	Fail	Fail	Pass	Structures	
002124	Stop 10	Pass	Pass	Pass	Pass	Structures	
002124	Stop 11	Pass	Fail	Fail	Pass	Structures	
002124	Stop 12	Pass	Fail	Fail	Pass	Structures	
002125	Stop 01	Pass	Pass	Pass	Pass	Structures	FAIL
002125	Stop 02	Fail	Fail	Fail	Fail	Structures	
002125	Stop 03	Pass	Pass	Pass	Fail	Structures	
002125	Stop 04	Pass	Pass	Pass	Pass	Structures	
002125	Stop 05	Fail	Fail	Pass	Pass	Structures	
002125	Stop 06	Pass	Pass	Pass	Fail	Structures	
002125	Stop 07	Pass	Fail	Pass	Pass	Structures	
002125	Stop 08	Pass	Fail	Fail	Pass	Structures	
002125	Stop 09	Fail	Fail	Fail	Fail	Structures	
002125	Stop 10	Fail	Pass	Fail	Pass	Structures	
002125	Stop 11	Fail	Fail	Fail	Pass	Structures	
002125	Stop 12	Fail	Fail	Fail	Pass	Structures	
002257	Stop 01	Fail	Pass	Pass	Pass	Structures	FAIL
002257	Stop 02	Fail	Pass	Pass	Pass	Structures	
002257	Stop 03	Fail	Pass	Pass	Fail	Structures	
002257	Stop 04	Fail	Pass	Pass	Fail	Structures	

## Appendix 5a

Activities and threats noted as impacting upon calcareous grassland sites

Site Code	Activities Code	Activity description	Intensity	Impact
000020	103	Cultivation: agricultural improvement	C	-1
000020	120	Fertilisation	C	-1
000020	141	Grazing: abandonment of pastoral systems	C	-1
000020	149	Grazing: undergrazing	C	-1
000020	171	Animal breeding: stock feeding	C	-1
000020	954	Biocœnotic evolution: invasion by a species	B	-1
000054	103	Cultivation: agricultural improvement	B	-1
000054	120	Fertilisation	B	-1
000054	141	Grazing: abandonment of pastoral systems	B	-1
000054	149	Grazing: undergrazing	B	-1
000054	954	Biocœnotic evolution: invasion by a species	A	-1
000191	120	Fertilisation	C	-1
000191	511	Energy transport: electricity lines	C	-1
000191	621	Outdoor sports & leisure activities: nautical sports	C	0
000191	622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	C	0
000191	629	Outdoor sports & leisure activities: other outdoor sports & leisure activities	B	0
000197	120	Fertilisation	C	-1
000197	149	Grazing: undergrazing	C	-1
000197	160	General Forestry management	B	1
000197	954	Biocœnotic evolution: invasion by a species	C	-1
000212	102	Cultivation: mowing/cutting	C	2
000212	120	Fertilisation	C	-1
000212	140	Grazing	B	2
000212	149	Grazing: undergrazing	C	-1
000212	150	Restructuring agricultural land holding	C	-2
000212	954	Biocœnotic evolution: invasion by a species	C	-1
000213	101	Cultivation: modification of cultivation practices	A	-1
000213	103	Cultivation: agricultural improvement	B	-1
000213	104	Cultivation: removal of limestone pavement	C	-2
000213	120	Fertilisation	B	-1
000213	141	Grazing: abandonment of pastoral systems	B	-1
000213	149	Grazing: undergrazing	B	-1
000213	390	Mining & extraction activities not referred to above	C	-1
000213	954	Biocœnotic evolution: invasion by a species	B	-1
000242	103	Cultivation: agricultural improvement	C	-1
000242	120	Fertilisation	C	-1
000242	140	Grazing	B	1
000242	190	Agriculture & forestry activities not referred to above	C	-1
000242	954	Biocœnotic evolution: invasion by a species	B	-1
000268	103	Cultivation: agricultural improvement	B	-1
000268	120	Fertilisation	B	-1
000268	141	Grazing: abandonment of pastoral systems	C	-1
000268	149	Grazing: undergrazing	C	-1
000268	171	Animal breeding: stock feeding	C	-1
000268	422	Discharges: disposal of industrial waste	C	-1
000268	954	Biocœnotic evolution: invasion by a species	B	-1
000297	103	Cultivation: agricultural improvement	C	-1
000297	120	Fertilisation	C	-1
000297	149	Grazing: undergrazing	B	-1
000297	171	Animal breeding: stock feeding	C	-1
000297	220	Leisure fishing	A	-1
000297	609	Sport & leisure structures: other sport/leisure complexes	C	-1
000297	954	Biocœnotic evolution: invasion by a species	C	-1
000432	120	Fertilisation	C	-1
000432	149	Grazing: undergrazing	A	-1
000432	301	Sand & gravel extraction: quarries	C	-2
000432	511	Energy transport: electricity lines	C	1
000432	604	Sport & leisure structures: circuit, track	C	1
000432	954	Biocœnotic evolution: invasion by a species	A	-1
Site Code	Activities Code	Activity description	Intensity	Impact

000439	149	Grazing: undergrazing	B	-1
000439	300	Sand & gravel extraction	B	-2
000439	954	Biocœnotic evolution: invasion by a species	B	-1
000439	990	Other natural processes	A	2
000440	103	Cultivation: agricultural improvement	B	-1
000440	120	Fertilisation	A	-2
000440	140	Grazing	B	1
000440	141	Grazing: abandonment of pastoral systems	B	-1
000440	142	Grazing: overgrazing by sheep	C	-1
000440	180	Burning	C	0
000440	954	Biocœnotic evolution: invasion by a species	C	-1
000572	103	Cultivation: agricultural improvement	B	-1
000572	149	Grazing: undergrazing	B	-1
000572	171	Animal breeding: stock feeding	C	-1
000572	301	Sand & gravel extraction: quarries	D	0
000572	954	Biocœnotic evolution: invasion by a species	A	-1
000606	102	Cultivation: mowing/cutting	C	1
000606	140	Grazing	B	1
000606	149	Grazing: undergrazing	B	-1
000606	152	Restructuring agricultural land holding: removal of scrub	C	-1
000606	954	Biocœnotic evolution: invasion by a species	B	-1
000625	120	Fertilisation	B	-2
000831	102	Cultivation: mowing/cutting	C	2
000831	120	Fertilisation	C	-1
000831	140	Grazing	B	1
000831	149	Grazing: undergrazing	B	-1
000831	954	Biocœnotic evolution: invasion by a species	B	-1
000849	102	Cultivation: mowing/cutting	C	1
000849	103	Cultivation: agricultural improvement	C	-1
000849	120	Fertilisation	B	-1
000849	140	Grazing	B	1
000849	148	Grazing: overgrazing, general	B	-1
000849	149	Grazing: undergrazing	B	-1
000849	161	General Forestry management: forestry planting	C	0
000849	954	Biocœnotic evolution: invasion by a species	C	-1
000919	103	Cultivation: agricultural improvement	B	-1
000919	120	Fertilisation	B	-1
000919	140	Grazing	C	1
000919	149	Grazing: undergrazing	A	-1
000919	954	Biocœnotic evolution: invasion by a species	C	-1
000925	149	Grazing: undergrazing	A	-1
000925	230	Hunting	C	0
000925	301	Sand & gravel extraction: quarries	A	-2
000925	412	Industrial or commercial areas: industrial stockage	C	0
000925	623	Outdoor sports & leisure activities: motorised vehicles	A	-1
000925	954	Biocœnotic evolution: invasion by a species	B	-1
001209	102	Cultivation: mowing/cutting	C	1
001209	103	Cultivation: agricultural improvement	B	-1
001209	141	Grazing: abandonment of pastoral systems	B	-1
001209	142	Grazing: overgrazing by sheep	B	-1
001209	149	Grazing: undergrazing	B	-1
001209	402	Urbanised areas, human habitation: discontinuous urbanisation	B	-1
001209	954	Biocœnotic evolution: invasion by a species	C	-1
001275	103	Cultivation: agricultural improvement	B	-1
001275	104	Cultivation: removal of limestone pavement	C	-2
001275	120	Fertilisation	B	-1
001275	141	Grazing: abandonment of pastoral systems	B	-1
001275	149	Grazing: undergrazing	B	-1
001275	530	Improved access to site	C	0
001275	954	Biocœnotic evolution: invasion by a species	B	-1
Site Code	Activities Code	Activity description	Intensity	Impact
001625	141	Grazing: abandonment of pastoral systems	B	-1
001625	149	Grazing: undergrazing	B	-1
001625	152	Restructuring agricultural land holding: removal of scrub	C	1



001625	301	Sand & gravel extraction: quarries	C	0
001625	954	Biocœnotic evolution: invasion by a species	B	-1
001656	120	Fertilisation	C	-1
001656	140	Grazing	B	1
001656	149	Grazing: undergrazing	B	-1
001656	954	Biocœnotic evolution: invasion by a species	C	-1
001656	990	Other natural processes	B	-1
001774	103	Cultivation: agricultural improvement	B	-2
001774	120	Fertilisation	B	-2
001774	141	Grazing: abandonment of pastoral systems	A	-1
001774	149	Grazing: undergrazing	A	-1
001774	171	Animal breeding: stock feeding	C	-1
001774	954	Biocœnotic evolution: invasion by a species	C	-1
001776	103	Cultivation: agricultural improvement	B	-1
001776	120	Fertilisation	B	-1
001776	146	Grazing: overgrazing by hares, rabbits, small mammals	B	-1
001776	149	Grazing: undergrazing	B	-1
001776	171	Animal breeding: stock feeding	B	-1
001776	900	Erosion	C	-1
001776	954	Biocœnotic evolution: invasion by a species	B	-1
001831	140	Grazing	C	1
001831	149	Grazing: undergrazing	A	-1
001831	152	Restructuring agricultural land holding: removal of scrub	B	2
001831	168	General Forestry management: felling of native or mixed woodland	C	-1
001831	301	Sand & gravel extraction: quarries	A	-2
001831	502	Communication networks: routes, autoroutes	B	-2
001831	511	Energy transport: electricity lines	C	-1
001831	690	Other leisure & tourism impacts not referred to above	C	0
001831	900	Erosion	C	-1
001831	954	Biocœnotic evolution: invasion by a species	A	-1
001831	990	Other natural processes	B	2
001926	103	Cultivation: agricultural improvement	A	-1
001926	120	Fertilisation	A	-1
001926	141	Grazing: abandonment of pastoral systems	A	-1
001926	149	Grazing: undergrazing	A	-1
001926	171	Animal breeding: stock feeding	B	-1
001926	954	Biocœnotic evolution: invasion by a species	C	-1
002074	103	Cultivation: agricultural improvement	C	-1
002074	120	Fertilisation	C	-1
002074	140	Grazing	B	1
002074	954	Biocœnotic evolution: invasion by a species	C	-1
002213	120	Fertilisation	C	0
002213	140	Grazing	C	1
002213	149	Grazing: undergrazing	B	-1
002213	954	Biocœnotic evolution: invasion by a species	A	-1
002214	103	Cultivation: agricultural improvement	C	-1
002214	120	Fertilisation	C	-1
002214	140	Grazing	B	1
002214	149	Grazing: undergrazing	B	-1
002214	954	Biocœnotic evolution: invasion by a species	A	-1
002256	103	Cultivation: agricultural improvement	A	-2
002256	149	Grazing: undergrazing	C	-1
002256	152	Restructuring agricultural land holding: removal of scrub	C	-1
002256	180	Burning	C	0
002256	954	Biocœnotic evolution: invasion by a species	B	-1

## Appendix 5b

Activities and threats noted as impacting upon species-rich *Nardus* grassland sites

Site Code	Activities Code	Activity description	Intensity	Impact
000646	120	Fertilisation	C	-1
000646	140	Grazing	B	0
000646	149	Grazing: undergrazing	C	-1
000646	160	General Forestry management	C	-2
000646	810	Drainage	C	1
000646	990	Other natural processes	B	0
000934	102	Cultivation: mowing/cutting	B	-1
000934	103	Cultivation: agricultural improvement	B	-1
000934	120	Fertilisation	C	-1
000934	149	Grazing: undergrazing	A	-1
000934	954	Biocœnotic evolution: invasion by a species	B	-1
000939	120	Fertilisation	C	-1
000939	140	Grazing	C	1
000939	141	Grazing: abandonment of pastoral systems	C	-1
000939	142	Grazing: overgrazing by sheep	C	-1
000939	171	Animal breeding: stock feeding	C	-1
000939	954	Biocœnotic evolution: invasion by a species	B	-1
001197	120	Fertilisation	C	-1
001197	149	Grazing: undergrazing	C	-1
001197	954	Biocœnotic evolution: invasion by a species	C	-1
002124	120	Fertilisation	B	-1
002124	140	Grazing	B	1
002124	149	Grazing: undergrazing	B	-1
002124	954	Biocœnotic evolution: invasion by a species	A	-1
002125	120	Fertilisation	C	-1
002125	140	Grazing	C	1
002125	149	Grazing: undergrazing	B	-1
002125	954	Biocœnotic evolution: invasion by a species	A	-1
002257	140	Grazing	C	1
002257	149	Grazing: undergrazing	B	-1
002257	622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	C	0
002257	954	Biocœnotic evolution: invasion by a species	A	-1

Appendix 5c				
Activities and threats noted as impacting upon calcareous grassland sites				
Activities Code	Activity description	Site Code	Intensity	Impact
101	Cultivation: modification of cultivation practices	000213	A	-1
102	Cultivation: mowing/cutting	000212	C	2
102	Cultivation: mowing/cutting	000606	C	1
102	Cultivation: mowing/cutting	000831	C	2
102	Cultivation: mowing/cutting	000849	C	1
102	Cultivation: mowing/cutting	001209	C	1
103	Cultivation: agricultural improvement	000020	C	-1
103	Cultivation: agricultural improvement	000054	B	-1
103	Cultivation: agricultural improvement	000213	B	-1
103	Cultivation: agricultural improvement	000242	C	-1
103	Cultivation: agricultural improvement	000268	B	-1
103	Cultivation: agricultural improvement	000297	C	-1
103	Cultivation: agricultural improvement	000440	B	-1
103	Cultivation: agricultural improvement	000572	B	-1
103	Cultivation: agricultural improvement	000849	C	-1
103	Cultivation: agricultural improvement	000919	B	-1
103	Cultivation: agricultural improvement	001209	B	-1
103	Cultivation: agricultural improvement	001275	B	-1
103	Cultivation: agricultural improvement	001774	B	-2
103	Cultivation: agricultural improvement	001776	B	-1
103	Cultivation: agricultural improvement	001926	A	-1
103	Cultivation: agricultural improvement	002074	C	-1
103	Cultivation: agricultural improvement	002214	C	-1
103	Cultivation: agricultural improvement	002256	A	-2
104	Cultivation: removal of limestone pavement	000213	C	-2
104	Cultivation: removal of limestone pavement	001275	C	-2
120	Fertilisation	000020	C	-1
120	Fertilisation	000054	B	-1
120	Fertilisation	000191	C	-1
120	Fertilisation	000197	C	-1
120	Fertilisation	000212	C	-1
120	Fertilisation	000213	B	-1
120	Fertilisation	000242	C	-1
120	Fertilisation	000268	B	-1
120	Fertilisation	000297	C	-1
120	Fertilisation	000432	C	-1
120	Fertilisation	000440	A	-2
120	Fertilisation	000625	B	-2
120	Fertilisation	000831	C	-1
120	Fertilisation	000849	B	-1
120	Fertilisation	000919	B	-1
120	Fertilisation	001275	B	-1
120	Fertilisation	001656	C	-1
120	Fertilisation	001774	B	-2
120	Fertilisation	001776	B	-1
120	Fertilisation	001926	A	-1
120	Fertilisation	002074	C	-1
120	Fertilisation	002213	C	0
120	Fertilisation	002214	C	-1

Activities Code	Activity description	Site Code	Intensity	Impact
140	Grazing	000212	B	2
140	Grazing	000242	B	1
140	Grazing	000440	B	1
140	Grazing	000606	B	1
140	Grazing	000831	B	1
140	Grazing	000849	B	1
140	Grazing	000919	C	1
140	Grazing	001656	B	1
140	Grazing	001831	C	1
140	Grazing	002074	B	1
140	Grazing	002213	C	1
140	Grazing	002214	B	1
141	Grazing: abandonment of pastoral systems	000020	C	-1
141	Grazing: abandonment of pastoral systems	000054	B	-1
141	Grazing: abandonment of pastoral systems	000213	B	-1
141	Grazing: abandonment of pastoral systems	000268	C	-1
141	Grazing: abandonment of pastoral systems	000440	B	-1
141	Grazing: abandonment of pastoral systems	001209	B	-1
141	Grazing: abandonment of pastoral systems	001275	B	-1
141	Grazing: abandonment of pastoral systems	001625	B	-1
141	Grazing: abandonment of pastoral systems	001774	A	-1
141	Grazing: abandonment of pastoral systems	001926	A	-1
142	Grazing: overgrazing by sheep	000440	C	-1
142	Grazing: overgrazing by sheep	001209	B	-1
146	Grazing: overgrazing by hares, rabbits, small mammals	001776	B	-1
148	Grazing: overgrazing, general	000849	B	-1
149	Grazing: undergrazing	000020	C	-1
149	Grazing: undergrazing	000054	B	-1
149	Grazing: undergrazing	000197	C	-1
149	Grazing: undergrazing	000212	C	-1
149	Grazing: undergrazing	000213	B	-1
149	Grazing: undergrazing	000268	C	-1
149	Grazing: undergrazing	000297	B	-1
149	Grazing: undergrazing	000432	A	-1
149	Grazing: undergrazing	000439	B	-1
149	Grazing: undergrazing	000572	B	-1
149	Grazing: undergrazing	000606	B	-1
149	Grazing: undergrazing	000831	B	-1
149	Grazing: undergrazing	000849	B	-1
149	Grazing: undergrazing	000919	A	-1
149	Grazing: undergrazing	000925	A	-1
149	Grazing: undergrazing	001209	B	-1
149	Grazing: undergrazing	001275	B	-1
149	Grazing: undergrazing	001625	B	-1
149	Grazing: undergrazing	001656	B	-1
149	Grazing: undergrazing	001774	A	-1
149	Grazing: undergrazing	001776	B	-1
149	Grazing: undergrazing	001831	A	-1
149	Grazing: undergrazing	001926	A	-1
149	Grazing: undergrazing	002213	B	-1
149	Grazing: undergrazing	002214	B	-1
149	Grazing: undergrazing	002256	C	-1
150	Restructuring agricultural land holding	000212	C	-2
152	Restructuring agricultural land holding: removal of scrub	000606	C	-1
152	Restructuring agricultural land holding: removal of scrub	001625	C	1
152	Restructuring agricultural land holding: removal of scrub	001831	B	2
152	Restructuring agricultural land holding: removal of scrub	002256	C	-1

Activities Code	Activity description	Site Code	Intensity	Impact
160	General Forestry management	000197	B	1
161	General Forestry management: forestry planting	000849	C	0
168	General Forestry management: felling of native or mixed woodland	001831	C	-1
171	Animal breeding: stock feeding	000020	C	-1
171	Animal breeding: stock feeding	000268	C	-1
171	Animal breeding: stock feeding	000297	C	-1
171	Animal breeding: stock feeding	000572	C	-1
171	Animal breeding: stock feeding	001774	C	-1
171	Animal breeding: stock feeding	001776	B	-1
171	Animal breeding: stock feeding	001926	B	-1
180	Burning	000440	C	0
180	Burning	002256	C	0
190	Agriculture & forestry activities not referred to above	000242	C	-1
220	Leisure fishing	000297	A	-1
230	Hunting	000925	C	0
300	Sand & gravel extraction	000439	B	-2
301	Sand & gravel extraction: quarries	000432	C	-2
301	Sand & gravel extraction: quarries	000572	D	0
301	Sand & gravel extraction: quarries	000925	A	-2
301	Sand & gravel extraction: quarries	001625	C	0
301	Sand & gravel extraction: quarries	001831	A	-2
390	Mining & extraction activities not referred to above	000213	C	-1
402	Urbanised areas, human habitation: discontinuous urbanisation	001209	B	-1
412	Industrial or commercial areas: industrial stockage	000925	C	0
422	Discharges: disposal of industrial waste	000268	C	-1
502	Communication networks: routes, autoroutes	001831	B	-2
511	Energy transport: electricity lines	000191	C	-1
511	Energy transport: electricity lines	000432	C	1
511	Energy transport: electricity lines	001831	C	-1
530	Improved access to site	001275	C	0
604	Sport & leisure structures: circuit, track	000432	C	1
609	Sport & leisure structures: other sport/leisure complexes	000297	C	-1
621	Outdoor sports & leisure activities: nautical sports	000191	C	0
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	000191	C	0
623	Outdoor sports & leisure activities: motorised vehicles	000925	A	-1
629	Outdoor sports & leisure activities: other outdoor sports & leisure activities	000191	B	0
690	Other leisure & tourism impacts not referred to above	001831	C	0
900	Erosion	001776	C	-1
900	Erosion	001831	C	-1
954	Biocœnotic evolution: invasion by a species	000020	B	-1
954	Biocœnotic evolution: invasion by a species	000054	A	-1
954	Biocœnotic evolution: invasion by a species	000197	C	-1
954	Biocœnotic evolution: invasion by a species	000212	C	-1
954	Biocœnotic evolution: invasion by a species	000213	B	-1
954	Biocœnotic evolution: invasion by a species	000242	B	-1
954	Biocœnotic evolution: invasion by a species	000268	B	-1
954	Biocœnotic evolution: invasion by a species	000297	C	-1
954	Biocœnotic evolution: invasion by a species	000432	A	-1
954	Biocœnotic evolution: invasion by a species	000439	B	-1
954	Biocœnotic evolution: invasion by a species	000440	C	-1
954	Biocœnotic evolution: invasion by a species	000572	A	-1
954	Biocœnotic evolution: invasion by a species	000606	B	-1
954	Biocœnotic evolution: invasion by a species	000831	B	-1
954	Biocœnotic evolution: invasion by a species	000849	C	-1
954	Biocœnotic evolution: invasion by a species	000919	C	-1
954	Biocœnotic evolution: invasion by a species	000925	B	-1
954	Biocœnotic evolution: invasion by a species	001209	C	-1

Activities Code	Activity description	Site Code	Intensity	Impact
954	Biocœnotic evolution: invasion by a species	001275	B	-1
954	Biocœnotic evolution: invasion by a species	001625	B	-1
954	Biocœnotic evolution: invasion by a species	001656	C	-1
954	Biocœnotic evolution: invasion by a species	001774	C	-1
954	Biocœnotic evolution: invasion by a species	001776	B	-1
954	Biocœnotic evolution: invasion by a species	001831	A	-1
954	Biocœnotic evolution: invasion by a species	001926	C	-1
954	Biocœnotic evolution: invasion by a species	002074	C	-1
954	Biocœnotic evolution: invasion by a species	002213	A	-1
954	Biocœnotic evolution: invasion by a species	002214	A	-1
954	Biocœnotic evolution: invasion by a species	002256	B	-1
990	Other natural processes	000439	A	2
990	Other natural processes	001656	B	-1
990	Other natural processes	001831	B	2

## Appendix 5d

Activities and threats noted as impacting upon species-rich *Nardus* grassland sites

Activities Code	Activity description	Site Code	Intensity	Impact
102	Cultivation: mowing/cutting	000934	B	-1
103	Cultivation: agricultural improvement	000934	B	-1
120	Fertilisation	000646	C	-1
120	Fertilisation	000934	C	-1
120	Fertilisation	000939	C	-1
120	Fertilisation	001197	C	-1
120	Fertilisation	002125	C	-1
140	Grazing	000646	B	0
140	Grazing	000939	C	1
140	Grazing	002124	B	1
140	Grazing	002125	C	1
140	Grazing	002257	C	1
141	Grazing: abandonment of pastoral systems	000939	C	-1
142	Grazing: overgrazing by sheep	000939	C	-1
149	Grazing: undergrazing	000646	C	-1
149	Grazing: undergrazing	000934	A	-1
149	Grazing: undergrazing	001197	C	-1
149	Grazing: undergrazing	002124	B	-1
149	Grazing: undergrazing	002125	B	-1
149	Grazing: undergrazing	002257	B	-1
160	General Forestry management	000646	C	-2
171	Animal breeding: stock feeding	000939	C	-1
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehicles	002257	C	0
810	Drainage	000646	C	1
954	Biocœnotic evolution: invasion by a species	000934	B	-1
954	Biocœnotic evolution: invasion by a species	000939	B	-1
954	Biocœnotic evolution: invasion by a species	001197	C	-1
954	Biocœnotic evolution: invasion by a species	002124	A	-1
954	Biocœnotic evolution: invasion by a species	002125	A	-1
954	Biocœnotic evolution: invasion by a species	002257	A	-1
990	Other natural processes	000646	B	0

## Appendix 6a

List of calcareous grassland sites containing negative indicator species, listed by species

Site Code	Stop Number	Latin Name	DAFOR
000020	Stop 04	<i>Lolium perenne</i>	F
000054	Stop 04	<i>Lolium perenne</i>	O
000191	Stop 01	<i>Lolium perenne</i>	R
000213	Stop 01	<i>Lolium perenne</i>	R
000213	Stop 12	<i>Lolium perenne</i>	R
000268	Stop 05	<i>Lolium perenne</i>	A
000268	Stop 09	<i>Lolium perenne</i>	D
000297	Stop 05	<i>Lolium perenne</i>	R
000297	Stop 10	<i>Lolium perenne</i>	F
000432	Stop 01	<i>Lolium perenne</i>	R
000432	Stop 02	<i>Lolium perenne</i>	R
000432	Stop 03	<i>Lolium perenne</i>	A
000432	Stop 12	<i>Lolium perenne</i>	R
000440	Stop 04	<i>Lolium perenne</i>	O
000572	Stop 03	<i>Lolium perenne</i>	R
000849	Stop 03	<i>Lolium perenne</i>	O
001209	Stop 03	<i>Lolium perenne</i>	R
001209	Stop 04	<i>Lolium perenne</i>	R
001209	Stop 08	<i>Lolium perenne</i>	R
001275	Stop 01	<i>Lolium perenne</i>	O
001275	Stop 02	<i>Lolium perenne</i>	F
001275	Stop 11	<i>Lolium perenne</i>	F
001275	Stop 12	<i>Lolium perenne</i>	O
001275	Stop 14	<i>Lolium perenne</i>	O
001275	Stop 16	<i>Lolium perenne</i>	R
001275	Stop 23	<i>Lolium perenne</i>	R
001625	Stop 04	<i>Lolium perenne</i>	O
001656	Stop 06	<i>Lolium perenne</i>	R
001774	Stop 04	<i>Lolium perenne</i>	F
001774	Stop 08	<i>Lolium perenne</i>	R
001776	Stop 04	<i>Lolium perenne</i>	O
001926	Stop 01	<i>Lolium perenne</i>	O
001926	Stop 06	<i>Lolium perenne</i>	O
002214	Stop 03	<i>Lolium perenne</i>	O
002256	Stop 01	<i>Lolium perenne</i>	R
002256	Stop 02	<i>Lolium perenne</i>	F
002256	Stop 03	<i>Lolium perenne</i>	O
002256	Stop 04	<i>Lolium perenne</i>	R
000020	Stop 04	<i>Rumex crispus</i>	O
000213	Stop 11	<i>Rumex obtusifolius</i>	R
001275	Stop 01	<i>Rumex obtusifolius</i>	O
001926	Stop 06	<i>Rumex obtusifolius</i>	R
000213	Stop 11	<i>Urtica dioica</i>	R
001275	Stop 01	<i>Urtica dioica</i>	R
002213	Stop 07	<i>Urtica dioica</i>	R



## Appendix 6 b

List of *Nardus* grassland sites containing negative indicator species, listed by species

Site Code	Stop Number	Latin Name	DAFOR
001197	Stop 03	*Arrhenatherum elatius	R
002124	Stop 05	*Arrhenatherum elatius	R
002124	Stop 10	*Arrhenatherum elatius	R
002125	Stop 02	*Arrhenatherum elatius	R
002125	Stop 04	*Arrhenatherum elatius	R
002125	Stop 05	*Arrhenatherum elatius	R
002125	Stop 08	*Arrhenatherum elatius	R
002125	Stop 09	*Arrhenatherum elatius	O
002125	Stop 10	*Arrhenatherum elatius	R
001197	Stop 04	*Bellis perennis	R
002124	Stop 06	*Bellis perennis	R
002124	Stop 11	*Bellis perennis	R
000268	Stop 01	*Cirsium arvense	O
000268	Stop 02	*Cirsium arvense	F
002125	Stop 09	*Cirsium arvense	R
002124	Stop 10	*Cirsium vulgare	R
002124	Stop 11	*Cirsium vulgare	O
002124	Stop 12	*Cirsium vulgare	O
000934	Stop 02	*Cynosurus cristatus	R
000934	Stop 05	*Cynosurus cristatus	O
000939	Stop 03	*Cynosurus cristatus	R
000939	Stop 04	*Cynosurus cristatus	O
001197	Stop 04	*Cynosurus cristatus	R
002124	Stop 07	*Cynosurus cristatus	R
002124	Stop 11	*Cynosurus cristatus	O
002124	Stop 12	*Cynosurus cristatus	A
002125	Stop 07	*Cynosurus cristatus	R
002125	Stop 08	*Cynosurus cristatus	R
000646	Stop 06	*Holcus lanatus (>30%)	R
000646	Stop 14	*Holcus lanatus (>30%)	R
000934	Stop 01	*Holcus lanatus (>30%)	O
000934	Stop 03	*Holcus lanatus (>30%)	F
000934	Stop 04	*Holcus lanatus (>30%)	F
000934	Stop 06	*Holcus lanatus (>30%)	R
000934	Stop 07	*Holcus lanatus (>30%)	F
000934	Stop 08	*Holcus lanatus (>30%)	A
000939	Stop 03	*Holcus lanatus (>30%)	R
001197	Stop 01	*Holcus lanatus (>30%)	O
002124	Stop 01	*Holcus lanatus (>30%)	O
002124	Stop 03	*Holcus lanatus (>30%)	R
002124	Stop 05	*Holcus lanatus (>30%)	R
002124	Stop 06	*Holcus lanatus (>30%)	O
002124	Stop 11	*Holcus lanatus (>30%)	R
002124	Stop 12	*Holcus lanatus (>30%)	A
002125	Stop 02	*Holcus lanatus (>30%)	R
002125	Stop 04	*Holcus lanatus (>30%)	R
002125	Stop 05	*Holcus lanatus (>30%)	R
002125	Stop 08	*Holcus lanatus (>30%)	R
002125	Stop 09	*Holcus lanatus (>30%)	R
002125	Stop 10	*Holcus lanatus (>30%)	O
002125	Stop 11	*Holcus lanatus (>30%)	F
000646	Stop 07	*Juncus effusus	R
000646	Stop 08	*Juncus effusus	R
000934	Stop 05	*Juncus effusus	O

Site Code	Stop Number	Latin Name	DAFOR
001197	Stop 01	*Juncus effusus	D
001197	Stop 02	*Juncus effusus	O
002124	Stop 06	*Juncus effusus	R
002124	Stop 08	*Juncus effusus	R
002124	Stop 10	*Juncus effusus	R
002125	Stop 02	*Juncus effusus	R
002125	Stop 04	*Juncus effusus	R
002125	Stop 07	*Juncus effusus	R
002125	Stop 09	*Juncus effusus	O
002125	Stop 10	*Juncus effusus	F
002125	Stop 12	*Juncus effusus	F
001197	Stop 04	Lolium perenne	R
000934	Stop 08	Lolium perenne	A
000934	Stop 01	*Ranunculus repens	R
000934	Stop 02	*Ranunculus repens	F
000934	Stop 03	*Ranunculus repens	F
000934	Stop 05	*Ranunculus repens	O
000939	Stop 03	*Ranunculus repens	O
000939	Stop 04	*Ranunculus repens	O
001197	Stop 02	*Ranunculus repens	R
002124	Stop 07	*Ranunculus repens	O
002124	Stop 09	*Ranunculus repens	O
002124	Stop 11	*Ranunculus repens	O
002124	Stop 12	*Ranunculus repens	O
002125	Stop 02	*Ranunculus repens	O
002125	Stop 09	*Ranunculus repens	R
002124	Stop 06	*Senecio jacobea	R
002124	Stop 07	*Senecio jacobea	R
002124	Stop 09	*Senecio jacobea	R
002124	Stop 11	*Senecio jacobea	O
002124	Stop 12	*Senecio jacobea	F
002125	Stop 06	*Senecio jacobea	R
002125	Stop 08	*Senecio jacobea	R
002125	Stop 09	*Senecio jacobea	R
000934	Stop 01	*Trifolium repens (>10%)	F
000934	Stop 02	*Trifolium repens (>10%)	F
000934	Stop 03	*Trifolium repens (>10%)	F
000934	Stop 04	*Trifolium repens (>10%)	F
000934	Stop 05	*Trifolium repens (>10%)	O
000934	Stop 08	*Trifolium repens (>10%)	A
000939	Stop 04	*Trifolium repens (>10%)	O
001197	Stop 04	*Trifolium repens (>10%)	O
002124	Stop 01	*Trifolium repens (>10%)	O
002124	Stop 02	*Trifolium repens (>10%)	O
002124	Stop 05	*Trifolium repens (>10%)	R
002124	Stop 06	*Trifolium repens (>10%)	R
002124	Stop 07	*Trifolium repens (>10%)	R
002124	Stop 09	*Trifolium repens (>10%)	F
002124	Stop 11	*Trifolium repens (>10%)	O
002124	Stop 12	*Trifolium repens (>10%)	A
002125	Stop 01	*Trifolium repens (>10%)	R
002125	Stop 05	*Trifolium repens (>10%)	R
002125	Stop 08	*Trifolium repens (>10%)	R
002125	Stop 09	*Trifolium repens (>10%)	R

## Appendix 7a - Orchid-rich calcareous grassland

### (I) Summary Results of Conservation Assessment listed by **Site Code**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000020	Green	Amber	Amber	Amber
000054	Amber	Red	Amber	Red
000191	Green	Green	Green	Green
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
000213	Red	Red	Amber	Red
000242	Green	Red	Amber	Red
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000440	Red	Red	Red	Red
000572	Red	Red	Amber	Red
000606	Green	Red	Amber	Red
000625	Amber	Red	Red	Red
000831	Green	Red	Amber	Red
000849	Amber	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001625	Amber	Amber	Amber	Amber
001656	Green	Red	Amber	Red
001774	Amber	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
001926	Amber	Red	Amber	Red
002074	Green	Green	Green	Green
002213	Red	Red	Amber	Red
002214	Green	Red	Amber	Red
002256	Red	Red	Amber	Red

### (II) Summary Results of Conservation Assessment, sorted by **Extent**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000020	Green	Amber	Amber	Amber
000191	Green	Green	Green	Green
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
000242	Green	Red	Amber	Red
000606	Green	Red	Amber	Red
000831	Green	Red	Amber	Red
001656	Green	Red	Amber	Red
002074	Green	Green	Green	Green
002214	Green	Red	Amber	Red
000054	Amber	Red	Amber	Red
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
000625	Amber	Red	Red	Red
000849	Amber	Red	Amber	Red
001625	Amber	Amber	Amber	Amber
001774	Amber	Red	Amber	Red
001926	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000440	Red	Red	Red	Red
000572	Red	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
002213	Red	Red	Amber	Red
002256	Red	Red	Amber	Red

(iii) Summary Results of Conservation Assessment sorted by **Structures and functions**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000191	Green	Green	Green	Green
002074	Green	Green	Green	Green
000020	Green	Amber	Amber	Amber
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
000439	Red	Amber	Amber	Red
000919	Red	Amber	Amber	Red
001625	Amber	Amber	Amber	Amber
000054	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000242	Green	Red	Amber	Red
000432	Red	Red	Amber	Red
000440	Red	Red	Red	Red
000572	Red	Red	Amber	Red
000606	Green	Red	Amber	Red
000625	Amber	Red	Red	Red
000831	Green	Red	Amber	Red
000849	Amber	Red	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001656	Green	Red	Amber	Red
001774	Amber	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
001926	Amber	Red	Amber	Red
002213	Red	Red	Amber	Red
002214	Green	Red	Amber	Red
002256	Red	Red	Amber	Red

(iii) Summary Results of Conservation Assessment sorted by **Future Prospects**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000191	Green	Green	Green	Green
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
002074	Green	Green	Green	Green
000020	Green	Amber	Amber	Amber
000054	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000242	Green	Red	Amber	Red
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000572	Red	Red	Amber	Red
000606	Green	Red	Amber	Red
000831	Green	Red	Amber	Red
000849	Amber	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001625	Amber	Amber	Amber	Amber
001656	Green	Red	Amber	Red
001774	Amber	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
001926	Amber	Red	Amber	Red
002213	Red	Red	Amber	Red
002214	Green	Red	Amber	Red
002256	Red	Red	Amber	Red
000440	Red	Red	Red	Red
000625	Amber	Red	Red	Red

(iv) Summary Results of Conservation Assessment sorted by **EU Conservation Status**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000191	Green	Green	Green	Green
002074	Green	Green	Green	Green
000020	Green	Amber	Amber	Amber
000197	Green	Amber	Green	Amber
000212	Green	Amber	Green	Amber
000268	Amber	Amber	Amber	Amber
000297	Amber	Amber	Amber	Amber
001625	Amber	Amber	Amber	Amber
000054	Amber	Red	Amber	Red
000213	Red	Red	Amber	Red
000242	Green	Red	Amber	Red
000432	Red	Red	Amber	Red
000439	Red	Amber	Amber	Red
000440	Red	Red	Red	Red
000572	Red	Red	Amber	Red
000606	Green	Red	Amber	Red
000625	Amber	Red	Red	Red
000831	Green	Red	Amber	Red
000849	Amber	Red	Amber	Red
000919	Red	Amber	Amber	Red
000925	Red	Red	Amber	Red
001209	Red	Red	Amber	Red
001275	Red	Red	Amber	Red
001656	Green	Red	Amber	Red
001774	Amber	Red	Amber	Red
001776	Red	Red	Amber	Red
001831	Red	Red	Amber	Red
001926	Amber	Red	Amber	Red
002213	Red	Red	Amber	Red
002214	Green	Red	Amber	Red
002256	Red	Red	Amber	Red

## Appendix 7 b. Species-rich *Nardus* sites

### (I) Summary Results of Conservation Assessment sorted by **Site Code**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000934	Red	Red	Red	Red
000939	Green	Red	Amber	Red
001197	Green	Red	Red	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red

### (I) Summary Results of Conservation Assessment, sorted by **Extent**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000939	Green	Red	Amber	Red
001197	Green	Red	Red	Red
000934	Red	Red	Red	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red

### (ii) Summary Results of Conservation Assessment sorted by **Structures and functions**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000934	Red	Red	Red	Red
000939	Green	Red	Amber	Red
001197	Green	Red	Red	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red

### Summary Results of Conservation Assessment sorted by **Future Prospects**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000939	Green	Red	Amber	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red
000934	Red	Red	Red	Red
001197	Green	Red	Red	Red

### Summary Results of Conservation Assessment sorted by **EU Conservation Status**

Site Code	Extent	Structure and Function	Future Prospects	EU Conservation Status
000646	Green	Red	Green	Amber
000934	Red	Red	Red	Red
000939	Green	Red	Amber	Red
001197	Green	Red	Red	Red
002124	Red	Red	Amber	Red
002125	Red	Red	Amber	Red
002257	Red	Red	Amber	Red

## ***Semi-natural dry grasslands and scrubland facies***

### **6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates(*Festuco-Brometalia*) (\* important orchid sites)**

PAL.CLASS.: 34.31 to 34.34

1) Dry to semi-dry calcareous grasslands of the *Festuco-Brometea*. This habitat is formed on the one hand by steppic or subcontinental grasslands (*Festucetalia valesiacae*) and, on the other, by the grasslands of more oceanic and sub-Mediterranean regions (*Brometalia erecti*); in the latter case, a distinction is made between primary *Xerobromion* grasslands and secondary (semi-natural) *Mesobromion* grasslands with *Bromus erectus*; the latter are characterised by their rich orchid flora. Abandonment results in thermophile scrub with an intermediate stage of thermophile fringe vegetation (*Trifolio-Geranietea*).

Important orchid sites should be interpreted as sites that are important on the basis of one or more of the following three criteria:

- (a) the site hosts a rich suite of orchid species
- (b) the site hosts an important population of at least one orchid species considered not very common on the national territory
- (c) the site hosts one or several orchid species considered to be rare, very rare or exceptional on the national territory.

2) Plants: *Mesobromion* - *Anthyllis vulneraria*, *Arabis hirsuta*, *Brachypodium pinnatum*, *Bromus inermis*, *Campanula glomerata*, *Carex caryophyllea*, *Carlina vulgaris*, *Centaurea scabiosa*, *Dianthus carthusianorum*, *Eryngium campestre*, *Koeleria pyramidata*, *Leontodon hispidus*, *Medicago sativa* ssp. *falcata*, *Ophrys apifera*, *O. insectifera*, *Orchis mascula*, *O. militaris*, *O. morio*, *O. purpurea*, *O. ustulata*, *O. mascula*, *Polygala comosa*, *Primula veris*, *Sanguisorba minor*, *Scabiosa columbaria*, *Veronica prostrata*, *V. teucrium*. *Xerobromion* - *Bromus erectus*, *Fumana procumbens*, *Globularia elongata*, *Hippocrepis comosa*. *Festucetalia valesiacae*: *Adonis vernalis*, *Euphorbia seguierana*, *Festuca valesiaca*, *Silene otites*, *Stipa capillata*, *S. joannis*.

Animals: *Papilio machaon*, *Iphiclides podalirius* (Lepidoptera); *Libelloides* spp., *Mantis religiosa* (Neuroptera).

#### **3) Corresponding categories**

United Kingdom classification : "CG1 *Festuca ovina*-*Carlina vulgaris* grassland", "CG2 *Festuca ovina*-*Avenula pratensis* grassland", "CG3 *Bromus erectus* grassland", "CG4 *Brachypodium pinnatum* grassland", "CG5 *Bromus erectus*-*Brachypodium pinnatum* grassland", "CG6 *Avenula pubescens* grassland", "CG7 *Festuca ovina*-*Hieracium pilosella*-*Thymus praecox/pulegioides* grassland", "CG8 *Sesleria albicans*-*Scabiosa columbaria* grassland", "CG9 *Sesleria albicans*-*Galium sternerii* grassland".

In France the following sub-types are found: 34.31 - Subcontinental (Euro-Siberian and eastern) grasslands of the inner Alps stretching perhaps to Alsace (*Stipo capillatae*-*Festucetalia valesiacae* Gaultier 89 prov.); 34.32 - Sub-Atlantic xerocline calcicolous grasslands [*Mesobrometalia erecti* Royer 87 (IX 212: *Brometalia erecti* Br-BI. 36)]; 34.33 - Sub-Atlantic xerophile calcicolous grasslands (*Xerobrometalia erecti* Royer 87); 34.34 - Central European calcareo-siliceous grasslands

generally established on hyperxerothermophile sands, partly denuded (*Koelerio macranthae-Phleion phloeidis* Korneck 74 (*Koelerio macranthae-Phleenaia phloeidis* (Korneck 74) Royer 87.

German classification: "340101 submediterraner Trockenrasen auf karbonatischem Untergrund", "34020301 subkontinentaler Halbtrockenrasen auf karbonatischem Boden, gemäht", "34020102 submediterraner Halbtrockenrasen auf karbonatischem Boden, beweidet Mähweide", "34020103 submediterraner Halbtrockenrasen auf karbonatischem Boden, brachgefallen", "340103 subkontinentaler Trockenrasen auf karbonatischem Untergrund", "34020101 submediterraner Halbtrockenrasen auf karbonatischem Boden, gemäht", "34020302 subkontinentaler Halbtrockenrasen auf karbonatischem Boden, beweidet Mähweide", "34020303 subkontinentaler Halbtrockenrasen auf karbonatischem Boden, brachgefallen", "3403 natürlicher Steppenrasen (kontinental, auf tiefgründigem Boden)".

Nordic classification: *Avenula pratensis-Artemisia oelandica*-variant of "5213 *Avenula pratensis-Fragaria viridis-Filipendula vulgaris*-typ"

**4)** Often in association with scrubland and thermophile forests and with dry pioneer *Sedum* meadows (*Sedo-Scleranthea*).

**5) Albertsson, N. (1950).** Das grosse südliche Alvar der Insel Öland. Eine Pflanzensoziologische Übersicht. *Sven. Bot. Tidskr.* 44:269-331.



## **6230 \* Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)**

PAL.CLASS.: 35.1, 36.31

**1)** Closed, dry or mesophile, perennial *Nardus* grasslands occupying siliceous soils in Atlantic or sub-Atlantic or boreal lowland, hill and montane regions. Vegetation highly varied, but the variation is characterised by continuity. *Nardetalia*: 35.1-*Violo-Nardion* (*Nardo-Galion saxatilis*, *Violion caninae*); 36.31- *Nardion*.

Species-rich sites should be interpreted as sites which are remarkable for a high number of species. In general, the habitats which have become irreversibly degraded through overgrazing should be excluded.

**2)** Plants: *Antennaria dioica*, *Arnica montana*, *Campanula barbata*, *Carex ericetorum*, *C. pallescens*, *C. panicea*, *Festuca ovina*, *Galium saxatile*, *Gentiana pneumonanthe*, *Hypericum maculatum*, *Hypochoeris maculata*, *Lathyrus montanus*, *Leontodon helveticus*, *Leucorchis albida*, *Meum athamanticum*, *Nardus stricta*, *Pedicularis sylvatica*, *Platanthera bifolia*, *Polygala vulgaris*, *Potentilla aurea*, *P. erecta*, *Veronica officinalis*, *Viola canina*.

Animals: *Miramella alpina*.

### **3) Corresponding categories**

The habitat sub-types belonging to the *Nardion* alliance shows a strong regional differentiation: Alps and Pyrenees - *Geo-montani-Nardetum*, Black Forest - *Leontodonto-Nardetum*, Harz - *Pulsatillo micranthae-Nardetum*, Bayerischer Wald - *Lycopodio-Nardetum*.

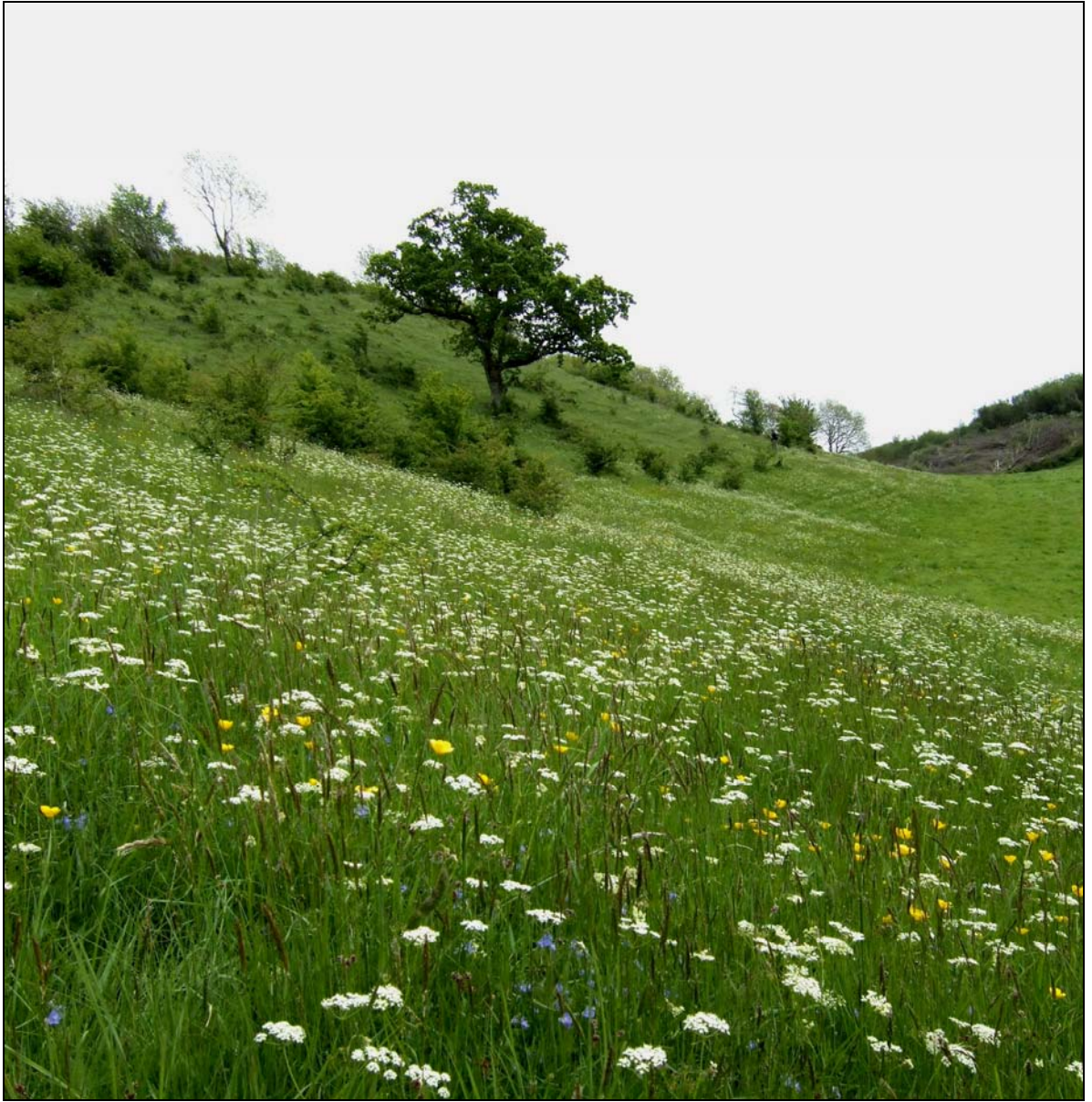
In the United Kingdom, the habitat covers the most species-rich sites of the types "CG10 *Festuca ovina-Agrostis capillaris-Thymus praecox*" and "CG11 *Festuca ovina-Agrostis capillaris-Alchemilla alpina* grass heath".

German classification : "34060101 gemähter Borstgrasrasen der planaren bis submontanen Stufe", "34060102 beweideter Borstgrasrasen der planaren bis submontanen Stufe (incl. Mähweide)", "34060103 brachgefallener Borstgrasrasen der planaren bis submontanen Stufe", "34060201 gemähter Borstgrasrasen der montanen bis hochmontanen Stufe", "34060202 beweideter Borstgrasrasen der montanen bis hochmontanen Stufe (incl. Mähweide)", "34060203 brachgefallener Borstgrasrasen der montanen bis hochmontanen Stufe".

Nordic classification : "5133 *Nardus stricta*-typ" and "5233a *Carex nigra-Carex panicea-Nardus stricta*-variant".

**5) Sjörs, H. (1967).** *Nordisk växtgeografi. 2 uppl.* Svenska Bokförlaget Bonniers, Stockholm, 240 pp.

# **Grasslands Monitoring Project 2006**



## **Volume II Summary Site Reports**

### **Orchid-rich Calcareous Grasslands**

Site Codes 000020 to 000919

Report produced by NPWS by Rosaleen Dwyer, Willie Crowley, and Faith Wilson  
as part of the Grasslands Monitoring Programme

# Grasslands Monitoring Project 2006

## Volume II

### Summary Site Reports

### Orchid-rich Calcareous Grasslands

SITE CODE	SITE NAME
IE0000020	Black Head-Poulsallagh Complex
IE0000054	Moneen Mountain
IE0000191	St. John's Point
IE0000197	West of Ardara/Maas Road
IE0000212	Inishmaan Island
IE0000213	Inishmore Island
IE0000242	Castletaylor Complex
IE0000268	Galway Bay Complex
IE0000297	Lough Corrib
IE0000432	Barrigone
IE0000439	Tory Hill
IE0000440	Lough Ree
IE0000566	All Saints Bog and Esker
IE0000572	Clara Bog
IE0000606	Lough Fingall Complex
IE0000625	Bunduff Lough and Machair/Trawalua/Mullaghmore
IE0000831	Cullahill Mountain
IE0000849	Spahill and Clomantagh Hill
IE0000919	Ridge Road, SW of Rapemills

**Black Head-Poulsallagh Complex****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	20/09/2006
Willie Crowley	21/09/2006
	29/09/2006

**Total Site Area (Ha):** 7806.6

**Area of Priority Grassland (N2000) (Ha):** 334.

**Area of Priority Grassland 2006 (Ha)\*:** 50-100.

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Clare	51	CL001, CL002.

**Digital Aerial Photos (Tile Nos.):**

O3622-b, O3622-c, O3622-d, O3678-a, O3678-b, O3678-c, O3678-d, O3679-a, O3679-b, O3679-c, O3679-d, O3680-a, O3680-c, O3680-d, O3736-a, O3736-b, O3736-c, O3736-d, O3737-a, O3737-b, O3737-c, O3737-d, O3738-a, O3738-b, O3738-c, O3793-a, O3793-b, O3793-c, O3793-d, O3794-a, O3794-b, O3794-c, O3795-a, O3795-b, O3795-c, O3795-d, O3796-a, O3796-c, O3850-b, O3850-c, O3850-d, O3851-a, O3851-b, O3851-c, O3907-a, O3907-b, O3907-c, O3907-d, O7037-a, O7037-c, O7037-d, O7040-b, O7040-c, O7040-d.

**Other Aerial Photographs:**

1993 Series - Number 12 - 216, 13 - 004, 13 - 005, 13 - 007, 12 - 169, 12 - 172.

**SITE DESIGNATIONS****SAC Site Code:**

000020

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

The Black Head-Poulsallagh complex encompasses a complete range of rocky Burren habitats from coastal, glacially planed limestone pavements to high level heaths. The Caher River, the only river found in the high Burren, and Fanore dunes, one of the best dune systems in Clare, are included in the site. The shoreline, littoral and sublittoral areas are also interesting because of the rock type, physical exposure, and flora and fauna communities. The limestone pavement includes smooth, blocky and shattered types, and is particularly well represented in the Poulsallagh area. Erratics of Galway granite occur within the site, especially around Black Head, which is the main glaciated area of the Burren. The bare pavement is interspersed with fine examples of species rich, dry calcareous grassland. Limestone heath is also well developed, particularly on the higher areas to the north and northeast, where Bearberry (*Arctostaphylos uva-ursi*) occurs.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site contains only a limited description of the calcareous grassland as follows: The limestone pavement includes smooth, blocky and shattered types and is particularly well represented in the Poulsallagh area. Erratics of Galway granite occur within the site, especially around Black Head, which is the main glaciated area of the Burren. The bare pavement is interspersed with fine examples of species rich, dry calcareous grassland. Limestone heath is also well developed, particularly on the higher areas to the north and northeast, where Bearberry (*Arctostaphylos uva-ursi*) occurs.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the calcareous grassland as follows: This habitat occurs throughout the site as part of a mosaic with limestone pavement, calcareous heath and scrub. These grasslands play host to a rich variety of orchid species which include *Anacamptis pyramidalis*, *Coeloglossum viride*, *Dactylorhiza fuchsii*, *Dactylorhiza fuchsii* subsp. *okellyi*, *Dactylorhiza maculata*, *Dactylorhiza traunsteineri*, *Gymnadenia conopsea*, *Ophrys apifera*, *Orchis insectifera*, *Platanthera chlorantha* and *Neotinea maculata*. The latter species *N. maculata*, has a limited distribution in Ireland being associated with the Burren in Co. Clare and rare elsewhere (Webb & Scannell 1983). The presence of *Sesleria albicans* contributes to this diverse and unique community. The Red Data species *Ajuga pyramidalis* is occasional in grassland and heath habitats at Poulsallagh.

#### *Description based on the 2006 Survey :*

The 2006 survey found that the calcareous grassland within the site was typically limited in its extent as it forms a continuum with limestone pavement, calcareous heath and scrub. Areas of grassland were often limited to thin linear strips between areas of outcropping limestone pavement or interspersed with areas of heath. Many of the larger areas contained frequent outcropping limestone boulders and rocks.

The calcareous grassland contained a good variety of indicator species including *Antennaria dioica*, *Anthyllis vulneraria*, *Briza media*, *Campanula rotundifolia*, *Carex*

flacca, *Carlina vulgaris*, *Daucus carota*, *Galium verum*, *Hieracium pilosella*, *Koeleria macrantha*, *Linum catharticum*, *Lotus corniculatus*, *Geranium sanguineum*, *Sesleria albicans*, and more rarely *Sanguisorba minor* and *Asperula cynanchica*. Much of the grassland forms a mosaic with exposed limestone bedrock, limestone pavement, limestone heath and shattered pavement and often has a heathy element with species such as *Dryas octopetala* and *Molinia caerulea* recorded. The presence of fruiting/seeding orchids were also noted in many of the areas surveyed.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This is a large complex site in which the calcareous grassland forms part of a mosaic with alpine and sub-alpine heath, *Juniperus communis* formations on calcareous heaths of grasslands, limestone pavement and scrub as described by Ivimey-Cook and Proctor (1963).

This site was originally listed as an ASI by An Foras Forbatha in 1971. The site was surveyed during the NHA survey but the NHA notes mainly relate to boundary details with only one general note on calcareous grassland within the site.

An extensive satellite mapping project of the Burren was conducted by Parr et. al. - 'A GIS baseline survey of habitat types and vegetation composition in the Karst region of the Burren, County Clare' in 2006. This project was funded by the Irish Government under the National Development Plan 2000-2006, Dept. Agriculture Research Stimulus Fund (RSF 117). The GIS data from this project was used in determining the extent of calcareous grassland within the site.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.



## **SITE MONITORING AND MANAGEMENT UNITS**

This is a large complex site in which the calcareous grassland forms part of a mosaic with a number of habitats including alpine and sub-alpine heath, *Juniperus communis* formations on calcareous heaths and grasslands, limestone pavement, and scrub. Given the lack of NHA notes within the site boundary, the aerial photographs (OSI 2000 series) of the site were studied and seven survey areas that appeared to be predominantly grassland (as opposed to heath/outcropping limestone pavement) were selected for field survey (See Map 1).

Each of these target survey areas was visited and twelve Monitoring Stops were conducted in total (See Map 2, Sheets 1 - 8). A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevés were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It can be seen from Table 1b that two of the Stops were not included in the assessment of Structures and Functions. Stop 4 was seen to be more representative of a loss in habitat Extent and was therefore not included in the assessment of Structures and Functions. Stop 11 was subsequently not used in any assessment as it was deemed not to be 6210 habitat, either now or at the time the site was designated.

Only eight of the ten Monitoring Stops that assessed the condition of the grassland were seen to pass. This results in an overall failure of 20% for the Structures and Functions assessment at this site.



**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	8
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	8
<b>Result of Assessment:</b>	Pass

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 2 of 8
Stop 02	1	Fail	Structures and Functions	Sheet 2 of 8
Stop 03	2	Pass	Structures and Functions	Sheet 1 of 8
Stop 04	3	Fail	Extent	Sheet 6 of 8
Stop 05	3	Fail	Structures and Functions	Sheet 6 of 8
Stop 06	4	Pass	Structures and Functions	Sheet 3 of 8
Stop 07	4	Pass	Structures and Functions	Sheet 3 of 8
Stop 08	4	Pass	Structures and Functions	Sheet 3 of 8
Stop 09	5	Pass	Structures and Functions	Sheet 8 of 8
Stop 10	6	Pass	Structures and Functions	Sheet 8 of 8
Stop 11	7	Fail	Not used in assessment	Sheet 7 of 8
Stop 12	8	Pass	Structures and Functions	Sheet 4 of 8

Based on the geographical distribution of these target areas (as depicted on the overview map (Map 1) and in detail on Map 2 (sheets 1 - 8)), the current management practices and current field boundaries, the areas of calcareous grassland visited were divided into eight management units.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Several of the areas visited during the survey had been improved through fertilisation (120) and reseeded of the sward (103). However, it is unclear as to whether or not these areas had been improved at the time of site designation due to the absence of any previous data such as NHA notes. The ongoing use of ring feeders (171) by landowners also threatens the habitat within this site.

Elsewhere, undergrazing (149) is resulting in the spread of *Pteridium aquilinum* (954) and encroachment by scrub (141). Some of the slopes are also becoming increasingly heathy due to a lack of grazing pressure. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	C
954	Biocœnotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	C
120	Fertilisation	-1	C
141	Grazing: abandonment of pastoral systems	-1	C
149	Grazing: undergrazing	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The key threats to the site arise from a lack of grazing which has resulted in the spread of *Pteridium aquilinum* and some encroachment by scrub (see notes 1 and 7). The well known threat to the Burren flora of encroachment by *Corylus avellana* was not a major issue within the areas surveyed during the current survey but it is likely to be affecting calcareous grassland within other parts of the site. The removal of many of the large goat herds within the site which occurred within the last two years is also likely to have a negative impact on the flora of the site. The wild goat herds form one of the key browsers within the site and curtail the spread of scrub. Lack of grazing has resulted in the development of areas of rank grassland (see Note 3) and is critical for maintaining species diversity. Lack of grazing may also result in an increase in heathy elements within the grassland (see notes 2 and 5).

It is unclear whether the agricultural improvement of lands within the SAC (as a result of fertilisation and reseeded) has been a recent event but such activities were noted at several locations (see notes 3, 4 and 8 and Monitoring Stop 4), as was the use of ring feeders.

## CONSERVATION STATUS

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and cannot be accurately mapped from aerial photographs. This is because of its patchy distribution as it forms a mosaic with, and is not easily distinguishable from calcareous heath and limestone pavement.

However, in order to have some estimate as to the extent of the habitat, the following can be considered. During this survey, eight relatively small survey areas (50ha) were chosen for site visits in order to:

- a) Establish whether calcareous grassland was present and
- b) Evaluate the condition (Structures and Functions) of the grassland where present.

These survey areas were chosen, after analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2, as they were thought to be the most likely, within the SAC, to contain the habitat type 6210. However, although elements of calcareous grassland were found in parts of all eight areas, only four of them were considered to contain a significant area (i.e. >20m x 20m) where the habitat was the dominant habitat type. In fact within the survey areas, the area of habitat 6210 present was estimated (using information collected during the ground survey and aerial photographs in ArcView GIS 3.2) to be as low as 15ha (or 3.7% of the survey areas). A further ca. 20ha was estimated to be present in areas adjacent to the survey areas giving a total of approximately 35ha.

From analysis of the aerial photographs and considering that only four of the eight areas surveyed contained habitat 6210, it can be reasoned that there are no other large areas of the habitat within this SAC and that the actual extent of the habitat is likely to be little more than the 35ha recorded above.

However, to estimate the maximum possible extent of the habitat it can be imagined that the extent of the habitat within the survey areas is a true reflection of the extent of the habitat within the whole SAC. However, it should be remembered that this is not strictly correct as the survey areas were chosen specifically because they were considered likely to contain habitat 6210. Estimating the maximum possible extent in this manner results in a figure of 207ha (3.7% of the land within the SAC, 5601ha).

Thus it can be estimated that the extent of habitat 6210 at Black Head-Poulsallagh Complex SAC 000020 is in the range of 35-207ha (or 0.5-3% of the SAC) and is more likely to be towards the lower end of that range.

The Natura 2000 explanatory notes estimate that 334ha of the habitat occurs within the SAC, which is much higher than the range estimated during this survey (35-200ha). However, an analysis of the aerial photographs from 1994 and 2000 would indicate that there was little or no reduction in the area of the habitat during this time so that it is likely that the extent of the habitat was over-estimated in the Natura 2000 form. Of the survey

areas visited during the current survey, only one showed signs of agricultural improvement (as reflected in Monitoring Stop 4). However, an examination of the aerial photographs of the site from 1994 indicated that this field was agriculturally improved at this time also. The extent of calcareous grassland within the site is thus described as Favourable, as there would not appear to be any loss of extent within the site since the site was designated.

***Structure and Functions:***

Twelve Monitoring Stops were conducted initially but on analysis, two were excluded from the assessment of Structures and Functions. Stop 4 was seen to be more representative of loss in habitat extent while Stop 11 was deemed not to have been 6210 habitat at the time the site was first designated.

Of the remaining ten Stops which were used to assess Structures and Functions, eight passed the assessment procedure. Both of the Stops which failed, Stops 2 and 5), did so on account of encroachment by *Pteridium aquilinum*. This indicates a degree of abandonment.

Because at least two of the ten Stops failed in their assessment of Structures and Functions (a failure rate of 20%), the assessment of Structures and Functions of the calcareous grassland within the site is described as Unfavourable - inadequate.

***Future Prospects:***

The Future Prospects for the calcareous grassland within the site will depend on management agreements between NPWS and local landowners particularly in relation to grazing. The recently funded Burren LIFE project (which is ongoing in 2006) is resulting in useful dialogues and exchanges between ecologists and local farmers and is well received within the local community. This project is resulting in active management of habitats on the ground.

However given the lack of NPWS resources, the increase in part-time farming in Ireland, the move away from traditional farming practices such as 'winterages' in the Burren and the known encroachment of many areas by *Corylus avellana* scrub, the Future Prospects for the site are described as Unfavourable - inadequate.

***Conservation Assessment:***

Overall, the calcareous grassland within the site, is in good condition. A good diversity of calcareous indicator species were recorded. The main threats to the habitat arise from a lack of grazing which is resulting in encroachment by *Pteridium aquilinum* and scrub and the development of rank grassland. The Extent of the habitat within the site is typically restricted to small linear strips of grassland between areas of exposed limestone pavement, shattered pavement, and areas of calcareous heath and scrub, forming a continuum of habitats in a rich mosaic.

If the traditional grazing practices of 'winterages' are maintained in the Burren, the Future Prospects for the site are good. However the spread of *Corylus avellana* continues to be a difficult and costly management issue. If farmers are increasingly farming on a part time basis, this traditional practice of winterage is unlikely to continue. Given that the majority

of the site is in private ownership the future of its management cannot be assured.

The overall Conservation Status Assessment for the site is thus described as Unfavourable - inadequate, as although the Extent of calcareous grassland within the site is described as Favourable, the Structures and Functions and Future Prospects are all described as Unfavourable - inadequate (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - inadequate</i>
	Future Prospects		
	Structure and Function		
Extent			

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

90% of this area is encroached by *Prunus spinosa* and *Pteridium aquilinum*. See photo 4.

**Note 2:**

Most of these slopes have frequent outcropping limestone boulders. This note was taken in an area with a higher percentage of vegetation cover. These slopes had been identified as calcareous grassland based on an examination of aerial photographs but are actually limestone heath dominated by *Dryas octopetala* (60%). See photo 5. Other species present include *Sesleria albicans* (F), *Koeleria macrantha* (O), *Carex flacca* (F), *Geranium sanguineum* (O), *Festuca rubra* (O), *Solidago virgaurea* (R), *Plantago lanceolata* (R), *Potentilla erecta* (O), *Lotus corniculatus* (F), *Prunella vulgaris* (R), *Succisa pratensis* (O), *Leucanthemum vulgare* (O), *Viola* sp. (R), *Trifolium repens* (R), *Molina caerulea* (R), *Primula* sp. (R), *Dactylis glomerata* (R), *Linum catharticum* (O), *Thymus praecox* (R), *Campanula rotundifolia* (R), *Euphrasia* sp. (R) and several fruiting/seeding orchids (R). This relevé data is presented in Quadrat 13.

Outside the immediate vicinity of this area *Calluna vulgaris*, *Daucus carota*, *Rhinanthus minor*, *Plantago maritima*, *Carlina vulgaris*, *Rosa pimpinellifolia* and *Pteridium aquilinum* were present. Encroachment by *Pteridium aquilinum* is a feature of these slopes.

**Note 3:**

This is an area of semi-improved/rank grassland with *Avenula pubescens*, *Festuca rubra*, *Filipendula ulmaria*, *Vicia cracca*, *Lathyrus pratensis*, *Trifolium repens*, *Trifolium pratense*, *Centaurea scabiosa*, *Succisa pratensis*, *Centaurea nigra*, *Lotus corniculatus*, *Plantago lanceolata*, *Heracleum sphondylium*, *Ranunculus acris*, *Leucanthemum vulgare*, *Sanguisorba minor*, *Holcus lanatus*, *Dactylis glomerata* and *Rumex acetosa*. The sward was currently ungrazed (approximately 40 - 50cm high).

**Note 4:**

This is an improved field with *Cynosurus cristatus*, *Trifolium repens*, *Plantago lanceolata*, *Holcus lanatus*, *Ranunculus repens*, *Ranunculus acris*, *Rumex obtusifolius*, *Potentilla anserina*, *Cirsium arvense*, *Plantago major*, *Dactylis glomerata* and *Trifolium pratense*.

## Note 5:

This area of species-rich grassland has a heathy element. Species present include *Succisa pratensis*, *Molinia caerulea*, *Euphrasia* sp., *Lotus corniculatus*, *Agrostis capillaris*, *Lathyrus montana*, *Rosa pimpinellifolia*, *Trifolium repens*, *Plantago lanceolata*, *Festuca rubra*, *Pteridium aquilinum*, *Pedicularis sylvatica*, *Vicia cracca*, *Prunella vulgaris*, *Cynosurus cristatus*, *Juncus conglomeratus*, *Briza media*, *Centaurea nigra*, *Potentilla erecta*, *Solidago virgaurea*, *Parnassia palustris*, *Galium verum*, fruiting/seeding orchids, *Plantago maritima*, *Lathyrus pratensis*, *Juncus acutiflorus*, *Rhinanthus minor* and *Sanguisorba minor*. The lower slopes of this field were quite wet.

## Note 6:

The field at the rear of this house is still quite species rich. *Blackstonia perfoliata* was present near rocky outcrops. Other species recorded include *Daucus carota*, *Succisa pratensis*, *Centaurea nigra*, *Carex flacca*, *Plantago lanceolata*, *Trifolium repens*, *Trifolium pratense*, *Lotus corniculatus*, *Briza media* (rare), *Holcus lanatus*, *Agrostis* sp., *Achillea millefolium*, *Potentilla anserina*, *Ranunculus repens*, *Cynosurus cristatus*, *Potentilla erecta*, *Linum catharticum* and *Cerastium fontanum*.

## Note 7:

This is an area of scrub with scattered bushes (1 - 1.5m tall) of *Corylus avellana* (some of which is beginning to spread) and *Crataegus monogyna* with some spreading *Pteridium aquilinum*. Other species recorded include *Rosa pimpinellifolia*, *Campanula rotundifolia*, *Rhinanthus minor*, *Phyllitis scolopendrium* and *Trifolium pratense*.

## Note 8:

This is an improved field with frequent patches of *Juncus effusus*. See photo 37. Other species present include *Agrostis stolonifera*, *Cynosurus cristatus*, *Holcus lanatus* and *Ranunculus repens*.

## Note 9:

The lower slopes of this field have frequent limestone rock and boulders. See photo 38. The areas of calcareous grassland in between these boulders is becoming encroached by *Pteridium aquilinum* but they still retain a good diversity of species. Species present include *Sesleria albicans*, *Carlina vulgaris*, *Briza media*, *Asperula cynanchica*, *Blackstonia perfoliata*, *Solidago virgaurea*, fruiting/seeding orchids, *Teucrium scorodonia*, *Succisa pratensis*, *Lotus corniculatus*, *Euphrasia* sp., *Galium verum*, *Rosa pimpinellifolia*, *Prunella vulgaris*, *Campanula rotundifolia*, *Linum catharticum*, *Antennaria dioica*, *Hieracium pilosella*, *Potentilla erecta*, *Anthyllis vulneraria*, *Carex pulicaris*, and *Carex flacca*. Bracken would cover c.10 - 15% of the slopes and rocks would cover c.40% of the area.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located on a gradually sloped field above the main road along the northern boundary of the site. See photo 1. This field has frequent outcropping limestone rocks and boulders and was recently grazed by cattle and horses. The southern portion of this area is becoming encroached by *Crataegus monogyna*, *Ilex aquifolium* and *Rubus fruticosus* agg. scrub.

Several fruiting/seeding orchids were recorded within the Monitoring Stop, in addition to 9 indicator species and a herb cover of 40% which resulted in a 'Pass' for this Monitoring Stop.

Other species present include *Centaurea nigra* (F), *Achillea millefolium* (R), *Prunella vulgaris* (O), *Potentilla erecta* (O), *Holcus lanatus* (R), *Cynosurus cristatus* (F), *Trifolium repens* (O), *Thymus praecox* (R), *Festuca rubra* (O), *Leucanthemum vulgare* (R), *Trifolium pratense* (O), *Bellis perennis* (O) and *Agrostis capillaris* (R). The relevé data for this Monitoring Stop is presented in Quadrat 1.

This area was closely grazed with some poach marks. There were occasional anthills with *Thymus praecox*. Outside the Monitoring Stop *Dactylis glomerata*, *Plantago lanceolata*, *Calluna vulgaris* (rare), *Cirsium palustre*, *Blackstonia perfoliata*, *Fragaria vesca*, *Hypericum tetrapterum*, *Galium verum*, *Pteridium aquilinum*, *Ilex aquifolium* seedlings, *Senecio jacobaea*, *Rubus fruticosus* agg., *Erica cinerea*, *Taraxacum* agg. and *Solidago virgaurea* were recorded.

### Monitoring Stop 2:

This Monitoring Stop was located west of Monitoring Stop 1 and slightly further up the slope. See photo 2. This area is becoming encroached by scrub with frequent *Pteridium aquilinum*, *Crataegus monogyna* and *Rubus fruticosus* agg. which coupled with a low herb ratio has resulted in a 'Fail' for this Monitoring Stop despite the presence of 9 indicator species.

Additional species recorded within the Monitoring Stop include *Solidago virgaurea* (R), *Pteridium aquilinum* (R), *Centaurea nigra* (O), *Leucanthemum vulgare* (R), *Bellis perennis* (R), *Festuca rubra* (O), *Potentilla erecta* (O), *Trifolium pratense* (R), *Trifolium repens* (O), *Leontodon* sp. (R), *Centaurea erythraea* (R), *Thymus praecox* (O), *Calluna vulgaris* (O), *Plantago maritima* (O), *Succisa pratensis* (O), *Rubus fruticosus* agg. (R), *Achillea millefolium* (R) and *Juncus acutiflorus* (R). The relevé data for this Monitoring Stop is presented in Quadrat 2.



**Monitoring Stop 3:**

The only area of calcareous grassland versus limestone heath in this area is found in a very thin strip at the foot of the slopes of Black Head adjacent to the road. See photo 6. This strip is c. 8 - 10m wide and the Monitoring Stop was conducted here. 10 indicator species were recorded in a herb rich sward (70%) with no negative indicators or scrub encroachment resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Festuca rubra* (F), *Plantago lanceolata* (O), *Plantago maritima* (O), *Prunella vulgaris* (R), *Trifolium repens* (R), *Thymus praecox* (O), *Achillea millefolium* (O), *Pteridium aquilinum* (R), *Succisa pratensis* (R), *Centaurea nigra* (R), *Dactylis glomerata* (R), *Centaurea nigra* (R), *Rhinanthus minor* (R), *Leucanthemum vulgare* (R), *Ranunculus repens* (R), *Euphrasia* sp. (R) and *Trifolium pratense* (R). The relevé data for this Monitoring Stop is presented in Quadrat 3.

Additional species recorded outside the Monitoring Stop included *Senecio jacobaea*, *Solidago virgaurea*, *Primula* sp. and *Campanula rotundifolia*.

**Monitoring Stop 4:**

This Monitoring Stop was located in an improved field which has been reseeded with *Lolium perenne* (F). *Holcus lanatus* (O), *Trifolium repens* (O), *Ranunculus repens* (O), *Cirsium arvense* (O), *Cerastium fontanum* (R), *Rumex crispus* (R) and *Rumex acetosa* (R) were also present. Herb cover was low at 40% and no indicator species were present resulting in a 'Fail' for this Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 4. See photo 9.

Additional species recorded within the Monitoring Stop include *Dactylis glomerata*, *Odontites verna* and *Trifolium pratense*. A house has been constructed within the SAC - also visible on the 2000 aerial photograph. There are remnants of calcareous grassland around here - species present included *Daucus carota*, *Leucanthemum vulgare*, *Blackstonia perfoliata* and *Prunella vulgaris*.

**Monitoring Stop 5:**

This Monitoring Stop was located on the slopes above the improved area where Monitoring Stop 4 was conducted. See photo 7. There is frequent *Pteridium aquilinum* on these slopes (c. 10% of slope) and seven indicator species were present in a sward with 45% herb cover resulting in a 'Fail' for the Monitoring Stop due to the abundance of *Pteridium*.

Additional species present within the Monitoring Stop include *Centaurea erythraea* (R), *Potentilla erecta* (O), *Leucanthemum vulgare* (O), *Succisa pratensis* (O), *Pedicularis sylvatica* (O), *Euphrasia* sp. (R), *Cynosurus cristatus* (R), *Danthonia decumbens* (R), *Plantago lanceolata* (R), *Anagallis tenella* (O), *Festuca rubra* (F), *Prunella vulgaris* (R) and *Pteridium aquilinum* (R). The relevé data for this Monitoring Stop is presented in Quadrat 5.

**Monitoring Stop 6:**

This Monitoring Stop was conducted on the upper section of terraced slopes above the Caher River. Some of these slopes have eroded to cliffs and most show signs of terracing. See photos 10 - 13. There is occasional *Juniperus communis* and *Blackstonia perfoliata* present on these slopes. Herb cover was good at 40% and 7 indicator species and no negatives or scrub were recorded resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Achillea millefolium* (F), *Leucanthemum vulgare* (F), *Plantago lanceolata* (O), *Plantago maritima* (R), *Bellis perennis* (O), *Festuca rubra* (F), *Thymus praecox* (F), *Prunella vulgaris* (O), *Trifolium pratensis* (O), *Trifolium repens* (O), *Succisa pratensis* (F), *Rhinanthus minor* (R) and *Hieracium* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 6.

Additional species recorded outside the Monitoring Stop include *Antennaria dioica*, *Daucus carota*, *Linum catharticum* and *Rosa pimpinellifolia*. There is some *Pteridium aquilinum* on the terraced slopes. This area is grazed by horses and sheep producing a tightly grazed sward.

**Monitoring Stop 7:**

This Monitoring Stop was located on a flatter area above the slopes adjacent to the Caher River in a field with outcropping limestone boulders. See photos 14, 15 and 16. This area was recently grazed. The high herb cover in the sward (60%) and the presence of 11 indicator species and no negative indicators or scrub resulted in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Danthonia decumbens* (R), *Potentilla erecta* (O), *Festuca rubra* (O), *Succisa pratensis* (O), *Leucanthemum vulgare* (O), *Thymus praecox* (O), *Plantago maritima* (O), *Trifolium repens* (R), *Molinia caerulea* (R), *Prunella vulgaris* (O), *Centaurea nigra* (O), *Plantago lanceolata* (R) and *Rhinanthus minor* (R). The relevé data for this Monitoring Stop is presented in Quadrat 7.

*Carlina vulgaris*, *Centaurea scabiosa*, *Solidago virgaurea*, *Primula* sp. and *Thalictrum minus* were recorded outside the Monitoring Stop.

**Monitoring Stop 8:**

This Monitoring Stop was conducted on a plateau above the slope of the Caher River. See photo 17. This area is heavily grazed which has ensured that the herb diversity is good in the sward (40%) and 8 indicator species were recorded resulting in a 'Pass' for the Stop.

Additional species recorded within the Monitoring Stop include *Molinia caerulea* (A), *Prunella vulgaris* (F), *Plantago lanceolata* (O), *Festuca rubra* (F), *Pteridium aquilinum* (R), *Trifolium repens* (R), *Achillea millefolium* (O), *Calluna vulgaris* (R), *Viola* sp. (R), *Danthonia decumbens* (R), *Potentilla erecta* (R) and *Euphrasia* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 8.

There were several fruiting/seeding orchids in the general area of this Monitoring Stop. The slopes above the Caher River below this Monitoring Stop are vegetated with *Molinia caerulea* and *Schoenus nigricans*.

**Monitoring Stop 9:**

This Monitoring Stop was located in a mosaic of calcareous heath, calcareous grassland and small wetter areas dominated by *Juncus* sp. and *Filipendula ulmaria* in an area with frequent outcropping limestone. See photo 25. *Coeloglossum viride* was present in the area but was not recorded within the Monitoring Stop. Herb cover was good at 50%, 8 indicator species were recorded and the level of *Pteridium* was low enough to allow the Monitoring Stop to 'Pass'.

Additional species recorded within the Monitoring Stop include *Achillea millefolium* (O), *Succisa pratensis* (O), *Plantago lanceolata* (F), *Thymus praecox* (O), *Festuca rubra* (O), *Trifolium repens* (R), *Juncus acutiflorus* (R), *Danthonia decumbens* (O), *Lathyrus pratensis* (O), *Agrostis* sp. (R), *Filipendula ulmaria* (R), *Pteridium aquilinum* (R), *Viola* sp. (R), *Primula* sp. (R), *Euphrasia* sp. (R), *Potentilla erecta* (R) and *Calluna vulgaris* (R). The relevé data for this Monitoring Stop is presented in Quadrat 9. Exposed rock accounts for c.5% of the Monitoring Stop.

This area would be more dominated by heath than grassland. Other species recorded outside the Monitoring Stop include *Alchemilla* sp., *Potentilla anserina*, *Solidago virgaurea*, *Dactylis glomerata* and *Cynosurus cristatus*.

**Monitoring Stop 10:**

This Monitoring Stop was located in an area with frequent outcropping limestone bedrock. See photo 32. There are some linear strips of wetter vegetation dominated by *Filipendula ulmaria* between areas of dry calcareous grassland and outcropping limestone bedrock. 7 indicator species were recorded, herb cover was 40%, there were several unidentified orchid seed heads and no negative indicators or encroachment by *Pteridium aquilinum*/scrub resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (F), *Euphrasia* sp. (O), *Trifolium repens* (O), *Plantago lanceolata* (F), *Cynosurus cristatus* (A), *Rhinanthus minor* (R), *Trifolium pratense* (R), *Potentilla erecta* (O), *Achillea millefolium* (O), *Cerastium fontanum* (R), *Festuca rubra* (F), *Prunella vulgaris* (R), *Danthonia decumbens* (R), *Polygala vulgaris* (R), *Lathyrus pratensis* (R) and *Leontodon* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 10.

Other species recorded outside the Monitoring Stop include *Calluna vulgaris*, *Leucanthemum vulgare*, *Dactylis glomerata* and *Geum rivale*. Some of the surrounding fields to the west are becoming encroached.

**Monitoring Stop 11:**

This Monitoring Stop was located in a field with a large area dominated by *Juncus* sp. See photo 36. The upper section of this field adjacent to the road has frequent outcropping limestone boulders with some small bushes of *Crataegus monogyna* and *Corylus avellana*. These fields are all semi-improved and may never have been calcareous grassland. This Monitoring Stop 'Failed' based on a lack of indicator species (only 4 were recorded).

Additional species recorded within the Monitoring Stop include *Ranunculus repens* (R), *Plantago lanceolata* (R), *Cynosurus cristatus* (A), *Trifolium pratense* (R), *Achillea millefolium* (R), *Trifolium repens* (O), *Thymus praecox* (R), *Bellis perennis* (R), *Holcus lanatus* (R), *Agrostis* sp. (R), *Pteridium aquilinum* (R), *Leucanthemum vulgare* (O), *Veronica chamaedrys* (R), *Primula* sp. (R), *Succisa pratensis* (R) and *Festuca rubra* (O). The relevé data for this Monitoring Stop is presented in Quadrat 11. Exposed rock is c.15% of the Monitoring Stop. *Alchemilla* sp. was recorded outside the Monitoring Stop.

**Monitoring Stop 12:**

This Monitoring Stop was conducted on the east slopes of Cappanawalla Hill. See photos 39 to 44. These slopes all have frequent outcropping boulders and rocks and are becoming quite heath dominated in places. 14 indicator species were recorded with no negatives, no encroachment by scrub and herb cover of 40% resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Plantago maritima* (F), *Rhinanthus minor* (R), *Potentilla erecta* (O), *Succisa pratensis* (O), *Euphrasia* sp. (O), *Calluna vulgaris* (R), *Solidago virgaurea* (R), *Plantago lanceolata* (R), *Leucanthemum vulgare* (R), *Thymus praecox* (R), *Danthonia decumbens* (R), *Trifolium repens* (R), *Carex pulicaris* (R), *Hypericum* sp. (R), *Molinia caerulea* (R), *Centaurea nigra* (R) and two fruiting/seeding orchids. The relevé data for this Monitoring Stop is presented in Quadrat 12. Exposed rock accounts for c.10% within the Monitoring Stop (c.30 - 40% on the slopes), heathy elements (*Dryas*/*Molinia*/*Calluna*) account for c.20%. The immediate area surrounding the Monitoring Stop is quite heathy.

## **Moneen Mountain**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	26/09/2006
Willie Crowley	29/09/2006

**Total Site Area (Ha):** 6094.8

**Area of Priority Grassland (N2000) (Ha):** 736.

**Area of Priority Grassland 2006 (Ha)\*:** 600-700

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Clare	51	CL002, CL003, CL005, CL006, CL009, CL010, CL016.

#### **Digital Aerial Photos (Tile Nos.):**

O3681-a, O3681-b, O3681-c, O3681-d, O3682-c, O3738-b, O3738-d, O3739-a, O3739-b, O3739-c, O3739-d, O3740-a, O3796-a, O3796-b, O3796-c, O3796-d, O3797-a, O3797-b, O3797-c, O3797-d, O3854-a, O3854-b, O3854-c, O3854-d, O3855-a, O3855-b, O3855-c, O3855-d, O3911-a, O3911-b, O3911-c, O3911-d, O3912-a, O3912-b, O3912-c, O3912-d, O3968-a, O3968-b, O3968-d, O3969-a, O3969-c

#### **Other Aerial Photographs:**

1994 Set - No. 13 - 095, No. 12 - 232, No. 12 - 212, No. 12 - 173 and No. 13 - 041.

### **SITE DESIGNATIONS**

#### **SAC Site Code:**

000054

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Moneen Mountain is a large, composite site situated in north County Clare. It encompasses a complete range of inland Burren habitats, from open limestone pavement and its associated calcareous grasslands and heaths, to dense Hazel (*Corylus avellana*) scrub and patches of Ash (*Fraxinus excelsior*) woodland. The site extends inland from Muckinish Point and includes all of the higher ground between Ballyvaughan and Bell Harbour in a southerly direction for approximately 20km. The underlying rock type is Carboniferous limestone, which rises into a series of rounded hills, intersected by deep and often steep-sided valleys to the north of the site (max. altitude 307m) before levelling out towards the south. Traces of Galway Granite are found within the site, particularly to the north. Soil cover is shallow and the soil type most abundant for the area is rendzina.

The bulk of the site is made up of limestone pavement, a priority habitat listed on Annex I of the EU Habitats Directive and its associated calcareous grasslands, juniper scrub and heaths.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site only describes the grassland as follows: The bare pavement is interspersed with fine examples of species-rich dry calcareous grassland.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: The habitat plays host to an excellent variety of orchid species along with a diverse range of species typically associated with calcareous grasslands. Common orchid species include *Anacamptis pyramidalis*, *Coeloglossum viride*, *Dactylorhiza fuchsii*, *Dactylorhiza fuchsii* ssp. *okellyi*, *Dactylorhiza maculata*, *Dactylorhiza traunsteineri*, *Gymnadenia conopsea*, *Ophrys apifera*, *Orchis insectifera*, *Platanthera chlorantha* and *Neotinea maculata*. The latter species *N. maculata* has a limited distribution in Ireland being generally associated with the Burren in Co. Clare and rare elsewhere. The presence of *Sesleria albicans* contributes to this diverse and unique community.

#### *Description based on the 2006 Survey :*

The 2006 grassland survey found that the orchid-rich calcareous grassland is restricted to small linear strips between areas of outcropping limestone pavement or in a mosaic with shattered limestone or calcareous heath. No large areas of calcareous grassland were found and the habitat is found within a continuum of other habitats for which the flora of the Burren is famous. The following calcareous indicator species were present - *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Daucus carota*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Sesleria albicans* and less frequently *Antennaria dioica*, *Anthyllis vulneraria*, *Hieracium pilosella* and *Dryas octopetala*. *Gentianella campestris*, *Sanguisorba minor*, *Asperula cynanchica*, *Geranium sanguineum* and *Centaurea scabiosa* were found more rarely. Several fruiting/seed heads of orchids were also recorded but were not identified.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This is a large complex site in which the calcareous grassland forms part of a mosaic with alpine and sub-alpine heath, *Juniperus communis* formations on calcareous heaths of grasslands, limestone pavement and scrub as described by Ivimey-Cook and Proctor (1963).

The site was first designated as an ASI in 1989 and was surveyed during the NHA survey in 1993. The NHA notes relate mainly to boundary information with only general descriptions of the habitats present.

An extensive satellite mapping project of the Burren was conducted by Parr et. al. - 'A GIS baseline survey of habitat types and vegetation composition in the Karst region of the Burren, County Clare' in 2006. This project was funded by the Irish Government under the National Development Plan 2000-2006, Dept. Agriculture Research Stimulus Fund (RSF 117). The GIS data from this project was used in determining the extent of calcareous grassland within the site.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.



## **SITE MONITORING AND MANAGEMENT UNITS**

This is a large complex site in which the calcareous grassland forms part of a mosaic with alpine and sub-alpine heath, *Juniperus communis* formations on calcareous heaths and grasslands, limestone pavement, and scrub. Given the lack of NHA notes within the site boundary, the aerial photographs (OSI 2000 series) of the site were studied and six survey areas that appeared to be predominantly grassland (versus heath/outcropping limestone pavement) were selected for field survey (See Map 1).

Each of the six target areas was visited and twelve Monitoring Stops were conducted in total. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It can be seen from Table 1b that two of the twelve Monitoring Stops which were visited were not included in the assessment of Structures and Functions. These two Stops were seen to be more representative of a loss in habitat extent (one of the fields had been improved recently) and therefore the results of these Monitoring Stops are not included in the assessment of Structures and Functions.

Six of the ten Monitoring Stops which were assessed for the condition of the grassland, failed the assessment process. This resulted in an overall 'Fail' for the Structures and Functions of the site. Monitoring Stops typically failed due to a lack of indicator species (Monitoring Stop 12) or encroachment by scrub/*Pteridium aquilinum* (Monitoring Stops 5, 6 and 11).

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	11
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	6
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 1 of 6
Stop 02	2	Pass	Structures and Functions	Sheet 1 of 6
Stop 03	3	Pass	Structures and Functions	Sheet 1 of 6
Stop 04	4	Fail	Extent	Sheet 1 of 6
Stop 05	5	Fail	Structures and Functions	Sheet 2 of 6
Stop 06	5	Fail	Structures and Functions	Sheet 2 of 6
Stop 07	6	Pass	Structures and Functions	Sheet 3 of 6
Stop 08	7	Pass	Structures and Functions	Sheet 4 of 6
Stop 09	8	Pass	Structures and Functions	Sheet 4 of 6
Stop 10	9	Fail	Extent	Sheet 5 of 6
Stop 11	10	Fail	Structures and Functions	Sheet 5 of 6
Stop 12	11	Fail	Structures and Functions	Sheet 6 of 6

Based on the geographical distribution of these target areas (as depicted on the overview map (Map 1) and in detail on Map 2 (sheets 1 - 6)), the current management practices and current field boundaries the areas of calcareous grassland visited were divided into eleven management units.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

One of the areas surveyed (Monitoring Stop 1 and notes 3 and 4) showed signs of agricultural improvement (120) and reseeded with *Lolium perenne*. Other areas (Monitoring Stops 1, 4, 5, 6, 7, 8 and 11) are becoming encroached by *Pteridium aquilinum* (954) due to a lack of grazing (149) and the abandonment of the traditional grazing practices of the Burren known as winterages (141). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
103	Cultivation: agricultural improvement	-1	B
120	Fertilisation	-1	B
141	Grazing: abandonment of pastoral systems	-1	B
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The key threats to the site arise from a lack of grazing which has resulted in the spread of *Pteridium aquilinum* and some encroachment by scrub (see Monitoring Stops 1, 4, 5, 6, 7, 8 and 11). A suitable grazing regime is the key to the management of calcareous grassland. In the absence of grazing, calcareous grassland becomes rank and loses its species diversity.

The well known threat to the Burren flora of encroachment by *Corylus avellana* was not a major issue within the areas we surveyed but it is likely to be affecting calcareous grassland within other parts of the site. The removal of many of the large goat herds within the site (local farmers pers. comm.) which occurred within the last two years is also likely to have a negative impact on the flora of the site. The wild goat herds form one of the key browsers within the site and curtail the spread of scrub. Control of *Pteridium aquilinum* and removal of scrub require active management on the part of the landowner and will need to be addressed.

Lack of grazing may also result in an increase in heathy elements within the grassland (see note 1). A low level of agricultural improvement within the site was noted and this will also need to be addressed (Monitoring Stop 1 and notes 3 and 4).

## CONSERVATION STATUS

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and is not accurately mapped from aerial photographs. This is because of its patchy distribution as it forms a mosaic with, and is not easily distinguishable from calcareous heath and limestone pavement.

However, in order to have some estimate as to the extent of the habitat, the following can be considered. During this survey six relatively small survey areas (40ha) were chosen for site visits in order to:

- a) Establish whether calcareous grassland was present and
- b) Evaluate the condition (structure and function) of the grassland where present.

These survey areas were chosen, after analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2, as they were thought to be the most likely, within the SAC, to contain the habitat type 6210. Although elements of habitat 6210 were recorded in every survey area (using information collected during the ground survey and aerial photographs in ArcView GIS 3.2), the extent varied somewhat (2ha to 14ha). Overall the amount of habitat 6210 present within the survey areas was estimated to be 49ha (or 20% of the survey areas).

This 49ha can be considered to be the minimum amount of habitat 6210 that is present within the SAC. However, from analysis of the aerial photographs and considering that all of the six survey areas surveyed contained the habitat 6210, it can be reasoned that there are other areas of the habitat within this SAC and that the actual extent of the habitat is likely to be much greater than the 49ha recorded above.

In order to estimate the maximum possible extent of the habitat, it can be imagined that the extent of the habitat within the survey areas is a true reflection of the extent of the habitat within the whole SAC. However, it should be remembered that this is not strictly correct as the survey areas were chosen specifically because they were considered likely to contain habitat 6210. Estimating the maximum possible extent in this manner results in a figure of 1219ha (20% of the SAC, 6095ha).

Thus it can be estimated that the extent of habitat 6210 at Moneen Mountain SAC 000054 is in the range of 49-1219ha (or 1-20% of the SAC) and is more likely to be somewhere in the middle of that range (i.e. 10-12% or ca. 600-750ha).

The Natura 2000 explanatory notes estimate that 736ha of the habitat occurs within Moneen Mountain SAC, which is within the range estimated during this survey (600-750ha). Thus, there would appear to be little change in the extent of the habitat in the last ten years. However, a small number of areas inspected during the current survey displayed signs of agricultural improvement. For example, *Lolium perenne* was recorded in one of the Monitoring Stops (Stop 4) while another area showed signs of recent improvement (Monitoring Stop 10). This was also reflected in two additional areas (notes 3 and 4).

Thus, due to the perceived loss in some habitat areas as a result of reseeded and fertilising, the Extent of habitat 6210 within the site is described as Unfavourable - inadequate.

***Structure and Functions:***

Six of the ten Monitoring Stops which were attributed to Structures and Functions failed, resulting in an overall failure for the Structures and Functions of the site. Monitoring Stops typically failed due to a lack of indicator species (Monitoring Stop 12) or encroachment by scrub/*Pteridium aquilinum* (Monitoring Stops 5, 6 and 11). Due to the significant failure of the assessment, the Structures and Functions of the site are thus described as Unfavourable - bad.

***Future Prospects:***

The Future Prospects for the calcareous grassland within the site will depend on management agreements between NPWS and local landowners particularly in relation to grazing. The recently funded Burren LIFE project (which is ongoing in 2006) is resulting in useful dialogues and exchanges between ecologists and local farmers and is well received within the local community. This project is resulting in active management of habitats on the ground.

However, given the lack of NPWS resources, the increase in part-time farming in Ireland, the move away from traditional farming practices such as 'winterages' in the Burren and the known encroachment of many areas by *Corylus avellana* scrub, the Future Prospects for the site are described as Unfavourable - inadequate.

***Conservation Assessment:***

Overall, the areas of calcareous grassland surveyed within the site were in poor condition. Although a good diversity of calcareous indicator species were recorded, on a Stop by Stop basis, the main threats to the habitat arise from a lack of grazing which is resulting in encroachment by *Pteridium aquilinum*.

The Extent of the calcareous grassland within the site is typically restricted to small linear strips of grassland between areas of exposed limestone pavement, shattered pavement, and areas of calcareous heath and scrub, forming a continuum of habitats in a rich mosaic.

If the traditional grazing practices of 'winterages' are maintained in the Burren, the Future Prospects for the site are good. However the spread of *Corylus avellana* continues to be a difficult and costly management issue. If farmers are increasingly farming on a part time basis, this traditional practice of winterage is unlikely to continue. Given that the majority of the site is in private ownership the future of its management cannot be assured.

The overall Conservation Status Assessment for the site is thus described as Unfavourable - bad as the Extent and Future Prospects of the site are described as Unfavourable - inadequate and the Structures and Functions are described as Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
	Extent		

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

Note 1:

This note was located in an adjoining field to the north of Monitoring Stop 2. The slopes of this field near to the boundary wall are dominated by *Calluna vulgaris* with frequent *Carlina vulgaris* but further north there is a more open grassland dominated area with less *Calluna vulgaris* but *Dryas octopetala* is beginning to dominate here. Species present include *Briza media* (F), *Succisa pratensis* (O), *Sesleria albicans* (O), fruiting/seeding orchids, *Solidago virgaurea* (O), *Carex flacca* (O), *Lotus corniculatus* (R), *Calluna vulgaris* (R), *Molinia caerulea* (O), *Prunella vulgaris* (O), *Anthyllis vulneraria* (R), *Antennaria dioica* (R), *Hieracium pilosella* (R), *Hypericum* sp. (R), *Campanula rotundifolia* (R), *Linum catharticum* (R), *Viola* sp. (R), *Trifolium pratense* (R) and *Dryas octopetala* (F). This relevé data is presented in Quadrat 11. This area had been previously grazed which would have maintained the grassland but now appears to be reverting to heath in the absence of grazing. There are frequent outcropping limestone boulders/rocks. *Carlina vulgaris* was also recorded.

Note 2:

This is an area with revegetated frequently outcropping limestone bedrock. This area is too wet for dry calcareous grassland. *Filipendula ulmaria* and *Juncus* sp. is frequent between outcrops which are vegetated with *Succisa pratensis*, *Trifolium pratense*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Euphrasia* sp., *Potentilla erecta*, *Trifolium repens*, *Leucanthemum vulgare*, *Festuca rubra*, *Lathyrus pratensis*, *Plantago lanceolata*, *Campanula rotundifolia*, fruiting/seeding orchids, *Potentilla anserina*, *Carex flacca*, *Agrostis* sp., *Polygala* sp., *Leucanthemum vulgare*, *Juncus conglomeratus* and *Carex* sp. *Alchemilla* sp. was also present in this field as was *Achillea millefolium*, *Pteridium aquilinum*, *Rumex acetosa* and *Primula* sp. Several large anthills were present.

Note 3:

This is an improved field with frequent patches of *Urtica dioica* and *Rumex* spp.

Note 4:

There has been recent disturbance to this field which has been reseeded with *Lolium perenne* and *Trifolium repens*. Other species present include *Ranunculus repens*, *Ranunculus acris*, frequent *Cerastium* sp., *Cirsium arvense* and *Rumex* spp.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located in a field which is currently outside the SAC boundary and it is proposed that this field is included within the SAC. This field grades from gradually sloped slopes to steep slopes with some terracing on the upper slopes which then meet an area of shattered limestone. Nine calcareous indicator species were present in a sward of 40% herb cover. Although there was some *Pteridium aquilinum* recorded within the Monitoring Stop this was <5% resulting in a 'Pass' for the Monitoring Stop.

Other species recorded within the Monitoring Stop include *Succisa pratensis* (F), *Potentilla erecta* (O), *Calluna vulgaris* (F), *Solidago virgaurea* (R), *Carex* sp. (O), *Pedicularis sylvatica* (R), *Pteridium aquilinum* (R), *Lathyrus montanus* (R), *Viola* sp. (R), *Thymus praecox* (R), *Festuca rubra* (O), *Trifolium repens* (R), *Molinia caerulea* (R), *Nardus stricta* (R), *Cynosurus cristatus* (O), *Trifolium pratense* (R), *Plantago lanceolata* (R) and *Leucanthemum vulgare* (R). The relevé data for this Monitoring Stop is presented in Quadrat 1.

This was a tightly grazed sward with good moss cover. The current grazing regime seems appropriate. On some of the steeper slopes there is *Dryas octopetala*, an increased abundance of *Sesleria albicans*, *Erica cinerea* and *Parnassia palustris*.

### Monitoring Stop 2:

This Monitoring Stop was located in an ungrazed field adjacent to Monitoring Stop 1. Fourteen calcareous indicator species and several fruiting/seeding orchids were present in a sward of 40% herb cover. There was no negative indicator species or encroachment by scrub resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Molinia caerulea* (F), *Solidago virgaurea* (F), *Plantago maritima* (O), *Succisa pratensis* (O), *Centaurea nigra* (R), *Potentilla erecta* (O), *Trifolium repens* (R), *Calluna vulgaris* (O), fruiting/seeding orchids, *Thymus praecox* (R), *Festuca rubra* (O), *Prunella vulgaris* (R), *Parnassia palustris* (R), *Leucanthemum vulgare* (O), *Achillea millefolium* (R) and *Pimpinella saxifraga* (R). This field was currently ungrazed but there were some light poach marks. Exposed rock forms c.5% of the relevé. The relevé data for this Monitoring Stop is presented in Quadrat 2.

Near the boundary of this field *Erica cinerea*, *Lathyrus pratensis*, *Geranium sanguineum* and *Pteridium aquilinum* are present.



**Monitoring Stop 3:**

This Monitoring Stop was located in a field adjacent to N1 with occasional outcropping rocks and boulders. This field appears more heavily grazed than that in N1. Eleven calcareous indicator species were present in a sward of 50% herb cover. There was no negative indicator species or encroachment by scrub resulting in a 'Pass' for the Monitoring Stop.

Additional species present within the Monitoring Stop include *Thymus praecox* (R), *Succisa pratensis* (O), *Solidago virgaurea* (R), *Plantago maritima* (O), *Achillea millefolium* (R), *Trifolium pratense* (R), *Prunella vulgaris* (R), *Trifolium repens* (R), *Cynosurus cristatus* (R), *Dactylis glomerata* (R), *Anthoxanthum odoratum* (R), *Polygala vulgaris* (R), *Calluna vulgaris* (R), *Potentilla erecta* (R), *Leucanthemum vulgare* (R), *Molinia caerulea* (O) and *Rosa pimpinellifolia* (R). The relevé data for this Monitoring Stop is presented in Quadrat 3.

Exposed rock forms c.15% in the general area of the Monitoring Stop and there were several orchid seed heads present. *Carlina vulgaris* and *Teucrium scorodonia* were present on the lower slopes.

**Monitoring Stop 4:**

This Monitoring Stop was located on slightly deeper soils at the foot of the slope which show some signs of improvement. Only one calcareous indicator species was present in a sward of 40% herb cover. The herb:grass ratio of 40% was based mainly on the abundance of *Trifolium* spp. The abundance of *Lolium perenne* recorded resulted in a 'Fail' for the Monitoring Stop. This area was currently ungrazed but cattle here have access to this area from the upper slopes.

Additional species present include *Lolium perenne* (O), *Dactylis glomerata* (F), *Holcus lanatus* (O), *Potentilla anserina* (O), *Trifolium repens* (F), *Trifolium pratense* (O), *Cerastium* sp. (R), *Centaurea nigra* (R) and *Pteridium aquilinum* (R). The relevé data for this Monitoring Stop is presented in Quadrat 4.

**Monitoring Stop 5:**

This Monitoring Stop was located in a flattish area below an area with more frequent outcropping limestone boulders. The entire area is becoming badly encroached by *Pteridium aquilinum*. There were frequent outcropping rocks underfoot in this area but they had all been mostly vegetated over. Exposed rock would account for 2 - 5% of the Monitoring Stop. Eight calcareous indicator species and an unidentified orchid species were present in a sward of 60% herb cover. There was no negative indicator species but encroachment by *Pteridium aquilinum* (15%) resulted in a 'Fail' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Rosa pimpinellifolia* (O), *Pteridium aquilinum* (F), *Teucrium scorodonia* (R), *Potentilla erecta* (O), *Danthonia decumbens* (R), *Succisa pratensis* (F), *Solidago virgaurea* (O), *Viola* sp. (O), *Calluna vulgaris* (R), *Thymus praecox* (R), *Plantago lanceolata* (O), *Centaurea nigra* (O), *Anthoxanthum odoratum* (R), *Rhinanthus minor* (R) and *Hypericum* sp. (O). The relevé data for this Monitoring Stop is presented in Quadrat 5.

**Monitoring Stop 6:**

This Monitoring Stop was located on the other side of the track from Monitoring Stop 5 in an area which has more outcropping rock and consequently less vegetation. Eleven calcareous indicator species and an unidentified orchid species were present in a sward of 40% herb cover. There was no negative indicator species but encroachment by *Pteridium aquilinum* (10%) resulted in a 'Fail' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Pteridium aquilinum* (O), *Teucrium scorodonia* (O), *Plantago lanceolata* (R), *Solidago virgaurea* (R), *Succisa pratensis* (O), *Hypochoeris radicata* (R), *Potentilla erecta* (O), *Hypericum* sp. (R), *Rosa pimpinellifolia* (R), *Viola* sp. (R), *Pimpinella saxifraga* (R) and *Cynosurus cristatus* (R). The relevé data for this Monitoring Stop is presented in Quadrat 6.

**Monitoring Stop 7:**

This Monitoring Stop was conducted on a flat plateau adjacent to the road. Ten calcareous indicator species were present in a sward of 50% herb cover. There was no negative indicator species or encroachment by scrub resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare*, *Molinia caerulea*, *Succisa pratensis*, *Centaurea nigra*, *Trifolium repens*, *Trifolium pratense*, *Lathyrus montanus*, *Leucanthemum vulgare*, *Festuca rubra*, *Euphrasia* sp., *Thymus praecox*, *Calluna vulgaris*, *Plantago lanceolata*, *Potentilla erecta*, *Rhinanthus minor*, *Pteridium aquilinum*, *Rosa pimpinellifolia*, *Cynosurus cristatus*, *Dactylis glomerata* and *Solidago virgaurea*.

**Monitoring Stop 8:**

This Monitoring Stop was conducted in an undulating area where the underlying limestone bedrock/outcrops are covered by vegetation. This is typically a limestone heath area with c.40% cover of *Calluna vulgaris* in the general area. Seven calcareous indicator species were present in a sward of 50% herb cover. There was no negative indicator species and encroachment by scrub was <5% resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Danthonia decumbens* (R), *Potentilla erecta* (F), *Succisa pratensis* (F), *Calluna vulgaris* (F), *Filipendula ulmaria* (O), *Plantago lanceolata* (R), *Euphrasia* sp. (R), *Agrostis canina* (O), *Achillea millefolium* (R), *Centaurea nigra* (R), *Rosa pimpinellifolia* (R), *Trifolium pratense* (R), *Festuca rubra* (O), *Lathyrus montanus* (O), *Lathyrus pratensis* (O), *Ranunculus acris* (R) and *Rumex acetosa* (R). *Centaurea scabiosa* and *Geranium sanguineum* were present outside the Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 7.

**Monitoring Stop 9:**

This Monitoring Stop was conducted in a flat area immediately north of a circular heap of collected limestone rock. The soil is shallow here but there is <5% exposed rock in the Monitoring Stop (c.5 - 10% in a 5 X 5 quadrat, but 10 - 20% in the general field) with occasional troughs/grykes dominated by *Filipendula ulmaria*. Nine calcareous indicator species were present in a sward of 60% herb cover. There was no negative indicator species or encroachment by scrub resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Festuca rubra* (F), *Leucanthemum vulgare* (F), *Plantago lanceolata* (O), *Succisa pratensis* (F), *Lathyrus montanus* (O), *Centaurea nigra* (R), *Cynosurus cristatus* (O), *Achillea millefolium* (R), *Trifolium pratense* (O), *Euphrasia* sp. (R), *Potentilla erecta* (O), *Solidago virgaurea* (R) and *Dactylis glomerata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 8.

**Monitoring Stop 10:**

This Monitoring Stop was located in a field with regular outcropping limestone boulders and small strips of sparsely vegetated limestone pavement. This field has many disturbed areas and lots of bare ground which is becoming recolonised by species such as *Anagallis arvensis*, *Ranunculus repens*, *Cerastium* sp., *Plantago lanceolata*, etc. This area has been fertilised/spread with slurry. No indicator species were recorded resulting in a 'Fail' for the Monitoring Stop.

The outcropping rock adjacent to the Monitoring Stop had frequent *Galium verum*, *Lotus corniculatus*, *Thymus praecox* and *Geranium molle*.

Species recorded within the Monitoring Stop include *Cirsium arvense* (O), *Holcus lanatus* (F), *Ranunculus repens* (F), *Cynosurus cristatus* (F), *Plantago lanceolata* (O), *Taraxacum* agg. (O), *Rumex acetosa* (O), *Ranunculus acris* (R), *Bellis perennis* (O), *Filipendula ulmaria* (R), *Achillea millefolium* (R), *Prunella vulgaris* (R), *Cirsium vulgare* (R), *Potentilla anserina* (R), *Cerastium* sp. (R), *Trifolium repens* (O) and *Senecio vulgaris* (R). Outside the Monitoring Stop *Pteridium aquilinum* is frequent and *Rumex obtusifolius* and *Leucanthemum vulgare* are also present.

**Monitoring Stop 11:**

This Monitoring Stop was conducted in an area of frequent outcropping limestone boulders/pavement which has become revegetated. Nine calcareous indicator species were present in a sward of 70% herb cover. There was no negative indicator species but encroachment by *Pteridium aquilinum* (10%) resulted in a 'Fail' for the Monitoring Stop.

Additional species recorded include *Succisa pratensis* (O), *Leucanthemum vulgare* (F), *Pteridium aquilinum* (R), *Trifolium repens* (F), *Plantago lanceolata* (O), *Prunella vulgaris* (R), *Trifolium pratense* (R), *Primula* sp. (R), *Cynosurus cristatus* (R), *Achillea millefolium* (F), *Festuca rubra* (F), *Polygala* sp. (R), *Euphrasia* sp. (R), *Centaurea nigra* (R) and *Ranunculus repens* (R). The relevé data for this Monitoring Stop is presented in Quadrat 9. This area is currently ungrazed but some droppings of *Lepus timidus hibernicus* were noted.

**Monitoring Stop 12:**

This Monitoring Stop was conducted in a flat area with some encroachment by *Pteridium aquilinum*. This area is currently ungrazed. Six calcareous indicator species were present in a sward of 60% herb cover. There was no negative indicator species or encroachment by scrub but the lack of indicator species resulted in a 'Fail' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (F), *Euphrasia* sp. (O), *Holcus lanatus* (O), *Succisa pratensis* (O), *Centaurea nigra* (R), *Trifolium pratense* (F), *Cerastium fontanum* (R), *Festuca rubra* (F), *Cynosurus cristatus* (F), *Achillea millefolium* (R), *Plantago lanceolata* (O) and *Trifolium repens* (R). Exposed rock accounts for c.5% of the Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 10.

Other species recorded outside the Monitoring Stop include *Pteridium aquilinum*, frequent *Heracleum sphondylium*, *Rosa pimpinellifolia*, *Ranunculus repens* and *Prunella vulgaris*.

**St. John's Point****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	16/08/2006
Willie Crowley	17/08/2006

**Total Site Area (Ha):** 809.54

**Area of Priority Grassland (N2000) (Ha):** 82.5.

**Area of Priority Grassland 2006 (Ha)\*:** 14.

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Donegal	10	DG097, DG098.

**Digital Aerial Photos (Tile Nos.):**

O0629-b, O0607-c, O0607-d, O0608-b, O0608-c, O0608-d.

**Other Aerial Photographs:**

1994 Set: No. 12 - 120, No. 6092.

**SITE DESIGNATIONS****SAC Site Code:**

000191

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

St. John's Point is a 10km-long, narrow peninsula running south-west from Dunkineely into Donegal Bay. The site covers the most southerly 4 km of the peninsula and includes some of the surrounding marine waters. The underlying geology is limestone. Tournaisian Basal Clastics form the majority of the underlying rocks while Calp limestone of the Visean era outcrop at the south-western end of the site.

The site is a candidate SAC selected for orchid-rich grassland and limestone pavement, both priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for other habitats listed on Annex I of the directive - Molinia meadow, alkaline fen, marine caves, reefs and large shallow inlets and bays.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site described the calcareous grassland as follows: The grassland on the Calp limestone occurs on an undulating topography of low ridges with outcropping rocks, and 'V' shaped valleys with peaty formations. The exposed limestone forms pavement where some unusual plants are found including Bloody Cranesbill (*Geranium sanguineum*), Northern Bedstraw (*Galium boreale*), Stone Bramble (*Rubus saxatilis*), Blue Moor-grass (*Sesleria albicans*) and English Hawkweed (*Hieracium anglicum*). More abundant plants on the thin soils and rocky clefts include Mountain Everlasting (*Antennaria dioica*), Broad-leaved Marsh Orchid (*Dactylorhiza majalis*), Burnet Rose (*Rosa pimpinellifolia*), Black Knapweed (*Centaurea nigra*) and Heath Spotted Orchid (*Dactylorhiza maculata*). On the steep slopes of the valley side, Blackthorn (*Prunus spinosa*), Bramble (*Rubus fruticosus*) and Red Fescue (*Festuca rubra*) are abundant.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This is a relatively large area of this habitat. It is undisturbed and supports a diversity of vegetation communities where the habitat grades into limestone pavement, coastal heath and wet calcareous marsh/fen. The grassland is species-rich and contains several uncommon plant species associated with the limestone pavement on the site. A variety of orchid species occur in this habitat, e.g. *Orchis mascula*, *Gymnadenia conopsea*, *Dactylorhiza majalis*, *Platanthera chlorantha*.

#### *Description based on the 2006 Survey :*

The 2006 survey found that the orchid rich calcareous grassland within the site was characterised by the presence of *Carex flacca*, *Lotus corniculatus*, *Linum catharticum*, *Lotus corniculatus*, *Sesleria albicans*, *Campanula rotundifolia*, and *Galium verum* with more rarely *Antennaria dioica*, *Hieracium pilosella* and *Anthyllis vulneraria* which tended to be found on the thinner soils within the site. Other species encountered include *Gentianella campestris*, *Daucus carota*, *Geranium sanguineum* and *Koeleria macrantha*. *Briza media* was only found in one location within the site. There were several areas with good populations of fruiting/seeding orchid heads which made species identification difficult.

The MPSU management plan habitat map indicates that the bulk of the peninsula is dominated by orchid rich calcareous grassland however the 2006 survey found that the overall area of this habitat is likely to have been overestimated as this habitat type was restricted to thinner soils near outcropping limestone within the site and on the southern slopes of the seaward side of the peninsula again near outcropping limestone. The bulk of grassland within the site is a more neutral grassland dominated by *Succisa pratensis*, *Centaurea nigra*, and *Cynosurus cristatus*.



## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the NHA Survey in 1993. A MPSU Conservation Plan is available for the site.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

The NHA notes and the MPSU management plan for this site indicated that the orchid-rich calcareous grassland was present on the peninsula tip and hence this area was visited. Twelve Monitoring Stops were conducted within the site and their locations are depicted on Map 2 (sheet 1). A summary of the results of the assessments undertaken at these Stops is presented in Appendix II.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that three of the Stops were not included in the assessment of Structures and Functions. On analysis of the field data, these Stops were deemed not to have been 6210 habitat. These Stops occurred either in areas of deeper soil (which supported a more neutral grassland), in an exposed area, or in an area which showed some slight agricultural improvement. As it is believed that these areas may never have been orchid-rich calcareous grassland when the site was first designated, they were not included in the Structures and Functions assessment of the site.

Of the remaining nine Monitoring Stops included in the assessment of Structures and Functions, all nine were seen to pass. This results in an overall 'pass' for the Structures and Functions of the site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

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<b>Number of Management Units:</b>	1
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	9
<b>Result of Assessment:</b>	Pass

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Not used in assessment	Map 2
Stop 02	1	Pass	Structures and Functions	Map 2
Stop 03	1	Pass	Structures and Functions	Map 2
Stop 04	1	Fail	Not used in assessment	Map 2
Stop 05	1	Pass	Structures and Functions	Map 2
Stop 06	1	Pass	Structures and Functions	Map 2
Stop 07	1	Fail	Not used in assessment	Map 2
Stop 08	1	Pass	Structures and Functions	Map 2
Stop 09	1	Pass	Structures and Functions	Map 2
Stop 10	1	Pass	Structures and Functions	Map 2
Stop 11	1	Pass	Structures and Functions	Map 2
Stop 12	1	Pass	Structures and Functions	Map 2

This site was treated as a single management unit as there are no fences within the peninsula and cattle are free to wander and graze throughout.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Overall this site is in good condition. The main threats to it arise from activities such as off-road driving by four wheel drive vehicles (629) as was witnessed during the site visit. Recent damage has also been caused by the ESB in replacing electricity poles (511). The area is also popular with scuba-divers (621) and walkers/day trippers (622).

The current grazing regime would appear to be suitable for the management of the grassland and there is very little development of scrub along the peninsula. There may have been some light reseeded of some areas within the peninsula (120) This is indicated by the presence of *Lolium perenne*. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
511	Energy transport: electricity lines	-1	C
120	Fertilisation	-1	C
621	Outdoor sports & leisure activities: nautical sports	0	C
629	Outdoor sports & leisure activities: other outdoor sports & leisure activities	0	B
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehi	0	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The current level of vehicular access to the grasslands and other habitats is low and does not appear to be of major concern at present. However, should this situation change, this will need addressing. The current agricultural management appears suitable although there may have been some light reseeded of some areas within the peninsula. This is indicated by the presence of *Lolium perenne*. This practice does not appear either to have been extensive or to have been conducted in recent times.

## **CONSERVATION STATUS**

### ***Extent:***

The Extent of orchid-rich calcareous grassland within the site may appear to have been reduced in its extent when compared to the MPSU habitat map. However this is not likely to be a result of agricultural improvements but it is seen to be more a result of the increased fieldwork undertaken during the current survey where mapping differentiated between neutral and calcareous grassland.

The orchid-rich calcareous grassland is restricted to the thinner soils and the immediate vicinity of outcropping limestone within the site. The remaining areas of grassland are on deeper soils and are more neutral yet still species-rich (See notes 3, 5, 6 and 12 and Monitoring Stop 7). Areas of calcareous heath (notes 1, 7, 8, 9, 10 and 12) and some small areas with *Lolium perenne* (notes 2 and 5 and Monitoring Stop 1) were recorded. Overall the Extent of the habitat is described as Favourable.

### ***Structure and Functions:***

During the initial monitoring process, three of the twelve Monitoring Stops failed within the site. Monitoring Stop 1 which was conducted in an area of more neutral grassland failed due to a lack of indicator species and there was some *Lolium perenne* present. Monitoring Stop 4 was conducted in an exposed area of the headland below the lighthouse and also failed as a result of lack of indicator species. Monitoring Stop 7 was conducted in an area of more neutral type grassland and also failed on the basis of number of indicator species. It is unlikely (given that two of these Monitoring Stops were conducted in a more neutral grassland on deeper soils and that the other one was conducted in an exposed area of the headland) that these areas ever contained species-rich calcareous grassland. Therefore the results of these three Monitoring Stops were not included when assessing the Structures and Functions of the site.

Nine of the other nine Monitoring Stops 'passed' resulting in a 'pass' for the site. The Structures and Functions of the calcareous grassland within the site is thus described as Favourable.

### ***Future Prospects:***

The Future Prospects for this site are good as the current grazing regime seems appropriate and there is little evidence of agricultural improvement or encroachment by scrub or *Pteridium aquilinum* within the site. However, the public access to the site for recreational activities does pose a potential threat, given the open nature of the site and the increased ownership of four wheel drive vehicles in Ireland. Impacts at the moment are minor but need to be monitored.

Given the current absence of impacting activities, in conjunction with the Favourable results for the assessment of Extent and Structures and Functions, the Future Prospects for the site are also described as Favourable.

### ***Conservation Assessment:***

Although the condition of the habitats within the site seems unlikely to have significantly

changed since it was designated, there is some small evidence of agricultural improvement in the presence of *Lolium perenne* within the sward. These areas which have been affected by light improvement tended to be the areas of more neutral grassland on deeper soils (rather than the areas of calcareous grassland on thinner soils). The site was thus described as Favourable for the Extent of calcareous grassland within the site.

Similarly, although three of the Monitoring Stops failed these Stops may never have contained species rich calcareous grassland when designated and thus only 9 of the 12 Monitoring Stops were used in assessing the Structures and Functions for the Site which is described as Favourable.

The Future Prospects are described as favourable as the current agricultural regime seems appropriate and there are no management issues that need immediate action. The public access to the site for recreational activities does pose a potential threat given the open nature of the site and the increased ownership of four wheel drives in Ireland. Damaging activities such as off road driving would reduce the condition of the grassland within the site but at present the Future Prospects are described as Favourable.

The overall Conservation Status Assessment for the site is thus described as Favourable (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Favourable</i>
Future Prospects			
Structure and Function			
Extent			

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

Note 1:

Area of exposed limestone with *Erica cinerea*, *Calluna vulgaris*, *Potentilla erecta*, *Euphrasia* sp., *Galium verum*, *Rosa pimpinellifolia*, *Centaurea nigra* and *Succisa pratensis*. See photo 3.

The area between this and monitoring stop 2 is varied in quality and is a more neutral type of grassland similar to that found in monitoring stop 1. The calcareous grassland in this area is restricted to the thin soils near the outcrops of limestone.

Note 2:

The sward here is dominated by *Lolium perenne* and *Trifolium repens* with occasional *Senecio vulgaris*, *Trifolium pratense* and *Cirsium vulgare*. Below the lighthouse the sward has *Potentilla anserina*, *Hypochoeris radicata*, *Ranunculus repens* and *Plantago major*.

Note 3:

This is a small area of outcropping limestone rocks and neutral to calcareous grassland north of the lighthouse. See photo 9.

The dominant species are *Succisa pratensis*, *Centaurea nigra*, *Lotus corniculatus*, *Prunella vulgaris* and *Cynosurus cristatus*. Other species present include *Euphrasia* sp., *Campanula rotundifolia*, *Trifolium pratense*, *Potentilla erecta*, *Galium verum*, *Daucus carota*, occasional *Lolium perenne*, *Carex flacca*, *Thymus praecox*, *Hieracium pilosella*, *Centaureum erythraea*, *Sesleria albicans*, *Koeleria macrantha* and *Festuca rubra*. Again the calcareous elements are restricted to the thinner soil areas.

On deeper soils surrounding these outcrops *Cirsium vulgare* and *Senecio jacobaea* are present.

North of this area there was frequent *Rosa pimpinellifolia*, *Linum catharticum*, *Daucus carota* and *Plantago maritima* on thin soils.

## Note 4:

This note is located above the sea cliffs north of the lighthouse. The sward here is closely grazed. See photos 10 and 11.

Species present include *Carex flacca* (A), *Armeria maritima* (O), *Festuca rubra* (F), *Plantago maritima* (O), *Anthyllis vulneraria* (F), *Succisa pratensis* (F), *Centaurea nigra* (O), *Potentilla erecta* (R), *Linum catharticum* (O), *Trifolium repens* (O), *Prunella vulgaris* (O), *Centaureum erythraea* (R), *Sesleria albicans* (R), *Hypochoeris radicata* (R), *Lotus corniculatus* (O) and *Hieracium pilosella* (O). This relevé data is presented in Quadrat 13.

There is occasional outcropping limestone in this area. *Daucus carota* was recorded outside the quadrat and *Plantago coronopus* was present in thin ground closer to the cliff edge.

## Note 5:

This area is a hollow next to the cliff surrounded by areas with outcropping limestone. See photo 13. The sward is dominated *Lolium perenne* (F), *Potentilla anserina* (F), *Plantago lanceolata* (F), *Trifolium repens* (O), *Plantago media* (O), *Bellis perennis* (R), *Plantago maritima* (R), *Agrostis stolonifera* (A) and *Hypochoeris radicata* (F). This relevé data is presented in Quadrat 14.

This area is currently grazed by rabbits and cattle. Other species present outside the quadrat include *Ranunculus repens*, *Centaurea nigra*, *Festuca rubra*, *Prunella vulgaris* and *Succisa pratensis*.

The slopes of this area are more herb and species rich with *Euphrasia* sp., *Carex flacca*, *Potentilla erecta*, *Galium verum*, *Plantago maritima*, *Centaureum erythraea*, *Lotus corniculatus*, *Anthyllis vulneraria*, *Armeria maritima* and *Polygala* sp.

## Note 6:

This is an area of neutral grassland on deeper soils with *Centaurea nigra* (D), *Succisa pratensis* (F), *Potentilla erecta* (F), *Lotus corniculatus* (O), *Carex flacca* (O), *Plantago lanceolata* (O), *Festuca rubra* (F), *Plantago maritima* (R), *Danthonia decumbens* (O), *Trifolium repens* (O), *Prunella vulgaris* (O), *Cirsium dissectum* (O), *Holcus lanatus* (O) and *Koeleria macrantha* (R). This relevé data is presented in Quadrat 15. See photo 17.

This area grades into an area of *Molinia* meadow/*Juncus* dominated area. It is currently ungrazed but there is some poaching and it is surrounded by outcrops of limestone with thinner soils and a more typical calcareous grassland.



## Note 7:

This note is located on a ridge of limestone which outcrops frequently. The bulk of the summit of this ridge is dominated by heath which grades into areas of exposed limestone pavement with frequent *Molinia caerulea*. See photo 19. *Salix repens* is present on these outcropping heathy areas with frequent *Carex flacca*, *Succisa pratensis*, *Potentilla erecta*, *Plantago maritima*, *Anthyllis vulneraria*, *Linum catharticum* and *Campanula rotundifolia*. This area is essentially a mosaic of exposed limestone bedrock, calcareous heath and calcareous grassland.

## Note 8:

This is an area of calcareous heath dominated by *Calluna vulgaris*, *Molinia caerulea* and *Succisa pratensis*. *Salix repens*, *Euphrasia* sp., *Festuca rubra*, *Erica cinerea* and *Rosa pimpinellifolia* are all frequent while *Campanula rotundifolia* occurs more rarely. This habitat type extends towards the sea cliffs. The soils in this area appear to be a mixture of peat with wind blown sand.

## Note 9:

Two ridges of exposed limestone rock run parallel to each other at this point. The north-eastern one has a small area of calcareous grassland growing between strips of exposed limestone. This grassland then grades into an area dominated by *Molinia caerulea* amidst the outcrops. See photo 25.

The summit of each ridge has a strong heathy element with *Calluna vulgaris*, *Erica cinerea*, *Rosa pimpinellifolia* and *Euphrasia vulgaris* amidst pockets of calcareous grassland with *Carex flacca*, *Thymus praecox*, *Plantago maritima*, *Galium verum*, *Lotus corniculatus*, *Campanula rotundifolia*, *Succisa pratensis*, *Centaurea nigra*, *Anthyllis vulneraria*, *Trifolium pratense* and occasional *Antennaria dioica*, *Danthonia decumbens*, *Sesleria albicans*, *Potentilla erecta*, *Plantago lanceolata*, *Festuca rubra* and *Prunella vulgaris*. *Daucus carota* is rare. This grassland occurs between the outcropping rocks. *Calluna vulgaris* heath would cover c.30% of this area.

The valley between the two ridges is somewhat enriched with species such as *Cirsium palustre* commonly occurring. This is probably due to the deeper soils and that cattle may shelter here between the two ridges.

## Note 10:

There is damage within the site at this location. The ESB have recently replaced the wooden electricity poles which lead to the lighthouse complex and there are tyre tracks and disturbed areas of grassland adjacent to the road as a result.

There is a heathy element to the grassland on the slopes adjoining the road at this point. Species present include *Rosa pimpinellifolia*, *Carex flacca*, *Euphrasia* sp., *Succisa pratensis*, *Erica cinerea*, *Calluna vulgaris*, *Campanula rotundifolia*, *Lotus corniculatus*, *Thymus praecox*, *Briza media*, *Anthyllis vulneraria*, *Festuca rubra*, *Potentilla erecta*, *Danthonia decumbens*, *Anthoxanthum odoratum*, *Linum catharticum*, *Galium verum*, *Solidago virgaurea*, *Antennaria dioica* and *Prunella vulgaris*. This area is closely grazed.

The heathy element would be c.30 - 40% of this area. There are occasional patches of *Potentilla anserina* near the road.

## Note 11:

Area of outcropping limestone. See photo 31 and 32. Species present include *Daucus carota* (O), *Koeleria macrantha* (R), *Geranium sanguineum* (F), *Carex flacca* (F), *Anthyllis vulneraria* (F), *Galium verum* (O), *Viola* sp. (R), *Lotus corniculatus* (O), *Succisa pratensis* (R), *Euphrasia* sp. (O), *Plantago maritima* (O), *Prunella vulgaris* (F), *Trifolium pratense* (R), *Campanula rotundifolia* (R), *Rosa pimpinellifolia* (O), *Molinia caerulea* (R), *Hypericum* sp. (R), *Sesleria albicans* (R), *Danthonia decumbens* (R), *Potentilla erecta* (R), *Linum catharticum* (R), *Thymus praecox* (O), *Centaureum erythraea* (R), *Cynosurus cristatus* (R), *Centaurea nigra* (R) and *Polygala serpyllifolia* (R). This relevé data is presented in Quadrat 16.

This grassland is restricted to the immediate vicinity of the outcropping limestone and is lightly grazed. Adjoining this area *Galium boreale*, *Rhinanthus minor*, *Rubus saxatile* and the spikes of several fruiting/seeding orchids are present.

## Note 12:

This is an area of heathy neutral grassland with abundant *Molinia caerulea*, *Anthoxanthum odoratum*, *Holcus lanatus*, *Festuca rubra*, *Trifolium pratense*, *Centaurea nigra*, *Rosa pimpinellifolia*, *Erica cinerea*, *Calluna vulgaris*, *Potentilla erecta*, *Achillea millefolium* and *Cirsium helenoides*.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was conducted in a neutral type grassland near an area of outcropping limestone with calcareous grassland. The Monitoring Stop recorded only 2 indicator species amidst a herb rich sward (40%) and there was some *Lolium perenne* present. This resulted in a 'Fail' for the Monitoring Stop. See photo 1.

Additional species recorded within the Monitoring Stop include *Hypochoeris radicata* (O), *Cynosurus cristatus* (F), *Plantago lanceolata* (F), *Trifolium pratense* (O), *Potentilla erecta* (F), *Succisa pratensis* (O), *Centaurea nigra* (O), *Prunella vulgaris* (R), *Festuca rubra* (A), *Trifolium repens* (R) and *Holcus lanatus* (O). This relevé data is presented in Quadrat 1.

There is an area of outcropping limestone near the Monitoring Stop. Other species recorded outside the Monitoring Stop include *Galium verum*, *Campanula rotundifolia*, *Senecio jacobaea*, *Rosa pimpinellifolia*, *Euphrasia officinalis*, *Anthyllis vulneraria*, *Agrostis* sp. and *Thymus praecox*.

### Monitoring Stop 2:

This Monitoring Stop was located in an area of outcropping limestone rocks above an area of alkaline fen. See photo 2. 8 indicator species were recorded in a sward with 70% herb cover, no negative indicator species or encroachment by scrub. This resulted in a 'Pass' for the Stop.

Additional species recorded within the Monitoring Stop include *Viola* sp. (O), *Rosa pimpinellifolia* (O), *Euphrasia* sp. (O), *Hypochoeris radicata* (R), *Pteridium aquilinum* (R), *Thymus praecox* (F), *Carex pulicaris* (R), *Succisa pratensis* (O), *Centaurea nigra* (O), *Erica cinerea* (O), *Danthonia decumbens* (R), *Potentilla erecta* (R), *Festuca rubra* (O), *Plantago lanceolata* (R), *Hypericum humifusum* (R) and *Centaureum erythraea* (R). This relevé data is presented in Quadrat 2.

### Monitoring Stop 3:

This Monitoring Stop was located above a ridge of outcropping limestone on thin soils. See photos 5 and 6. Eight indicator species were recorded in a sward with 70% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded include *Plantago maritima* (F), *Prunella vulgaris* (R), *Centaurea nigra* (O), *Centaureum erythraea* (R), *Euphrasia* sp. (F), *Succisa pratensis* (O), *Potentilla erecta* (O), *Carex pulicaris* (O), *Rosa pimpinellifolia* (O), *Viola* sp. (R) and *Hypericum* sp. (R). This relevé data is presented in Quadrat 3.

*Calluna vulgaris* was present outside the Monitoring Stop.

**Monitoring Stop 4:**

This Monitoring Stop was conducted on the peninsula south of the lighthouse. See photos 7 and 8. The sward was dominated by *Festuca rubra*, with occasional *Holcus lanatus*, *Leontodon autumnalis*, *Plantago lanceolata*, *Potentilla erecta*, *Cynosurus cristatus*, *Lolium perenne* and *Ranunculus repens*. A low herb cover of 20% and the presence of only 2 indicator species resulted in a 'Fail' for this Monitoring Stop. This relevé data is presented in Quadrat 4. This area was grazed by cattle.

**Monitoring Stop 5:**

Located on a small knoll with thin soils and frequent outcropping limestone. There are occasional patches of *Molinia caerulea* below this. See photo 16. Ten indicator species were recorded in a sward with 70% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded include *Rosa pimpinellifolia* (O), *Plantago maritima* (O), *Succisa pratensis* (F), *Centaurea nigra* (O), *Hypochoeris radicata* (R), *Potentilla erecta* (F), *Thymus praecox* (F), *Centaureum erythraea* (R), *Trifolium repens* (R), *Polygala serpyllifolia* (R), *Calluna vulgaris* (R), *Carex* sp. (O), *Carex pulicaris* (R), *Danthonia decumbens* (R), *Hypericum humifusum* (R), *Festuca rubra* (O), *Gentianella* sp. (R) and *Armeria maritima* (O). This relevé data is presented in quadrat 5.

**Monitoring Stop 6:**

This Monitoring Stop was conducted on a ridge of occasional outcropping limestone which is closely grazed. See photo 18. Eight indicator species were recorded in a sward with 80% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Carex* sp. (O), *Succisa pratensis* (F), *Anagallis tenella* (A), *Euphrasia* sp. (O), *Hypericum humifusum* (R), *Gentianella* sp. (R), *Centaureum erythraea* (R), *Polygala vulgaris* (R), *Danthonia decumbens* (O), *Carex pulicaris* (R), *Centaurea nigra* (R), *Potentilla erecta* (O), *Calluna vulgaris* (R) and *Festuca rubra* (O). This relevé data is presented in Quadrat 6.

Immediately adjacent to the Monitoring Stop but outside the relevé is *Molinia caerulea*, *Plantago maritima* and *Plantago lanceolata*.

**Monitoring Stop 7:**

This Monitoring Stop was located in an area of neutral grassland on the top of a limestone bluff overlooking an area of fen and the road which lead to the end of the point. See photo 27. Three indicator species were recorded in a sward with 40% herb cover, no negative indicator species or scrub encroachment resulting in a 'Fail' for the Monitoring Stop.

Additional species recorded include *Cynosurus cristatus* (R), *Holcus lanatus* (R), *Festuca rubra* (F), *Plantago lanceolata* (A), *Succisa pratensis* (O), *Centaurea nigra* (A), *Ranunculus acris* (R), *Trifolium repens* (F), *Trifolium pratense* (F), *Prunella vulgaris* (R), *Cerastium fontanum* (R), *Potentilla erecta* (O), *Anthoxanthum odoratum* (O), *Danthonia decumbens* (R) and *Agrostis stolonifera* (O). This data is presented in Quadrat 7.

This area is grazed by cattle. *Pteridium aquilinum* and *Senecio jacobaea* were found in the vicinity of this Monitoring Stop but were not recorded within the actual quadrat.

**Monitoring Stop 8:**

This Monitoring Stop was located on a small ridge with frequent outcropping limestone above an area of fen adjacent to the road. The area of calcareous grassland is small and is restricted to the thin soils. There were frequent orchids in this area (c. 40 flowering spikes were recorded (20 of which were in the quadrat)) but only the seed heads were present making identification difficult. See photo 28. Eight indicator species were recorded in a sward with 75% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Calluna vulgaris* (O), *Carex pulicaris* (F), *Potentilla erecta* (F), *Euphrasia* sp. (O), *Thymus praecox* (O), *Succisa pratensis* (F), *Danthonia decumbens* (F), *Plantago maritima* (F), *Rosa pimpinellifolia* (O), *Prunella vulgaris* (O), *Centaurea nigra* (O), *Cynosurus cristatus* (R), *Festuca rubra* (R), *Polygala vulgaris* (R) and *Viola* sp. (O). This relevé data is presented in Quadrat 8.

**Monitoring Stop 9:**

This Monitoring Stop was located on the south east facing slopes of the peninsula below an area of outcropping limestone. It is quite heathy in places. See photo 30. Nine indicator species were recorded in a sward with 80% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded include *Danthonia decumbens* (O), *Hypericum humifusum* (R), *Carex pulicaris* (R), *Succisa pratensis* (F), *Rosa pimpinellifolia* (F), *Erica cinerea* (F), *Calluna vulgaris* (O), *Centaurea nigra* (O), *Plantago maritima* (R), *Leontodon autumnalis* (R), *Centaureum erythraea* (R), *Molinia caerulea* (R), *Viola* sp. (R), *Polygala vulgaris* (R), *Euphrasia* sp. (F), *Potentilla erecta* (F), *Carex* sp. (R) and *Thymus praecox* (O). This relevé data is presented in Quadrat 9.

This Monitoring Stop has frequent outcropping limestone, and several unidentified orchid species were present in the vicinity of the Monitoring Stop (Unspotted leaves).

**Monitoring Stop 10:**

This Monitoring Stop was located on a south facing slope above the shoreline with occasional outcropping limestone. See photo 36. Nine indicator species were recorded in a sward with 70% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded include *Rosa pimpinellifolia* (A), *Succisa pratensis* (F), *Plantago maritima* (O), *Euphrasia* spp. (F), *Prunella vulgaris* (R), *Hypericum humifusum* (R), *Centaurea nigra* (R), *Rhinanthus minor* (O), *Polygala vulgaris* (R), *Viola* sp. (O), *Potentilla erecta* (O), *Danthonia decumbens* (O), *Erica cinerea* (R), *Trifolium repens* (R), *Carex pulicaris* (O), *Thymus praecox* (O) and *Molinia caerulea* (R). This relevé data is presented in Quadrat 10.

**Monitoring Stop 11:**

This Monitoring Stop was located amidst an area of frequent outcropping limestone. See photo 37, 38, 39, 40, 41 and 42. Eleven indicator species were recorded in a sward with 80% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the quadrat include *Molinia caerulea* (R), *Danthonia decumbens* (O), *Plantago maritima* (F), *Centaurea nigra* (R), *Succisa pratensis* (O), *Euphrasia* sp. (F), *Rosa pimpinellifolia* (F), *Trifolium pratense* (R), *Prunella vulgaris* (R), *Hypericum humifusum* (R), *Thymus praecox* (O), *Potentilla erecta* (F), *Festuca rubra* (O), *Polygala* sp. (R), *Rhinanthus minor* (R) and *Viola* sp. (R). This relevé data is presented in Quadrat 11.

Approximately 20% of the quadrat is exposed rock.

**Monitoring Stop 12:**

This Monitoring Stop was located on a small ridge next to the road. See photo 48. The calcareous grassland is restricted to a band c.5m wide on top of the ridge, and becomes more neutral on the slopes with *Carex nigra*, *Succisa pratensis* and *Cynosurus cristatus* dominating. Nine indicator species were recorded in a sward with 70% herb cover, no negative indicator species or scrub encroachment resulting in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Danthonia decumbens* (O), *Euphrasia* sp. (O), *Dactylis glomerata* (R), *Cynosurus cristatus* (O), *Anthoxanthum odoratum* (R), *Thymus praecox* (O), *Festuca rubra* (F), *Trifolium pratense* (R), *Succisa pratensis* (F), *Prunella vulgaris* (O), *Centaureum erythraea* (R), *Plantago lanceolata* (R), *Bellis perennis* (R), *Achillea millefolium* (R), *Polygala* sp. (R) and *Carex pulicaris* (R). This relevé data is presented in Quadrat 12.

**West of Ardara/Maas Road****SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Faith Wilson                18/08/2006  
Willie Crowley

**Total Site Area (Ha):** 6513.1

**Area of Priority Grassland (N2000) (Ha):** Not given.

**Area of Priority Grassland 2006 (Ha)\*:** 4

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Donegal	10	DG057, DG064, DG065, DG066, DG073, DG074, DG075.

**Digital Aerial Photos (Tile Nos.):**

O0298-d, O0317-d, O0319-d, O0320-a, O0320-b, O0320-c, O0340-c, O0340-d, O0341-b, O0341-c, O0341-d, O0342-a, O0342-c, O0342-d, O0343-b, O0343-c, O0343-d, O0363-b, O0363-d, O0364-a, O0364-b, O0364-c, O0364-d, O0365-a, O0365-b, O0365-c, O0365-d, O0366-a, O0366-b, O0366-d, O0367-a, O0367-b, O0367-c, O0367-d, O0368-a, O0389-a, O0389-b, O0389-d, O0390-a, O0390-b, O0390-c, O0390-d, O0391-a, O0391-b, O0391-c, O0391-d, O0392-a, O0392-b, O0392-c, O0392-d, O0393-b, O0393-c, O0393-d, O0394-a, O0394-b, O0394-d, O0395-a, O0395-c, O0415-b, O0416-a, O0416-b, O0416-d, O0417-a, O0417-b, O0417-c, O0417-d, O0418-a, O0418-b, O0419-a, O0419-b, O0420-a, O0420-b, O0421-a, O0443-b, O0444-a

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS****SAC Site Code:**

000197

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.



## **SITE DESCRIPTION**

This extensive site occupies the area of coast immediately north of Ardara in south-west County Donegal. From there, it continues northwards around the coast, and then up the Gweebarra River to Doocharry. From the centre of the site an expanse of blanket bog extends south-east almost to Glenties. Lough Beg Bay and Slieve Tooley Mountain are adjacent and to the south-west of the site. Most of the coastal parts of the site are underlain by metamorphic rocks, in particular Loughros Group and Upper Falcarragh Pelites, and Falcarragh limestone. More recent blown sand occurs over much of these coastal rocks, however. The majority of the inland part of the site is underlain by intrusive igneous Granodiorites. The site exhibits a highly diverse range of both coastal and terrestrial habitats, this feature itself being of great scientific value.

### **Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

The site synopsis for the site does not contain a description of the calcareous grassland.

*Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: *Neotinea maculata* (N. intacta) was recently discovered on the site by Sheppard and Sheppard (1985 - see section 4.6 of form for reference). They noted it from a small area of species-rich calcareous grassland in the Irish Wildbird Conservancy nature reserve near Sheskinmore Lough. J. Ryan (pers. comm. 1996) has also seen the species near the margin of the wetland area on the west side of Sheskinmore Lough/fen. The species was also noted on high ground north-west of Sheskinmore Lough during the ASI re-survey in 1994.

Some of the Sheskinmore back-dunes have good populations of other orchid species, including the dwarf form of *Listera ovata*; these populations are not, however, included here in the habitat under consideration, but are assessed under the fixed dune category (habitat 2130).

Note that the Interpretation Manual of EU Habitats indicates that there is, in some cases, a transition between habitats 2130 and 6210). The area of calcareous grassland on the site with important orchid populations is therefore very small and restricted to those areas with *Neotinea maculata*. Very few individuals of this species occur on the site. Sheppard and Sheppard (1985) noted no more than three plants at their site, while a similarly small number was seen in 1994 (in perhaps the same station as Sheppard and Sheppard?). The number of plants seen by Ryan is not known.

It appears that all of the calcareous grassland with this species is state- or IWC-owned. However, the Sheppard's' station is threatened by the invasion of thorn scrub and the population of *Neotinea* is greatly threatened by grazing. Although *Neotinea maculata* is not a Red Data Book species it is notably restricted in its distribution in Ireland and Britain (where it is known only from the Isle of Man). It has a very disjunct European distribution, occurring in Ireland, the Isle of Man, Portugal and the Mediterranean region. The Sheskinmore sites appear to be the most northerly in the world for the

species.

*Description based on the 2006 Survey :*

Typical indicator species noted in 2006 include *Carex flacca*, *Daucus carota*, *Lotus corniculatus*, *Linum catharticum*, *Campanula rotundifolia* and less frequently *Anthyllis vulneraria*, *Briza media*, *Conopodium majus*, *Galium verum*, *Gentianella campestris*, *Hieracium pilosella* and *Primula veris*.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1994 NHA Survey. *Neotinea maculata* was recorded within the site in 1995 by Sheppard and Sheppard and by NPWS staff in 1996. A MPSU management plan is available for this site.

## SITE MONITORING AND MANAGEMENT UNITS

Four Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Two of the four Monitoring Stops passed, resulting in an overall fail for the Structures and Functions of the site (see Table 1a). Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1b below.

It can be seen from Table 1b that Stop 1 is not included in the assessment of Structures and Functions. On reflection, it was thought that the vegetation at this Stop may not have been habitat 6210 in the past and that it may be more indicative of a neutral type grassland. This area is also not within the SAC boundary. For these reasons, this Stop is not included in the assessment of Structure and Functions.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	1
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Not used in assessment	Map 2
Stop 02	1	Pass	Structures and Functions	Map 2
Stop 03	1	Fail	Structures and Functions	Map 2
Stop 04	1	Pass	Structures and Functions	Map 2

This site was treated as a single management unit as there are no fences within the survey area.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below. The main agricultural activity on the site is grazing (140) and this appears to be occurring at light to moderate levels so that, in general, it impacts positively on the areas of calcareous grassland. However, a degree of bracken encroachment (954) has been noted in places, indicating inadequate or inconsistent grazing pressures (149). A minor degree of fertiliser application (120) is also likely to have occurred in places, but would not appear to be in anyway severe.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
120	Fertilisation	-1	C
160	General Forestry management	1	B
149	Grazing: undergrazing	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The main management issue with regard to the calcareous grassland at West of Ardara/Maas Road is the maintenance of current grazing pressures and the prevention of fertiliser application on the calcareous grasslands.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

4ha (0.1% of the SAC) of habitat 6210 was mapped within the site and this area is located to the NW of Sheskinmore Lough. The habitat was found here on sandy soil and graded into a more neutral-type grassland where the topography was flat and the soil deeper. This is likely to correspond to the location of *Neotinea maculata* which was highlighted in the NATURA 2000 Explanatory Notes as being found "on high ground to the north-west of Sheskinmore Lough during the ASI re-survey in 1994". Due to the underlying geology there is unlikely to be any other areas of habitat 6210 within this site. The NATURA 2000 notes do, however, mention a second area where *Neotinea maculata* was described by Sheppard and Sheppard (1985) from a small area of species-rich calcareous grassland in the Irish Wildbird Conservancy Nature Reserve near Sheskinmore. The NATURA notes question whether or not this station for the plant is the same as that found during the ASI re-survey.

In any case, no figure for the extent of habitat 6210 within the SAC is given in the NATURA 2000 notes except to state that "the area of calcareous grassland with important orchid populations is very small and restricted to those areas with *Neotinea maculata*". Thus, since the area of calcareous grassland to the NW of Sheskinmore Lough is still reasonably intact, the Conservation Assessment for Extent at West of Ardara/Maas Road is given as Favourable.

### ***Structure and Functions:***

Four Monitoring Stops were carried out in West of Ardara/Maas Road during the 2006 survey. Of these, one Stop (Stop 1) was not included in the final assessment of Structures and Functions as it was located outside of the SAC on slightly deeper soil and hence may not be suitable for supporting habitat 6210.

Two of the three Monitoring Stops, which were used to assess Structures and Functions, passed. The Stop that failed (Stop 03), failed due to encroachment by *Pteridium aquilinum*, despite having a sufficient number of positive indicator species (8) as well as an unidentified orchid seed-head, no negative indicator species and a high cover of herbs (75%). Thus, if management and control mechanisms were put in place to tackle the *Pteridium aquilinum* encroachment, it is reasonable to assume that this area of calcareous grassland could be successfully recovered quite quickly. The lower slopes in this area, to the south-east of Stop 3, had a larger encroachment problem, but these areas were generally on deeper soils and thus did not support habitat 6210.

Elsewhere in the site there was no significant problem with *Pteridium aquilinum* encroachment, although a degree of encroachment was also noted at Stop 4 which passed the assessment of Structure and Functions. The orchid, *Neotinea maculata*, which was

recorded in this area in the past, was not recorded during the 2006 survey. However, this may be due to the late timing of the survey at the end of August.

One of the three Monitoring Stops failed in the assessment of Structure and Functions, resulting in a failure rate of 33%. However, it is considered that this figure is skewed because of the low number of Stops carried out at the site. The Stop failed on *Pteridium aquilinum* encroachment, which at present is not a significant characteristic of the calcareous grassland at the site. Thus the Conservation Assessment of the Structures and Functions of habitat 6210 at West of Ardara/Maas Road is described as Unfavourable - inadequate.

#### ***Future Prospects:***

At present, grazing levels in the calcareous grassland to the NW of Sheskinmore at West of Ardara/Maas Road are described as light to moderate and appear to be at the appropriate level to maintain the grassland in relatively good condition. Eight indicator species were recorded in each of the three Monitoring Stops which were used to assess the Structure and Functions. A total number of 11 different indicator species were recorded from these three Stops, as well as an unidentified orchid seed head.

A small degree of *Pteridium aquilinum* encroachment is present on the slopes close to Monitoring Stop 3 and this threat would need to be addressed in order to prevent it becoming a more serious issue. On the positive side, the positive indicator species are still present in this area so that the condition of the calcareous grassland in this area should be recoverable.

The current management of the calcareous grassland at West of Ardara/Maas Road appears to be appropriate and the only issue in need of a more active management strategy is the potential problem of *Pteridium aquilinum* encroachment in a small area in the south-east of the calcareous grassland. Thus, the Future Prospects for the habitat at this site are considered to be Favourable, as long as a monitoring and management programme is put in place to thwart any future threat of *Pteridium aquilinum* encroachment and to recover the area that is currently becoming encroached.

#### ***Conservation Assessment:***

The extent of habitat 6210 at West of Ardara/Maas Road appears to have remained stable since the designation of the site. While the condition, in general, is good, a small amount of *Pteridium aquilinum* encroachment is noted on the slopes in the south-east of the habitat. As there is no previous information on the condition of the grassland it is not known whether or not this encroachment is a recent event. Nevertheless, it must be recognised as a potential threat and thus needs to be monitored and, if necessary, managed.

The Conservation Assessment of the Extent and the Future Prospects for habitat 6210 at West of Ardara/Maas Road are considered to be Favourable. However, as the Structure and Functions of the habitat are currently assessed as Unfavourable - inadequate, the overall Conservation Status Assessment for habitat 6210 at the site is described as Unfavourable - inadequate (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - inadequate</i>
Future Prospects			
	Structure and Function		
Extent			



## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

### Note 1

This is an area of heathy calcareous grassland (see photo 24) close to the top of a slope across from the summit with the standing stone. It is separated from that hill by an area of flushed wet grassland (see N02). The grassland on this slope is moderately grazed (tightly in places) and is characterised by low-growing (<5cm) *Calluna vulgaris*, which cover up to ca. 20-25% of the ground surface. Other heathy elements present include *Succisa pratensis* (O), *Potentilla erecta* (O), *Erica cinerea* (R) and *Danthonia decumbens* (R). Calcareous grassland indicators recorded include *Hieracium pilosella* (R) and *Carex flacca* (A) while *Campanula rotundifolia*, *Daucus carota* and *Gentianella campestris* were recorded nearby. Additional species present included *Cynosurus cristatus* (F), *Festuca rubra* (F), *Trifolium pratense* (O), *T. repens* (F), *Plantago lanceolata* (O), *Salix repens* (O), *Achillea millefolium* (R), *Prunella vulgaris* (R) and *Euphrasia* sp. (O). *Senecio jacobaea* is present close-by.

### Note 2

This is a narrow flushed channel running NW-SE at this point between two slopes that is dominated by wet grassland. *Juncus effusus*, *J. acutiflorus*, *Hydrocotyle vulgaris*, *Mentha aquatica* and *Lychnis flos-cuculi* were recorded in the wettest part of the channel (5-10m wide) with *Holcus lanatus*, *Ranunculus flammula* and *Succisa pratensis* present towards the edges of the channel.

### Note 3

From this point downslope to the north-east, a more neutral type grassland dominates (see photos 25-26). The herb ratio is still high at 60%, but there are not as many calcareous grassland indicator species present with only *Linum catharticum* (O), *Lotus corniculatus* (O) and *Carex flacca* (F) recorded in the releve carried out in this area. However, in close-by areas of outcropping rock more indicators (as well as more heathy species) are present including *Campanula rotundifolia*. The slight heathy element is still present in the vegetation with *Succisa pratensis* (F), *Potentilla erecta* (O) and *Danthonia decumbens* (R) all recorded. Additional species recorded included *Cynosurus cristatus* (F), *Plantago lanceolata* (F), *Prunella vulgaris* (F), *Centaurea nigra* (O), *Bellis perennis* (F), *Leucanthemum vulgare* (O), *Achillea millefolium* (O), *Festuca rubra* (O), *Leontodon autumnalis* (O), *Centaureum erythraea* (R), *Trifolium pratense* (O), *Euphrasia* sp. (O), *Agrostis* sp. (R), *Holcus lanatus* (R), *Cerastium* sp. (R), *Parnassia palustre* (R) and *Plantago maritime* (R).

**Note 4**

This is an area of semi-improved neutral grassland (see Photo 28). The only calcareous grassland indicator species recorded in the open patches of grassland is *Carex flacca* (O) with *Lotus corniculatus* found on outcropping rocks with *Festuca rubra*, *Thymus praecox* and *Danthonia decumbens*. Additional species recorded include *Cynosurus cristatus* (F), *Agrostis* sp. (O), *Lolium perenne* (R), *Cirsium palustre* (O), *Senecio jacobea* (O), *Bellis perennis* (O), *Trifolium repens* (O), *T. pratense* (O), *Prunella vulgaris* (O), *Plantago lanceolata* (O) and *Leucanthemum vulgare* (R).

Scrub dominated by *Ulex europaeus* is developing in places and there are wet areas dominated by *Juncus* spp.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1

This Monitoring Stop was located near the base of a north-easterly facing slope on sandy soil just outside of the SAC (see Photos 01-03). The area appears to be lightly to moderately grazed by cattle and there are some small bare patches of soil scattered around the base of the slope as evidence of disturbance by grazers.

Only four indicator species were recorded and the herb cover just reached the target of 40%. However, no negative indicators were recorded and there was little or no scrub or bracken. A heathy element is present in the Stop represented by *Succisa pratensis* (O), *Potentilla erecta* (O) and *Polygala serpyllifolia* (R) with small areas of *Calluna vulgaris* and *Erica cinerea* occurring adjacent to the Stop.

The area where this Stop was conducted may in fact not be suitable for habitat 6210 and it may be that an insufficient number of indicators were recorded simply because a more neutral type grassland is present (owing partly the greater depth of soil). Additional species (See releve 1) within the Stop include *Potentilla anserina* and *Juncus articulatus* (R), which also indicate that conditions may be too wet for habitat 6210. Also occurring are *Cynosurus cristatus*, *Leontodon autumnalis*, *Plantago lanceolata* and *Prunella vulgaris* (all frequent), *Agrostis* sp., *Euphrasia* sp., *Trifolium repens*, *Ranunculus repens*, *T. pratense* and *Taraxacum* agg. (all occasional) and *Centaurea nigra*, *Centaureum erythraea*, *Alchemilla filicaulis*, *Pteridium aquilinum*, *Senecio jacobaea* and *Leucanthemum vulgare* (all rare). Another two indicators, *Campanula rotundifolia* and *Hieracium pilosella* were noted as occurring just outside of the Stop.

As the Stop failed to reach the required number of indicator species, the Structures and Functions of this Stop would be seen to Fail. However, because the Stop may not have been habitat 6210 in the past and may be more of a neutral type grassland (and is not within the SAC), this Stop is not assessed for the Structure and Functions of the habitat

### Monitoring Stop 2

This Monitoring Stop was located on a north-easterly gradual facing slope on sandy soil in an area characterised by small rolling hills with occasional outcropping rock (see Photos 06-08). The calcareous grassland is generally restricted to the 'hilly' areas with a more neutral type grassland covering the flatter areas that have a deeper soil between the 'hills'. These 'hills' are lightly grazed though the flatter areas are more moderately grazed.

Eight indicator species were recorded and the herb cover was 60%. In addition no negative indicators were recorded and there was little or no scrub/bracken in the area. The grassland had a strong heathy element with *Calluna vulgaris* (R), *Succisa pratensis* (F), *Potentilla erecta* (O), *Polygala serpyllifolia* (O), *Carex pulicaris* (R) and *Danthonia decumbens* (R) all recorded within the Stop. Furthermore, *Erica cinerea* and *Juniper communis* were recorded adjacent to the Stop.

Additional species (See releve 2) within the Stop include *Cynosurus cristatus*, *Prunella vulgaris* and *Festuca rubra* (all frequent) and *Salix repens*, *Trifolium pratense*, *T. repens*, *Plantago lanceolata*, *Leontodon autumnalis*, *Thymus praecox* and *Leucanthemum vulgare* (all occasional).

The calcareous indicators *Galium verum*, *Daucus carota* and *antennaria dioica* were recorded adjacent to the Stop as well as *Rosa pimpinellifolia* and *Rubus fruticosus* agg.

As the Stop reached the required number of indicator species and % herb cover and contained no negative indicators and little or no scrub/bracken, the Structures and Functions of this Stop were deemed to Pass.

### Monitoring Stop 3

This Monitoring Stop was located on a south-easterly gradual facing slope on sandy soil in an area characterised by small rolling hills with occasional outcropping rock (see Photo 10). The calcareous grassland is generally restricted to the 'hilly' areas with a more neutral type grassland covering the flatter areas that have a deeper soil between the 'hills'. These 'hills' are lightly grazed though the flatter areas are more moderately grazed.

Eight indicator species were recorded as well as an unidentified orchid seed head and the herb cover was 75%. In addition no negative indicators were recorded, but a scrub/bracken encroachment problem was highlighted as bracken covered 20-25% of a surrounding 5 x 5 m area. The heathy element is not so strong here with *Succisa pratensis* recorded as frequent and *Potentilla erecta* and *Danthonia decumbens* as occasional. No *Calluna vulgaris* was noted.

Additional species (see releve 3) present within the Stop include *Cynosurus cristatus*, *Trifolium repens*, *Prunella vulgaris* and *Leucanthemum vulgare* (all frequent) and *Trifolium pratense*, *Plantago lanceolata*, *Centaurea nigra* and *Festuca rubra* (all occasional).

Although the Stop reached the required number of indicator species, the cover of bracken was high so that the Structures and Functions of the Stop were deemed to Fail.

In this locality, in general, the south-west facing slopes are steeper and there appears to be less areas with a deep neutral soil. Old dwellings are present in this area on the lower slopes and above these is an area of deeper soil with patches of *Lolium perenne* and prominent *Senecio jacobea*. Above this is an area of scrub encroachment (*Salix repens*, *Prunus spinosa* and *Rubus fruticosus* agg. *Pteridium aquilinum* is also a problem and covers ca. 25% of the grassland in the area. Heathy elements are also present in places including *Juniper communis*, which is recorded as scattered but rare.

#### Monitoring Stop 4

This Monitoring Stop was located on a south-westerly facing gentle slope on sandy soil in an area characterised by small rolling hills with occasional outcropping rock (see Photo 18-19). The calcareous grassland is generally restricted to the 'hilly' areas with a more neutral type grassland covering the flatter areas that have a deeper soil between the 'hills'. These 'hills' are lightly grazed though the flatter areas are more moderately grazed.

Eight indicator species were recorded including frequent *Gentianella campestris* and the herb cover was 60%. No negative indicators were recorded and *Pteridium aquilinum* covered only 5% of the quadrat though it was up to 10-15% in a larger 5 x 5m area. Again there is a slight heathy element with *Succisa pratensis* recorded as frequent, *Potentilla erecta* and *Danthonia decumbens* as occasional and *Polygala serpyllifolia* as rare. No *Calluna vulgaris* was noted.

Additional species (see releve 4) present within the Stop include *Cynosurus cristatus* and *Festuca rubra* (both frequent) and *Plantago lanceolata*, *Prunella vulgaris* *Leontodon autumnalis*, *Pteridium aquilinum* and *Euphrasia* sp. (all occasional) as well as *Trifolium pratense*, *T. repens*, *Centaurea nigra*, *Achillea millefolium*, *Centaureum erythraea* and *Leucanthemum vulgare* (all rare). *Anthyllis vulneraria* was noted immediately adjacent to the Stop.

As the Stop reached the required number of indicator species and % herb cover and contained no negative indicators and only small amounts of scrub/bracken, the Structures and Functions of this Stop were deemed to Pass.

To the south-west of the Stop, a fence running WNW-ESE delineated a steep slope (see Photo 22). On the steep slope behind the fenceline, the vegetation was ungrazed and was dominated by *Calluna vulgaris* heath with *Erica cinerea* and *Juniper communis* also prominent.

**Inishmaan Island****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	05/09/2006
Willie Crowley	06/09/2006

**Total Site Area (Ha):** 792.79

**Area of Priority Grassland (N2000) (Ha):** 79.

**Area of Priority Grassland 2006 (Ha)\*:** 160

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Galway	51	GA119.

**Digital Aerial Photos (Tile Nos.):**

O3735-a, O3735-b, O3735-c, O3735-d, O3791-a, O3791-b, O3791-c, O3791-d, O7041-b, O7041-d

**Other Aerial Photographs:****SITE DESIGNATIONS****SAC Site Code:**

000212

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Inishmaan is the middle of the three Aran Islands, situated approximately 15km off the west coast of County Clare. Geologically, the Island is an extension of the Burren. The shallow soil is a man-made combination of sand and seaweed built up over the centuries. Pockets of rendzina are found throughout the limestone pavement.

This site is of major scientific importance owing to the range of outstanding Karstic Carboniferous Limestone and coastal habitats, many of which are listed as priority and Annex I habitats under the European Habitats Directive. The site is dominated by limestone pavement and its associated calcareous grasslands. Other Annex I habitats which occur include dry heath, lowland hay meadows and orchid-rich calcareous grassland.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site described the calcareous grassland as follows: A network of small, stone-walled fields dissect the Island. Each field encloses an area of limestone pavement interspersed with fine examples of species-rich, dry calcareous grasslands. In places, the rocky grasslands support Rare plant species: Hairy Violet (*Viola hirta*) and Wood Small-reed (*Calamagrostis epigejos*). Both species are legally protected under the Flora Protection Order (1987). Common species include Blue Moor-grass (*Sesleria albicans*) and Eyebright (*Euphrasia* spp.), along with Knapweeds (*Centaurea nigra* and *C. scabiosa*), Orchids (Orchidaceae), Bloody Cranesbill (*Geranium sanguineum*) and Spring Gentian (*Gentiana verna*). The southern part of the Island supports the highest proportion of these calcareous meadows.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: The habitat plays host to an excellent variety of orchid species along with a diverse range of species typically associated with calcareous grasslands. Common orchid species include *Anacamptis pyramidalis*, *Orchis mascula*, *Listera ovata* and *Platanthera bifolia* with occasional *Dactylorhiza fuchsii*, *D. fuchsii* ssp. *okellyi*, *Spiranthes spiralis*, *Dactylorhiza maculata*, *Orchis majalis*, and lesser amounts of *Gymnadenia conopsea*, *Ophrys apifera* and *Neotinea maculata*. The latter species *N. maculata* has a limited distribution in Ireland being generally associated with the Burren and rare elsewhere.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the general descriptions of the grassland habitats presented in the NHA Site Synopsis and the NATURA 2000 Forms were still seen to apply. Very few orchids were noted during the survey however, due mainly to the timing of the survey in September. *Coeloglossum viride* was the only flowering species recorded but frequent fruiting orchid heads were also noted.

Species diversity was high in the grasslands, with up to 11 calcareous indicator species being recorded at a number of locations. The following indicator species were



recorded: *Anthyllis vulneraria*, *Antennaria dioica*, *Avenula pubescens*, *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Carlina vulgaris*, *Daucus carota*, *Galium verum*, *Hieracium pilosella*, *Koeleria macrantha*, *Linum catharticum*, *Lotus corniculatus*, *Sanguisorba minor*, *Sesleria albicans*, and *Geranium sanguineum*.

Areas of limestone pavement, calcareous heath, coastal communities, and wet grassland habitats were also noted as occurring within the site.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This island was surveyed during the 1993 NHA Survey. There were no detailed NHA notes recorded within the site boundary and any NHA notes listed relate to general habitat descriptions and boundary notes only.

## SITE MONITORING AND MANAGEMENT UNITS

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

The results of the assessment for Structures and Functions at Inishmaan Island is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. Of the 20 Monitoring Stops conducted within this site, the Structures and Functions were assessed at each Stop. 16 Stops were seen to pass the assessment, resulting in a failure rate of 20% for the Structures and Functions of the site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	20
<b>Number of Monitoring Stops:</b>	20
<b>Number of Stops That Pass:</b>	16
<b>Result of Assessment:</b>	Pass

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 02
Stop 02	2	Fail	Structures and Functions	Map 02
Stop 03	3	Pass	Structures and Functions	Map 02
Stop 04	4	Fail	Structures and Functions	Map 02
Stop 05	5	Pass	Structures and Functions	Map 02

Stop 06	6	Pass	Structures and Functions	Map 02
Stop 07	7	Pass	Structures and Functions	Map 02
Stop 08	8	Pass	Structures and Functions	Map 02
Stop 09	9	Pass	Structures and Functions	Map 02
Stop 10	10	Pass	Structures and Functions	Map 02
Stop 11	11	Fail	Structures and Functions	Map 02
Stop 12	12	Pass	Structures and Functions	Map 02
Stop 13	13	Pass	Structures and Functions	Map 02
Stop 14	14	Pass	Structures and Functions	Map 02
Stop 15	15	Fail	Structures and Functions	Map 02
Stop 16	16	Pass	Structures and Functions	Map 02
Stop 17	17	Pass	Structures and Functions	Map 02
Stop 18	18	Pass	Structures and Functions	Map 02
Stop 19	19	Pass	Structures and Functions	Map 02
Stop 20	20	Pass	Structures and Functions	Map 02

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 20 separate management units. In effect, this means that each separate field in which a Stop was placed was treated as a separate Management Unit.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

During the 2006, it was noted that there were no widespread detrimental activities currently impacting on the site. However, the potential for damage to the grassland habitat by reduced management input is a factor that should not be ignored.

The traditional grassland management practices of mowing (102) and grazing (140) continue to occur. Grazing is perhaps more widespread as a management technique, given that the high stone walls and narrow gate ways typical of the Aran Islands do not facilitate access to many fields, particularly to those at a distance from the roadway.

Levels of both grazing and mowing appear to be sufficient across most of the areas surveyed, as no great evidence of either overgrazing or undergrazing was noted. However, some areas of the island, particularly closer to the northern boundary of the Target Area, show a degree of encroachment by Bracken (954). This may reflect a degree of undergrazing (149) in these locations but as yet, encroachment appears to be at an early stage. If left unchecked, however, this threat will increase and good grassland areas will be lost. Grazing is mostly carried out by cattle, although sheep were noted in one semi-improved field at Note 1.

In relation to machinery access, it was noticed that a JCB digger was widening the roadway close to Note 4 (150). If the objective here is to facilitate better access for machinery, it poses a threat to those fields which are currently managed in a more traditional manner. This will need to be monitored.

While large-scale application of fertiliser (120) was not seen to be an issue, fertiliser has been applied in some instances (see Stop 11 and Notes 1, 10, and 11. However, even in these instances, the impact has not been severe and reasonably good numbers of indicator species survive. Re-seeding with *Lolium perenne* was not seen to be an issue in the areas visited.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
102	Cultivation: mowing/cutting	2	C
120	Fertilisation	-1	C
140	Grazing	2	B
149	Grazing: undergrazing	-1	C
150	Restructuring agricultural land holding	-2	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

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\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

**Management Issues:**

The management requirements for good 6210 grassland habitat involve sufficient levels of grazing and/or mowing. Unlike the situation on the other two Aran Islands, traditional farming practices appear to be still in place over much of Inishmaan Island.

Intensification has not occurred and the majority of the fields visited still retain a very natural appearance. Grazing appears to be the primary means of maintaining good species diversity, with some mowing occurring where access by machinery is possible. Current practices should be monitored and maintained, and any increased use of fertilisers should be avoided. The practice of improving machinery access to fields should also be monitored, as more intensive grassland management will result in loss of priority habitat.

The potential threat from undergrazing should also be monitored. This is not currently an issue over most of the site but it has occurred in an area east of the centre of the Target Area (see Notes 10, N15, N16, N17, and Stop 15) where Bracken and scrub is beginning to spread. Remedial action is required in this location to prevent further spread and to improve the species diversity. In addition, the early indications of spread by Bracken and scrub species are appearing at other locations (see Stops 9 and 17). Early intervention in these areas will prevent encroachment becoming a management issue in the near future.

## CONSERVATION STATUS

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and cannot be accurately mapped from aerial photographs. This is because:

- a) It forms a mosaic with calcareous heath and limestone pavement and
- b) It is not easily distinguishable on the aerial photographs from calcareous heath and/or lowland hay meadows.

Thus, in order to have some estimate as to the extent of the habitat, the following can be considered.

1. The area of dry grassland in the entire Inishmaan SAC was crudely digitised using ArcView GIS 3.2 and geo-referenced ortho-rectified aerial photographs (2000 series). Thus, in estimating the extent of the grassland, any small pockets of limestone pavement that occur within a relatively large area of calcareous grassland were ignored, assuming that they would be balanced out by the pockets of calcareous grassland occurring amongst the limestone pavement. The extent of the dry grassland was thus estimated in this manner as being ca. 170ha.
2. During this ground survey of the grassland on the island, few or no fields within the SAC appeared to have been reseeded with *Lolium perenne* or other major agricultural improvements. Furthermore, on analysing the aerial photographs, it is estimated that the total area of any such fields within the SAC (excluding those agriculturally improved fields in the area of coastal grassland to the north of the island) does not exceed 10ha.

From the above considerations it can be estimated that the area of habitat 6210 in Inishmaan SAC is ca. 160ha. The Natura 2000 form estimated that habitat 6210 extended across 10% of Inishmaan SAC, which is equal to 79ha. This would appear to have been an over-estimation as it is unlikely that 80ha of the habitat were created in the last ten years by traditional island farming practices of 'making soil'.

The estimate of the extent of habitat 6210 at Inishmaan SAC is 160ha (20% of the SAC) and this extent appears to have been relatively stable in the last ten years. Thus, the Extent of the 6210 habitat on Inishmaan Island is considered to be Favourable.

### ***Structure and Functions:***

The assessment of the Structures and Functions of the 6210 grassland on Inishmaan Island was seen to be a relatively positive one with 16 of the 20 Stops passing the assessment. Herb content in these Stops ranged from 40% in Stop 10 to 80% in Stop 1. Species diversity was also seen to be high. The highest number of indicator species recorded was 11, at Stops 1, 3, 12, and 14. When additional species occurring in the Stops are taken into account, overall numbers of species occurring in the quadrats ranged from 16 to 27. Of the Stops which passed, Bracken or scrub was seen to be absent or occurring at very low frequencies.

Of the 4 Stops which failed the assessment, an insufficient number of indicator species (5 or 6 species) was the primary cause of failure. Herb content was mostly high enough, except at Stop 15 where only 30% was recorded. Encroachment by Bracken was an issue at only at one Stop, Stop 15. In general, minor agricultural improvements via fertiliser application was evident in the failure of Stops 2 and 11. Lack of sufficient management was causing the grassland in Stop 15 to become rank and encroached by Bracken. In Stop 4, a damper, more heath-like element to the vegetation was the reason the assessment failure.

Overall, while the condition of the grassland in general is seen to be very good, a failure rate of 20% results in the Structures and Functions of this site being described as Unfavourable - inadequate.

### ***Future Prospects:***

Unlike the situation existing on the other two Aran Islands, traditional life and farming practices appear to exist over much of Inishmaan Island. Discussions with local people on the island indicate that the Islanders also have a different vision for the future of Inishmaan. An island co-operative hopes to direct future developments in a more sensitive manner than has occurred on both Inishmore and Inisheer. Eco- and cultural-tourism is being promoted while development of amenities for more casual day-trippers will be curtailed. The input of traditional farming practices to the island's landscape is well appreciated and it is said that future developments will be mindful of these benefits.

While the Structures and Functions were seen to fail in their assessment, the overall condition of the grassland habitat was seen to be comparatively good. Minor management issues can resolve the matters causing the current assessment failures and future deterioration can be prevented. Taking this into account, in conjunction with the positive approach by landowners to the island landscape, the Future Prospects for the 210 habitat on Inishmaan are described as being Favourable.

### ***Conservation Assessment:***

It was seen during the 2006 survey that the 6210 grassland habitat did not vary considerably from the descriptions offered by the NHA Site Synopsis and the NATURA 2000 Forms. These two sources offered only general habitat descriptions, however, as the NHA survey was primarily a boundary survey and did not recorded location-specific notes.

Not many orchids were noted during the 2006 survey, however, but this is likely to be a consequence of the timing of the survey in September, long after most species have flowered. While a number of fruiting orchid heads were noted, *Coeloglossum viride* was the only species seen to be still in flower.

The estimation of habitat Extent was difficult as the 6210 grassland on Inishmaan occurs in association with limestone pavement, more heathy calcareous habitats, and areas of damp grassland. During the ground survey, areas which registered pavement in excess of 50% cover were not assessed. Using aerial photographs, in conjunction with the results of the ground survey, it is estimated that the Extent has not changed significantly in the last 10 years. Extent is thus described as being Favourable.



The Structures and Functions of the grassland were seen to fail, with 20% of Stops indicating a quality which was less than the target set. However, the condition of the grassland overall was not seen to be very deteriorated and minor adjustments to management practices would see an improvement in a relatively short time. Prompt management action, taken now, would also prevent the progression of scrub and Bracken encroachment beyond the early stages noted in the eastern half of the site. However, due to the 20% failure rate, Structures and Functions are described as being Unfavourable - inadequate.

The Future Prospects for the grassland habitat on the site are deemed to be Favourable. Local support for the island's unique character is strong and the islanders appear to have a strong desire to manage the island's potential in a sensitive way. Therefore, the future of the grassland habitat looks good.

While Extent and the Future Prospects are described as being Favourable, the fact that the assessment of Structures and Functions resulted in a 20% failure rate results in the overall Conservation Assessment of the site being described as Unfavourable - inadequate (see Table 3). Minor adjustments to current management practices would improve this result relatively easily.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
Extent			
			<i>Unfavourable - inadequate</i>
Future Prospects	Structure and Function		

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

Note 1:

This is a semi-improved field currently grazed by sheep. Vegetation includes *Avenula pubescens*, *Plantago lanceolata*, *Trifolium repens*, *Lotus corniculatus*, *Leucanthemum vulgare*, *Daucus carota*, *Primula* spp., and *Cerastium fontanum*.

Note 2:

This is an example of good grassland on deeper soil, located at the bottom end of a field which has exposed rock at its upper end. The grassland is herb dominated but the deeper soil is reflected in the fact that fewer calcareous indicators are recorded.

Species include *Daucus carota* (F), *Galium* (F), *Leucanthemum vulgare* (F), *Plantago lanceolata* (F), *Lotus corniculatus* (O), *Odontites vernus* (O), *Achillea millefolium* (O), *Centaurea scabiosa* (R), *Koeleria macrantha* (R), *Rumex acetosa* (R), *Centaurea nigra* (R), *Holcus lanatus* (R), *Dactylis glomerata* (R), *Cynosurus cristatus* (R), *Campanula rotundifolia* (R). This constitutes relevé 3.

Note 3:

This note refers to good calcareous grassland with <10% rock. The field is lightly grazed and is significant for its abundance of *Centaurea scabiosa*.

Note 4:

This is a damp field with *Filipendula ulmaria*, *Lythrum salicaria*, *Rumex acetosella*, and *Potentilla anserina*. Drier, rocky outcrops occur with typical calcareous indicators. *Crocsmia x crocosmiflora* (Montebretia) also occurs in scattered patches. A small stream exists the field close to the field wall.

Approximately 150m along the road to the north east of this location, a JCB digger was being used to widen the narrow roadway. The stone walls were knocked down and were being rebuilt at a distance from the original road edge, thereby widening the road and resulting in a loss of grassland habitat (see Photograph no. 7). While the loss, in real terms, is small, the potential for improved access by farm machinery to semi-natural grassland habitats needs to be monitored.

Note 5:

This field is a combination of limestone pavement and calcareous grassland. As limestone rock occupies approximately 50% of the field area, it is not considered for assessment for 6210. However, small examples of good calcareous grassland occur where soil has accumulated, either along the grykes or at the base of the field walls. In an area of 2m<sup>2</sup>, 50% of the quadrat was occupied by rock. 11 indicator species were recorded with an additional 15 species also occurring (see relevé 4 for details). There was an abundance of seeding orchid heads in this field.

## Note 6:

This field slopes gently to the south and contains approximately 20% exposed limestone rock. Deeper, damper, soil occurs at the bottom end with *Lotus corniculatus* (O), *Galium verum* (O), *Trifolium repens* (O), *Trifolium pratense* (O), *Plantago maritima* (F), *Potentilla anserina* (O), *Linum catharticum* (O), *Daucus carota* (O), *Odontites vernus* (R), *Koeleria macrantha* (R), *Hypochoeris radicata* (R), *Succisa pratensis* (R), *Hydrocotyle vulgaris* (R).

## Note 7:

In this field, the shattered limestone has been collected and stacked into small scattered heaps, providing more open grassland vegetation which is dominated by *Plantago maritima* and *Festuca rubra* with some *Carex flacca*. This area shows a distinct maritime influence with species such as *Armeria maritima*, *Honkenya peploides*, *Crithmum maritimum*, and *Plantago coronopus* occurring on rocky substrates and at the base of the field walls.

## Note 8:

This rocky field has a vegetation composition which is mainly dominated by *Sesleria albicans* and *Festuca rubra*. Also occurring are *Carex flacca* (F), *Succisa pratensis* (O), *Lotus corniculatus* (O), *Prunella vulgaris* (R), *Campanula rotundifolia* (R), *Geranium sanguineum* (R), *Galium verum* (R), *Galium verum* (R), *Trifolium pratense* (R), *Carlina vulgaris* (R), *Potentilla erecta* (R), *Euphrasia* spp. (R), and *Koeleria macrantha* (R). Unidentified seeding orchids also occur. In more low-lying, damper, patches, *Molinia caerulea* occurs.

In general the fields in this area are characterised by slabs of limestone pavement, where calcareous grassland occurs mainly towards the base of the field walls where soil has accumulated. In some fields, shallow or shattered rock has been collected into small heaps in order to increase the area of available grassland.

## Note 9:

This field shows a more heathy nature as indicated by the presence of *Erica cinerea*, *Calluna vulgaris*, *Sesleria albicans*, and *Festuca rubra*.

## Note 10:

This area is located just within the SAC boundary. Some of the fields along the edge of the SAC have a more semi-improved nature and bracken encroachment is an issue in some. This particular field has 60% cover of limestone pavement with the grykes and base of walls showing best vegetation cover.

## Note 11:

This semi-improved field is grass-dominated and is well grazed. Some bracken occurs but a high proportion appears to be dead. Rock accounts for approximately 10% of the field area where species such as *Galium verum*, *Leucanthemum vulgare*, *Lotus corniculatus*, and *Sanguisorba minor* survive.

## Note 12:

There is no exposed rock in this field and the soil is deeper with more retained moisture than other fields in the area. The vegetation is dominated by grasses such as *Anthoxanthum odoratum*, *Briza media*, *Dactylis glomerata*, and *Holcus lanatus* (see relevé 12). Also occurring are *Centaurea nigra*, *Succisa pratensis*, *Daucus carota*, *Agrimonia eupatoria*, *Rubus fruticosus* agg., *Rosa pimpinellifolia*, *Prunella vulgaris*, *Geranium sanguineum*, *Leucanthemum vulgare*, *Sanguisorba minor*, and *Prunus spinosa*.

## Note 13:

This is a wet grassland with *Lythrum salicaria*, *Filipendula ulmaria*, and *Molinia caerulea*. More elevated areas of the field contain drier, calcareous species.

## Note 14:

This is a damp grassland dominated by *Molinia caerulea*.

## Note 15:

Exposed rock occupies <5% of this field. Vegetation appears rank and species-poor. *Dactylis glomerata*, *Geranium sanguineum*, and *Centaurea nigra* co-dominate with scattered *Succisa pratensis*, *Trifolium repens*, *Campanula rotundifolia*, and *Daucus carota*. Around the field margins, at the base of the walls, *Pteridium aquilinum* occurs with occasional *Rubus fruticosus* agg.

## Note 16:

Limestone rock and small areas of pavement accounts for 30% of the area of this field. *Pteridium aquilinum*, *Rubus fruticosus* agg., and *Prunus spinosa* are encroaching along the lines of the grykes and rocky ledges.

## Note 17:

Limestone pavement occupies 40% of this field with the vegetation showing a heathy element. *Calluna vulgaris* and *Erica cinerea* account for 40% of the vegetation cover with *Pteridium aquilinum* occupying 30%. *Rubus fruticosus* agg., *Prunus spinosa*, and *Rosa pimpinellifolia* also occur.

## Note 18:

Exposed rock occupies 40% of this field with a narrow strip of good calcareous grassland occurring around the field margins at the base of the walls. *Calluna vulgaris* and *Erica cinerea* account for 10% of the vegetation cover with *Sesleria albicans* also appearing. *Prunus spinosa* is low-growing on the rocks.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This field is a good example of species-rich calcareous meadow. 11 indicator species were recorded and herb content is high at 80%. In addition to this, the absence of negative indicator species and bracken/scrub results in a 'Pass' for the Structures and Functions at this location. Light to moderate grazing is evident, with recent cowpats occurring.

The field shows a central damper depression with surrounding extruding low rocky ledges (<1m) topped with species-rich grassland. A minor percentage of bracken cover occurs along the edges of the field walls. In general, apart from an occasional semi-improved field (see site note 1), most other fields in this vicinity are of similar nature and quality.

In addition to the 11 indicator species, 20 additional species were recorded (see relevé 1). Outside the Stop, *Anthyllis vulneraria* also occurred on nearby rocky ledges. In the damper depression in the centre of the field, grasses such as *Dactylis glomerata* and *Holcus lanatus* dominated with frequent *Daucus carota*.

### Monitoring Stop 2:

This is a field which shows evidence of improvement. Herb content is good (50%) but only 5 indicator species were recorded, resulting in a 'Fail' for this attribute in Stop 2. 10 additional species occur including *Plantago lanceolata*, *Cynosurus cristatus*, *Taraxacum* agg., *Trifolium repens*, and *Rumex acetosella* (see relevé 2 for full details).

The surface of the field undulates, with damper areas occurring in more low-lying locations. These damper areas are dominated by *Potentilla anserina*. Drier areas show more diversity and Stop 2 is located in one such area. In addition to the species recorded in Stop 2, *Avenula pubescens*, *Succisa pratensis*, *Festuca rubra*, *Euphrasia* spp., and *Rumex obtusifolius*, *Rubus fruticosus* agg., and *Primula* spp. also occur elsewhere in this field.

A moderate grazing regime appears to currently exist in this field. Recent cowpats occur and sward height is reasonably good.

**Monitoring Stop 3:**

This is a rocky field with <20% of rock. It is currently lightly grazed. Herb content is high (70%) and 11 indicator species were recorded. With the absence of any negative indicators or bracken/scrub, this Stop is deemed to 'Pass' the assessment of Structure and Functions.

The vegetation in this field is species-rich, with an additional 17 species recorded (see relevé 3). The orchid *Coeloglossum viride* also occurred. Outside the quadrat area, *Centaurea scabiosa*, *Calluna vulgaris*, *Campanula rotundifolia*, *Rubus fruticosus* agg., *Sesleria albicans*, and *Solidago virgaurea* were recorded.

**Monitoring Stop 4:**

This is a large field with approximately 5% of the area occupied by rock. Occasional damp areas also occur. Stop 4 is located in a relatively drier, slightly elevated, area. While herb percentage was relatively good at 50%, a more heathy, damp, element to the vegetation resulted in only 6 calcareous indicators being recorded. This results in a 'Fail' for this attribute at Stop 4.

An additional 11 species occurred (see relevé 5 for details), including the heathy species *Succisa pratensis* (F) and *Potentilla erecta* (O). Both of these species are frequent throughout this field. Management appears to be light to moderate.

**Monitoring Stop 5:**

In this field, the shattered limestone has been collected and stacked into small scattered heaps, providing areas for more open grassland vegetation. Herb content is high (70%) and 8 indicator species were recorded. With n negative indicator species or scrub/Bracken, this Stop is deemed to 'Pass' its assessment for Structures and Functions. Grazing is light to moderate.

Also occurring are *Achillea millefolium* (O), *Thymus praecox* (O), *Plantago maritima* (O), *Plantago lanceolata* (R), *Festuca rubra* (F), *Succisa pratensis* (R), *Euphrasia* spp., *Leontodon autumnalis* (R), and *Prunella vulgaris* (R).

**Monitoring Stop 6:**

There is no rock in this field and grassland vegetation is dense on the deeper soil. Herb content is good (60%) and 8 indicator species were recorded. Sward height is relatively high at 20cm and while recent cowpats are present, grazing pressures would appear to be light at present.

The vegetation is dominated mainly by *Daucus carota* and *Succisa pratensis*. Also frequent are *Cynosurus cristatus* with occasional *Dactylis glomerata*, suggesting a degree of improvement in the past, which may now be tending towards a more rank nature. Nonetheless, this Stop is deemed to 'Pass' as sufficient herbs and indicators are present and there are no negative indicators or scrub/bracken.

In addition to the 8 indicator species recorded, 13 additional species occur (see relevé 6 for details). Outside the Stop, *Briza media* and *Rhinanthus minor* also occur.

**Monitoring Stop 7:**

The vegetation in this field shows a heathy element. *Erica cinerea* occurs at approximately 20% cover while limestone rock occupies 10%. Some bracken also occurs but percentages are low at 5% and it occurs mainly within the grykes with *Rubus fruticosus* agg.

Within the Stop itself, herb content is good (60%) and 9 indicator species were recorded. Recent cowpats indicate a light level of grazing. 8 additional species were recorded within the Stop, including *Rosa pimpinellifolia* which is scattered across the rocky habitat. Relevé 7 lists all species recorded at Stop 7.

This Stop is deemed to 'Pass' on its assessment of Structures and Functions.

**Monitoring Stop 8:**

Shattered limestone rock occupies 40% of this field. The intervening grassland is of good quality with light to moderate grazing pressures. Within the Stop itself, rock occupies 20% cover. Herb cover is good at 50% and 10 indicator species were recorded with an additional 9 species also occurring (see relevé 8 for details). This field is orchid-rich, with *Coeloglossum viride* and *Dactylorhiza fuchsii* currently in bloom. No negative indicators or scrub/Bracken occur.

This Stop is deemed to 'Pass' on its assessment of Structures and Functions.

**Monitoring Stop 9:**

This Stop is located in an area of good calcareous grassland with dense vegetation cover. Herb content is good (60%) and 7 indicator species were recorded. An additional 16 species also occur (see relevé 9 for details). Exposed limestone rock occupies less than 10% cover.

Bracken occupies 5% of the Stop area. However, as bracken cover is higher in a larger area of 5m<sup>2</sup>, it is likely that encroachment will shortly become a management issue in this field. No evidence of recent grazing was evident. Control measures would need to be implemented as soon as possible to prevent encroachment. In its current condition, this Stop is deemed to 'Pass' on its assessment of Structures and Functions.

**Monitoring Stop 10:**

This grassy field contains approximately 10% exposed limestone rock. Herb content is 40% and 9 indicator species were recorded. 17 additional species also occur (see relevé 10 for full list), with the grass content comprising *Dactylis glomerata*, *Festuca rubra*, *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Holcus lanatus*, and *Agrostis stolonifera*. Outside the Stop, *Campanula rotundifolia*, *Rumex acetosa*, and *Pteridium aquilinum* were noted.

Light to moderate levels of grazing occur and while some bracken was noted outside the Stop encroachment is not currently an issue in this field.

This Stop is deemed to 'Pass' on its assessment of Structures and Functions.

**Monitoring Stop 11:**

This grass-dominated field has been semi-improved by the application of fertiliser. Soil is deeper than previously noted and no rock is exposed. While herb content reaches the required 40% threshold, only 6 indicator species were recorded. Other species recorded in the Stop reflect the nature of the deeper, semi-improved soil (see relevé 11 for full details).

Grazing pressure is light to moderate. As this Stop did not reach the required number of indicator species, it is deemed to 'Fail' for Structures and Functions.

**Monitoring Stop 12:**

Exposed limestone rock accounts for 25% of the area in this field. Within the Stop itself, rock occupies only 5% cover. Herb content in the Stop is high (70%) and 11 indicator species were recorded with an additional 16 species also occurring (see relevé 13 for details). In addition, with the absence of any negative indicators or bracken/scrub, this Stop is deemed to 'Pass' for the 'Structure and Functions' attribute. Light to moderate grazing pressures occur.



**Monitoring Stop 13:**

This is a good calcareous grassland on rocky soil. Less than 20% of the field area is exposed limestone rock but no rock occurs within the Stop itself. Grazing pressure is light to moderate and recent cowpats were observed.

Herb content within the Stop is good (50%) and 8 indicator species were recorded. An additional 14 species also occur (see relevé 14 for full list). Outside the Stop, *Koeleria macrantha*, *Molinia caerulea*, *Campanula rotundifolia*, *Hieracium pilosella*, *Primula* spp., and *Prunus spinosa* also occur.

With no negative indicators or scrub/Bracken present, this Stop is deemed to 'Pass' for the 'Structure and Functions' attribute.

**Monitoring Stop 14:**

There is a heathy element to the grassland in the field where Stop 14 is located. Exposed rock accounts for approximately 20% of the area of the field but only 5% rock occurs within the Stop. Grazing pressure is light and while no recent cowpats were observed, occasional rabbit droppings were noted.

Herb content is good (60%) and 11 indicator species were recorded. No negative indicators or scrub/Bracken occur. In addition to the indicator species recorded, 15 other species occur including heath species such as *Calluna vulgaris*, *Erica cinerea*, *Potentilla erecta*, and *Polygala serpyllifolia*. *Calluna vulgaris* and *Erica cinerea* together occupy approximately 30% of the quadrat area (see relevé 15 for full list of species). Outside the Stop, *Solidago virgaurea*, *Molinia caerulea*, and *Rubus fruticosus* agg. also occur.

This Stop is deemed to 'Pass' for the 'Structure and Functions' attribute.

**Monitoring Stop 15:**

This field contains less than 10% exposed rock and has a predominantly grassy appearance. Within the Stop, herb content is only 30% and only 6 calcareous indicator species were recorded. The vegetation tends towards a rank appearance, with *Dactylis glomerata* and *Holcus lanatus* dominating the grass component (see relevé 16 for full species list). Bracken also occurs, occupying up to 10% of the Stop. These factors together result in a 'Fail' for Structures and Functions at this Stop.

Sward height is comparatively high in this field, averaging at 30cm, and up to 10% plant litter also occurs. There were no recent signs of grazing or other management in this field.

**Monitoring Stop 16:**

This is a good rocky limestone grassland. Rock does not exceed 20% of the area of the field and there is less than 5% cover of rock within the Stop itself. Vegetation is low and grazing is light to moderate. Herb content within the Stop is high (70%) and 10 indicator species were recorded. In addition, 10 other species also occur (see relevé 17 for full species list).

As no Bracken/scrub occurs in this Stop, it is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 17:**

Exposed rock occupies 20% of the area of this field. The interspersed grassland has a heathy tendency as indicated by the presence of *Calluna vulgaris* and *Erica cinerea*. Within the Stop, rock occupies 10%. Herb content is good (60%) and 8 indicator species were recorded. An additional 10 species were also recorded (see relevé 18 for details). Outside the Stop, a small patch of *Juniperus communis* was noted nearby. Grazing pressures are light at present.

Under the current assessment period, this Stop is deemed to 'Pass' for the 'Structure and Functions' attribute. However, while bracken currently covers only 5% of the quadrat area, this percentage rises to approximately 10% over a larger area of 5m<sup>2</sup>. This suggests that encroachment is likely to become an issue in this field unless management practices are implemented to control the spread of bracken. Bracken and bramble currently occur mainly along the lines of the grykes.

**Monitoring Stop 18:**

This field contains approximately 10% exposed limestone rock. This rock is scattered amongst good calcareous grassland which shows a heathy element in places where heathers reach 10% cover. Within the Stop, herb content is good (60%) and 10 indicator species were recorded. An additional 15 species occur within the Stop (see relevé 19 for full species list). No heathers occurred within the Stop. Outside the Stop, *Rosa pimpinellifolia*, *Prunus spinosa*, and *Rubus fruticosus* agg. also occur.

Bracken is concentrated in the lower-lying end of the field and along the base of the field walls. Within the Stop, it reaches only to 5% and overall, its sparse nature in this field does not make it a management issue at this time.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 19:**

This field is lightly grazed and has no exposed limestone. Vegetation is dense and while a minor percentage of bracken occurs at the field margins long the edges of the walls, very little occurs within the sward (<5%). Herb content is good (60%) and the required 7 indicators were recorded.

An additional 8 species were recorded within the Stop (see relevé 20 for full species list) while outside, *Daucus carota*, *Dactylis glomerata*, and *Senecio sylvaticus* also occur.

This Stop is deemed to Pass its assessment of Structure and Functions.

**Monitoring Stop 20:**

This field is a good example of species-rich calcareous grassland. Within the Stop, herb content is very high (70%) and 9 indicator species were recorded. No negative indicators or scrub/Bracken was recorded.

In addition to the 9 indicator species noted, an 16 additional species were recorded. Outside the Stop, *Senecio sylvaticus*, *Hypochoeris radicata*, *Blackstonia perfoliata*, *Koeleria macrantha*, *Carlina vulgaris*, and unidentified seeding orchids also occur.

This Stop is deemed to Pass its assessment of Structures and Functions.

**Inishmore Island****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	23/09/2006
Faith Wilson	24/09/2006

**Total Site Area (Ha):** 15768**Area of Priority Grassland (N2000) (Ha):** 212.**Area of Priority Grassland 2006 (Ha)\*:** 236

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Galway	51	GA110, GA110a, GA111, GA119 .

**Digital Aerial Photos (Tile Nos.):**

O3619-a, O3619-b, O3619-c, O3619-d, O3620-a, O3620-b, O3620-c, O3620-d, O3621-c, O3621-d, O3675-a, O3675-b, O3675-c, O3675-d, O3676-a, O3676-b, O3676-c, O3676-d, O3677-a, O3677-c, O3677-d, O3733-a, O3733-b, O3734-a, O3734-b, O3734-c, O3734-d, O7039-b

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS****SAC Site Code:**

000213

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Inishmore Island is the largest of the three Aran Islands, situated approximately 8km off the south coast of County Galway. Geologically an extension of the Burren, Co. Clare, the Island is formed of Upper Carboniferous limestone strata, interleaved with layers of shale and clay. In places along the coast, splendid cliffs rise to 90m. A thin cover of rendzina occurs in pockets between blocks of bare limestone. This soil is combined with a mixture of sand and seaweed to form a unique man-made soil cover, built up over the centuries. The site includes a large area of marine waters surrounding the island.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site described the calcareous grassland as follows: A network of small, stone-walled fields dissect the Island. Each field encloses an area of limestone pavement interspersed with fine examples of species-rich, dry calcareous grasslands. Common species here include Blue Moor-grass (*Sesleria albicans*), Eyebright (*Euphrasia* spp.), Wood Sage (*Teucrium scorodonia*), Carlina Thistle (*Carlina vulgaris*) and Burnet Rose (*Rosa pimpinellifolia*), along with Knapweeds (*Centaurea nigra* and *C. scabiosa*), Orchids (*Orchidaceae*), Bloody Cranesbill (*Geranium sanguineum*) and Spring Gentian (*Gentiana verna*). The southern part of the Island supports the highest proportion of these calcareous meadows.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: The habitat plays host to an excellent variety of orchid species along with a diverse range of species typically associated with calcareous grasslands. Common orchid species include *Anacamptis pyramidalis*, *Orchis mascula*, *Listera ovata* and *Platanthera bifolia* with occasional *Dactylorhiza fuchsii*, *Dactylorhiza fuchsii* ssp. *okellyi*, *Spiranthes spiralis*, *Dactylorhiza maculata*, *Orchis majalis*, and lesser amounts of *Gymnadenia conopsea*, *Ophrys apifera* and *Neotinea maculata*. The latter species *Neotinea maculata* has a limited distribution in Ireland being generally associated with the Burren and rare elsewhere.

#### *Description based on the 2006 Survey :*

The 2006 survey found that the better examples of calcareous grassland within the site were found on shallow soils associated with limestone pavement and outcropping rocks. Typical indicator species encountered include *Avenula pubescens*, *Campanula rotundifolia*, *Carex flacca*, *Daucus carota*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Sanguisorba minor*, *Geranium sanguineum*, *Anthyllis vulneraria* and less frequently *Sesleria albicans*, *Koeleria macrantha*, *Hieracium pilosella*, *Carlina vulgaris*, *Briza media* and *Gentianella campestris*.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

The site was surveyed during the 1993 NHA Survey. However, there are only general notes available on the habitats present as the NHA Survey was primarily a boundary survey only.

## **SITE MONITORING AND MANAGEMENT UNITS**

This extensive island had no NHA survey notes located within the site boundary. The aerial photographs (OSI 2000) for the site were examined and a number of target survey areas were selected, focussing on areas that appeared to be more grass-dominated as opposed to areas of outcropping limestone pavement or shattered rock. The locations of the visited target areas are depicted on the overview of the site in Map 1.

Within these target areas, 12 Monitoring Stops were conducted and their locations are depicted on Map 2. A summary of the information recorded at each of the Monitoring Stops is presented in Appendix 2 and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I while their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

All of the 12 Monitoring Stops on Inishmore Island were used to assess the Structures and Functions of calcareous grassland within the site. The results of the assessment is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It is seen from these tables that seven of the Monitoring Stops failed, resulting in an overall fail for the Structures and Functions of the site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	12
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	5
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Sheet 1 of 2
Stop 02	2	Fail	Structures and Functions	Sheet 1 of 2
Stop 03	3	Pass	Structures and Functions	Sheet 1 of 2
Stop 04	4	Fail	Structures and Functions	Sheet 1 of 2
Stop 05	5	Fail	Structures and Functions	Sheet 2 of 2
Stop 06	6	Pass	Structures and Functions	Sheet 2 of 2
Stop 07	7	Fail	Structures and Functions	Sheet 2 of 2
Stop 08	8	Pass	Structures and Functions	Sheet 2 of 2
Stop 09	9	Pass	Structures and Functions	Sheet 1 of 2
Stop 10	10	Pass	Structures and Functions	Sheet 1 of 2
Stop 11	11	Fail	Structures and Functions	Sheet 1 of 2
Stop 12	12	Fail	Structures and Functions	Sheet 1 of 2

The areas of calcareous grassland within the site which were surveyed were divided into twelve management units based on natural field boundaries.



## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

There have been changes in the way lands on Inishmore Island are managed (101) since the site was designated in 2000. This has resulted in a deterioration of the extent and condition of calcareous grassland within the site. Activities noted as impacting on the Conservation Status of the priority grassland within the site are presented in Table 2 below.

Some of the Monitoring Stops within the site are becoming encroached by *Pteridium aquilinum* (954). Monitoring Stop 5 failed as a result of excessive cover of *Pteridium aquilinum*, while Stops 4, 6, 9, 10 and 11 are currently threatened by encroachment. Encroachment by scrub is also an issue (Notes 3, 6, 7, 8, 9, 10, 11, 12 and 13).

Other areas within the site have become rank (Notes 8, 9 and 11) due to insufficient grazing (149) which has reduced the number of calcareous indicators present. This resulted in a number of Monitoring Stops failing the assessment process (Monitoring Stops 1, 2, 4, 7, 11 and 12). Other fields had been improved/semi-improved (120/103) with a resulting loss of species diversity within the site (Notes 4 and 7 and Monitoring Stops 1, 11, and 12).

There was some localised removal of soil (390) at Monitoring Stop 1 and there has been removal of limestone pavement (104) in a few areas within the site (Notes 14, 15 and 16).

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	B
101	Cultivation: modification of cultivation practices	-1	A
104	Cultivation: removal of limestone pavement	-2	C
120	Fertilisation	-1	B
141	Grazing: abandonment of pastoral systems	-1	B
149	Grazing: undergrazing	-1	B
390	Mining & extraction activities not referred to above	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The spread of *Pteridium aquilinum* and scrub is an issue in many fields within the site and will require active management. Monitoring Stop 5 failed as a result of *Pteridium aquilinum* encroachment, while Stops 4, 6, 9, 10 and 11 are threatened (see also Notes 3, 6, 7, 8, 9, 10, 11, 12 and 13). The agricultural improvement of fields resulting from the spread of farm yard slurry also requires management (Notes 4 and 7, and Monitoring Stops 1, 11 and 12). The removal of limestone pavement was observed at several locations during the survey (Notes 14, 15 and 16) and may be more extensive in other

areas of the island. This activity requires immediate action.

## **CONSERVATION STATUS**

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and is not accurately mapped from aerial photographs. This is because of its patchy distribution as it forms a mosaic with, and is not easily distinguishable from calcareous heath and limestone pavement.

Thus, the area of the habitat is crudely estimated to be 10% of the SAC which has a total area of 2,360ha. This equates to an extent of approximately 236ha. This is likely to be an over-estimation, however, as much of the grassland within the SAC appeared to be agriculturally improved to some degree. However, a more accurate estimate can only be achieved by more intensive field survey work. The Natura 2000 explanatory notes crudely estimate that 212ha of the habitat occurs within the SAC, which is slightly lower than the current estimate.

During the current survey a number of areas of agriculturally improved land (reseeding and artificial fertilising) were noted within the SAC. Indeed one of the Monitoring Stops failed directly due to agricultural improvement (Monitoring Stop 11) while reseeding with *Lolium perenne* was contributory to a decrease in species diversity in two further Monitoring Stops (Monitoring Stops 1 and 12). Furthermore, a number of fields were noted as becoming rank or encroached with scrub and *Pteridium aquilinum* as a result of the abandonment of traditional grazing practices. Thus it would appear that there has been a significant loss in the extent of habitat 6210 on Inishmore since the site was designated resulting in a Conservation Assessment of Unfavourable - bad for Extent.

### ***Structure and Functions:***

Seven of the twelve Monitoring Stops failed, resulting in an overall 'Fail' for the Structures and Functions of the site. This was principally due to a loss of indicator species (Notes 4 and 7, and Monitoring Stops 1, 11 and 12), or to encroachment by scrub/*Pteridium aquilinum*.

Monitoring Stop 5 failed as a result of excessive cover of *Pteridium aquilinum*, while Stops 4, 6, 9, 10 and 11 are currently threatened (see also Notes 3, 6, 7, 8, 9, 10, 11, 12 and 13). Agricultural improvement of old grassland is also a significant factor (see Notes 4 and 7, and Monitoring Stops 1, 11 and 12). Monitoring Stops 7 and 11 also failed due to poor herb cover.

Due to the significant failure of the Structures and Functions assessment, this attribute is described as being Unfavourable - bad for Inishmore Island.

### ***Future Prospects:***

A reduced diversity in calcareous species was noted at a number of Monitoring Stops. Agricultural improvement practices are the most likely cause of this habitat deterioration. Reduction in the application of fertilisers is essential if this issue is to be dealt with, although it will take close monitoring and management over considerable time before improvements are seen. However, as significant levels of reseeding were not noted, it

would be hopeful that improvements in species diversity would occur.

For those fields which presented with rank vegetation, species diversity may be restored with hard grazing. Similarly, scrub encroachment can also be managed by removal on the ground followed by hard grazing. This will require active management and agreements between the landowner and NPWS.

The removal of areas of limestone pavement is also of concern and requires immediate attention. The lack of a resident Conservation Ranger on the island also means that damaging activities are more likely to go unobserved, especially if they occur in several fields in from the main walking tracks or roads within the island.

Due to the poor condition of the grassland areas surveyed and the loss in habitat area which has been estimated to have occurred, the Future Prospects for the site are thus described as Unfavourable - inadequate.

### ***Conservation Assessment:***

This site was first surveyed during the 1993 NHA Survey. However, there are only general notes available on the habitats present as the NHA Survey was primarily a boundary survey only. Therefore, a comparison of the previous and the current extent of calcareous grassland was difficult. However, given the evidence of agricultural improvement which was noted during the current survey, it is reasonable to assume that much of this has occurred in recent years and that loss of 6210 habitat has occurred.

The condition of the remaining calcareous grassland has also dis-improved, due mainly to a reduction in traditional grazing practices which has allowed *Pteridium aquilinum* to encroach and has caused the development of rank grassland. Both of these factors have contributed to a loss of species diversity.

The Future Prospects for the site will depend on management agreements between private landowners and NPWS as the restoration of orchid-rich calcareous grassland will require active management on the part of both parties. Although the Future Prospects for the site are described as Unfavourable - inadequate, given that the Extent and Structures and Functions of the site are described as Unfavourable - bad, the overall Conservation Status Assessment for the site is described as being Unfavourable - bad.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is a linear strip of grassland above monitoring stop 1. Above this there is outcropping limestone in strips and a boundary wall is located to the north -west. Species present include - *Succisa pratensis* (O), *Leucanthemum vulgare* (R), *Galium verum* (O), *Carex flacca* (O), *Carlina vulgaris* (R), *Rhinanthus minor* (F), *Trifolium pratense* (F), *Primula* sp. (R), *Linum catharticum* (R), *Sanguisorba minor* (O), *Cerastium fontanum* (R), *Potentilla erecta* (O), *Geranium sanguineum* (O), *Plantago lanceolata* (R), *Briza media* (R) and *Centaureum erythraea* (R). This relevé data is presented in Quadrat 13.

This area is currently ungrazed and is located on the deeper soils between areas of outcropping limestone. *Rosa pimpinellifolia*, *Senecio jacobaea*, *Centaurea scabiosa*, *Teucrium scorodonia*, *Potentilla anserina*, *Campanula rotundifolia*, *Plantago maritima* and *Calluna vulgaris* are all present outside the relevé.

**Note 2:**

This is located amidst an area which shows up as darker green between strips of outcropping limestone on the OSI 2000 aerial photograph. Deeper soils here have produced a sward dominated by *Festuca rubra* (D) with frequent *Lotus corniculatus*, *Potentilla erecta*, *Plantago lanceolata* and occasional *Holcus lanatus*. *Carex flacca*, *Trifolium pratense*, *Achillea millefolium*, *Cerastium fontanum*, *Prunella vulgaris*, *Plantago maritima*, *Centaurea nigra*, *Viola* sp. and *Campanula rotundifolia* were all rare. This relevé data is presented in Quadrat 14. This area was grazed by horses.

**Note 3:**

This field and the one to the south of it is dominated by limestone pavement which doesn't really show up on the OSI 2000 aerial photograph. *Pteridium aquilinum* encroachment is a serious threat to this area. *Ulex europaeus* is found on the slopes.

**Note 4:**

This is a semi-improved field dominated by *Lolium perenne* with abundant *Cynosurus cristatus*, *Dactylis glomerata*, *Cirsium arvense*, *Pteridium aquilinum* and frequent *Trifolium repens*. *Holcus lanatus*, *Lotus corniculatus* and *Ranunculus repens* were occasional while *Centaurea nigra*, *Agrimonia eupatoria* and *Prunella vulgaris* were rare. There was occasional *Rumex obtusifolius*. This area was grazed by cattle.

**Note 5:**

This is an area of species rich calcareous grassland adjacent to Port Muirbhagh. These may in fact be fossil dunes as species present included *Daucus carota*, *Prunella vulgaris*, *Centaurea scabiosa*, *Galium verum*, *Anthyllis vulneraria*, *Plantago lanceolata*, *Cynosurus cristatus*, *Euphrasia* sp., *Carex flacca*, *Lolium perenne*, *Campanula rotundifolia*, *Festuca rubra*, *Dactylis glomerata*, *Anacamptis pyramidalis*, *Hypochoeris radicata*, *Trifolium pratense* and *Rhinanthus minor*.

## Note 6:

This note relates to a field above Monitoring Stop 5. The upper portion of this field has outcropping limestone rocks while the lower section has deeper soils. This stop has a similar species list to Monitoring Stop 5. *Coeloglossum viride* is present. The deeper soils have *Centaurea nigra*, *Heracleum sphondylium* and *Ranunculus repens* while the upper shallower soils on outcropping rocks have *Thymus praecox*, *Euphrasia* sp., *Sanguisorba minor* and *Odontites verna* in addition to those in Monitoring Stop 5. There is also a greater abundance of *Geranium sanguineum*. The upper section of this field is becoming rapidly encroached by *Prunus spinosa*, *Pteridium aquilinum*, *Rubus fruticosus* agg. and *Rosa pimpinellifolia* despite the fact that it is currently grazed.

## Note 7:

This note was taken in the field above N6. The calcareous grassland in this field is restricted to the thinner soils surrounding outcropping limestone rocks. The deeper soils are dominated by *Ranunculus repens*, *Centaurea nigra*, *Heracleum sphondylium*, *Rumex* sp., *Holcus lanatus*, *Dactylis glomerata*, *Crepis* sp., *Odontites verna*, *Rumex acetosella* and *Lathyrus pratensis*. This area is semi-improved. Scrub encroachment is also an issue here.

## Note 8:

Four fields below Monitoring Stop 7 are of similar composition and quality and are currently ungrazed and appear abandoned. The upper field has greater species diversity due to large areas of outcropping limestone where there is *Geranium sanguineum*, *Lotus corniculatus*, *Campanula rotundifolia* and *Sanguisorba minor*. Elsewhere this field is dominated by *Dactylis glomerata*.

## Note 9:

This is an ungrazed field. The sward has frequent *Rubus fruticosus* agg. throughout, with *Dactylis glomerata*, *Centaurea nigra*, *Pteridium aquilinum*, *Avenula pubescens*, *Plantago lanceolata*, *Potentilla erecta*, *Briza media* and *Euphrasia* sp.

## Note 10:

The fields closer to the green road have more frequent outcrops of limestone verging on pavement. Species present include *Sanguisorba minor*, *Briza media*, *Euphrasia* sp., *Leucanthemum vulgare*, *Geranium sanguineum*, *Rosa pimpinellifolia*, *Anthyllis vulneraria*, *Potentilla erecta*, *Plantago maritima* and *Lotus corniculatus*. *Prunus spinosa* and *Rubus fruticosus* agg. is frequent between the limestone outcrops and is spreading as is *Pteridium aquilinum*.

## Note 11:

The fields on this side of the road are typically species rich calcareous grassland. Those on the other side are rank with frequent encroachment by *Rubus fruticosus* agg. and *Pteridium aquilinum*. The better fields have some areas of shattered limestone (c30%) and were previously grazed by cattle.

## Note 12:

This is a linear strip of low lying fields with a depression in the centre leading between the trackway and the sea. *Prunus spinosa*, *Pteridium aquilinum* and *Rubus fruticosus* agg. encroachment is a serious issue in this area. The areas of species-rich calcareous grassland is restricted to the shallower soils on the sloped areas of these depressions.

## Note 13:

This is a small field with outcropping limestone which is beginning to become heath dominated with *Calluna vulgaris* and *Erica cinerea*, with spreading *Prunus spinosa* and *Rubus fruticosus* agg. from field boundaries.

## Note 14:

This is an area of recently excavated/clearance of the field layer by machinery resulting in shattered and broken limestone.

## Note 15:

This is an accumulation of recently excavated limestone - possibly from the field described in N14.

## Note 16:

A photographic overview of an area of recently removed limestone pavement was taken from this location.

## Note 17:

This area is proposed for inclusion within the SAC.

This is a large field with good calcareous grassland between the junction of Gort Na gCapall road and Port Muirbhigh. Indicator species present include; *Galium verum* (F), *Daucus carota* (A), *Centaurea scabiosa* (O), *Centaurea nigra* (R), *Campanula rotundifolia* (O), *Hypochoeris radicata* (O), *Euphrasia* sp. (O), *Dactylis glomerata* (R), *Festuca rubra* (F), *Trifolium pratense* (R), *Plantago lanceolata* (R), *Rhinanthus minor* (O), *Leucanthemum vulgare* (O), *Anacamptis pyramidalis* (R) and *Medicago lupulina* (O). Other species present in the sward include *Anthyllis vulneraria*, *Thymus praecox*, *Anthoxanthum odoratum*, *Holcus lanatus*, *Carex flacca*, *Blackstonia perfoliata*, *Linum catharticum*, *Rosa pimpinellifolia* and frequent seed heads of orchids. This area appeared to be on a sand substrate and may be a fossilised dune.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop was located in a series of small fields c.20m wide at the base of a sloping area of exposed limestone bedrock. Only six calcareous indicator species were recorded in a herb-rich sward (70%). There was no encroachment by *Pteridium aquilinum*/scrub but small percentage cover of *Lolium perenne* occurred (<5%).

The sward was dominated by *Trifolium pratense* (A), *Dactylis glomerata* (R), *Cynosurus cristatus* (F), *Festuca rubra* (F), *Prunella vulgaris* (O), *Euphrasia* sp. (R), *Rhinanthus minor* (R), *Plantago lanceolata* (O), *Leucanthemum vulgare* (O), *Pteridium aquilinum* (R), *Potentilla erecta* (O), *Succisa pratensis* (F), *Centaurea nigra* (R), *Lolium perenne* (R), *Avenula pubescens* (R), *Holcus lanatus* (R), *Cerastium fontanum* (R), *Potentilla anserina* (R), *Luzula campestris* (R) and *Hypochoeris radicata* (R.) in addition to those species recorded as indicators. The relevé data for this Monitoring Stop is presented in Quadrat 1.

On thinner soils on the slope above these fields, *Pteridium aquilinum* is dominating and the spread of this species poses a threat to this grassland. There has been some extraction of soil in this area, leaving several shallow hollows which are recolonising.

Additional species recorded outside the Monitoring Stop include *Arctium minus* and *Ranunculus acris*. Additional species present on the slopes include *Plantago maritima*, *Hieracium pilosella*, *Galium verum*, *Carlina vulgaris*, *Primula* sp., *Rosa pimpinellifolia*, *Achillea millefolium*, *Campanula rotundifolia*, *Viola* sp. and *Carex flacca*.

Due to the insufficient number of indicator species recorded, this Stop fails the assessment of Structures and Functions.



**Monitoring Stop 2:**

This Monitoring Stop was located on a thin strip of grassland below the outer wall of Dun Aenghus Fort, amidst outcropping strips of limestone bedrock. Only five calcareous indicator species were recorded in a herb-rich sward (50%) with no negative indicator species present and no encroachment by *Pteridium aquilinum*/scrub. The insufficient number of indicator species recorded results in a 'Fail' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (F), *Trifolium pratense* (R), *Plantago lanceolata* (F), *Euphrasia* sp. (R), *Plantago maritima* (O), *Prunella vulgaris* (O), *Potentilla erecta* (O), *Festuca ovina* (R), *Holcus lanatus* (R), *Festuca rubra* (O), four fruiting/seeding spikes of an unidentified orchid species, *Hypochoeris radicata* (R), *Achillea millefolium* (R), *Viola* sp. (R), *Cerastium fontanum* (R) and *Thymus praecox* (O). This relevé data is presented in Quadrat 2.

Additional species recorded outside the Monitoring Stop include *Erica cinerea*, *Eupatorium cannabinum*, *Carlina vulgaris*, *Campanula rotundifolia*, and more frequent fruiting/seeding orchids.

**Monitoring Stop 3:**

This Monitoring Stop was located in a field adjoining the trackway to Dun Aenghus Fort with frequent outcrops of shattered limestone. It is currently grazed by cattle. Nine calcareous indicator species were recorded in a herb-rich sward (70%) with no negative indicator species present and no encroachment by *Pteridium aquilinum* or scrub. This resulted in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop reflect the heathy nature of the vegetation in this area. Species noted include *Calluna vulgaris* (R), *Euphrasia* sp. (O), *Rhinanthus minor* (F), *Succisa pratensis* (R), *Potentilla erecta* (R), *Plantago lanceolata* (R), *Leucanthemum vulgare* (R), *Prunella vulgaris* (R), *Festuca rubra* (F), *Plantago maritima* (F), *Polygala serpyllifolia* (R), *Holcus lanatus* (R), *Festuca ovina* (R), *Nardus stricta* (R), *Hypochoeris radicata* (R), and *Solidago virgaurea* (R). This relevé data is presented in Quadrat 3.

Outside the Monitoring Stop, *Rosa pimpinellifolia*, *Daucus carota*, *Schoenus nigricans* and *Erica cinerea* are also present. *Calluna vulgaris* is present in higher abundance (c40%). There are small patches of deeper/wetter soil.

**Monitoring Stop 4:**

This Monitoring Stop was conducted in a slightly enriched field. Only two calcareous indicator species were recorded in a herb rich sward (40%) with no negative indicator species present and some encroachment by *Pteridium aquilinum* (<5%). The insufficient number of indicator species results in a 'Fail' for this Monitoring Stop.

The sward is dominated by *Cynosurus cristatus* and *Centaurea nigra* with frequent *Hypochoeris radicata*, and occasional *Plantago lanceolata*, *Achillea millefolium*, *Leucanthemum vulgare*, *Trifolium repens*, *Prunella vulgaris*, and *Taraxacum* agg. The species *Pteridium aquilinum*, *Ranunculus acris*, *Rhinanthus minor*, and *Ranunculus repens* were all rare. This relevé data is presented in Quadrat 4.

This area was currently grazed by goats. There are patches of *Cirsium arvense* in the centre of the field. *Centaureum erythraea* and *Galium verum* were found near an area of outcropping limestone near the corner of the field.

**Monitoring Stop 5:**

This Monitoring Stop was located in a small field with terraces of outcropping limestone. 50% of this field is encroached by *Pteridium aquilinum* and *Rubus fruticosus* agg. The area was recently grazed by cattle and donkeys but is currently ungrazed. Nine calcareous indicator species were recorded in a herb rich sward (60%) with no negative indicator species present and some encroachment by *Pteridium aquilinum* (>15%). This resulted in a 'Fail' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (O), *Bellis perennis* (R), *Viola* sp. (R), *Plantago lanceolata* (R), *Leucanthemum vulgare* (O), *Primula* sp. (R), *Trifolium repens* (R), *Potentilla erecta* (O), *Rosa pimpinellifolia* (R), *Trifolium pratense* (R), *Hypochoeris radicata* (R), *Rubus fruticosus* agg. (R), *Pteridium aquilinum* (R), *Achillea millefolium* (R), *Dactylis glomerata* (R), *Veronica chamaedrys* (R), *Vicia* sp. (R), and *Centaureum erythraea* (R). This relevé data is presented in Quadrat 5.

*Ilex aquifolium* was also present outside the Monitoring Stop. The fields below this are semi-improved with encroaching *Pteridium aquilinum*.

**Monitoring Stop 6:**

This Monitoring Stop was located in a small circular field near the main area of limestone bedrock. Nine calcareous indicator species were recorded in a herb rich sward (50%) with no negative indicator species present and some encroachment by *Pteridium aquilinum* (<5%). This resulted in a 'Pass' for the Monitoring Stop.

The field of calcareous grassland is currently grazed. There is some encroachment by *Pteridium aquilinum* and *Rubus fruticosus* agg.. Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (R), *Pteridium aquilinum* (R), *Rubus fruticosus* (R), *Centaurea nigra* (O), *Plantago lanceolata* (R), *Cynosurus cristatus* (O), *Rosa pimpinellifolia* (R), *Achillea millefolium* (O), *Euphrasia* sp. (R), *Centaureum erythraea* (R), *Festuca rubra* (O), *Trifolium repens* (F), *Dactylis glomerata* (R), *Trifolium pratense* (R), *Odontites verna* (R), and *Rumex acetosella* (R). This relevé data is presented in Quadrat 6.

*Hieracium pilosella* was recorded outside the Monitoring Stop.

**Monitoring Stop 7:**

This Monitoring Stop was located in a field of rank grassland which appears to have been abandoned. Only two calcareous indicator species were recorded in a herb poor sward (20%) with no negative indicator species present and no encroachment by *Pteridium aquilinum*/scrub. The insufficient number of indicator species resulted in a 'Fail' for the Monitoring Stop.

The sward is dominated by *Dactylis glomerata* (A) with *Avenula pubescens* (O) and *Festuca rubra* (A). Other species present include *Daucus carota* (F), *Centaurea nigra* (F), *Plantago lanceolata* (O), *Heracleum sphondylium* (R), *Trifolium pratense* (O), *Lathyrus pratensis* (R), *Veronica chamaedrys* (R), and *Vicia* sp. (R). This relevé data is presented in Quadrat 7.

*Agrimonia eupatoria* was present outside the Monitoring Stop. There was some *Rubus fruticosus* agg. present at the margins of the field.

**Monitoring Stop 8:**

This Monitoring Stop was located in a field with outcropping limestone on one side and relatively thin soils elsewhere. Twelve calcareous indicator species were recorded in a herb-rich sward (90%) with no negative indicator species present and no encroachment by *Pteridium aquilinum*/scrub. This results in a 'Pass' for the Monitoring Stop.

The sward is currently ungrazed with *Succisa pratensis* (O), *Centaurea nigra* (R), *Prunella vulgaris* (R), *Euphrasia* sp. (O), *Potentilla erecta* (F), *Trifolium pratense* (R), *Rhinanthus minor* (O), *Plantago lanceolata* (O), *Prunus spinosa* seedlings (R), *Dactylis glomerata* (R), *Anthoxanthum odoratum* (R), *Festuca rubra* (R), and *Holcus lanatus* (R). The relevé data for this Monitoring Stop is presented in Quadrat 8.

Outside the Monitoring Stop, *Carlina vulgaris*, *Leucanthemum vulgare*, *Sanguisorba minor*, *Thymus praecox*, *Rosa pimpinellifolia*, and *Centaurea scabiosa* are present. There is some encroachment of *Prunus spinosa* and *Rubus fruticosus* agg. from the field margins but the current grazing regime seems suitable. Other fields in this area are very similar to this Monitoring Stop.

**Monitoring Stop 9:**

This Monitoring Stop was located on a steeply sloped field adjoining a green trackway. The slope has frequent outcropping of limestone bedrock which forms terraces. There is quite a heathy element to this slope. Eleven calcareous indicator species were recorded in a herb rich sward (60%) with no negative indicator species present and some encroachment by *Pteridium aquilinum* (<5%). This results in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Primula* sp. (R), *Prunella vulgaris* (O), *Leucanthemum vulgare* (O), *Agrostis capillaris* (R), *Pteridium aquilinum* (R), *Potentilla erecta* (F), *Trifolium pratense* (R), *Plantago lanceolata* (R), *Anthoxanthum odoratum* (R), *Rhinanthus minor* (R), *Succisa pratensis* (O), *Euphrasia* sp. (R), *Viola* sp. (R), *Calluna vulgaris* (R), *Cynosurus cristatus* (R), and *Festuca rubra* (R). This relevé data is presented in Quadrat 9.

Additional species recorded on the slopes included several orchid seed heads along with *Pimpinella saxifraga*, *Thymus praecox*, *Rubus fruticosus* agg., *Galium verum*, *Primula* sp., and *Rosa pimpinellifolia*.

There is some evidence of winter grazing, but the poach holes caused by the grazing animals during recent years are revegetating well. There is some encroachment by *Rubus fruticosus* agg. and *Pteridium aquilinum* from the field boundaries. This is currently kept in check by the current grazing regime but could become an issue.

**Monitoring Stop 10:**

This Monitoring Stop was located in a field adjoining the track. It was conducted on a small plateau area with deeper soils which was surrounded by broken limestone pavement and outcropping limestone. Eight calcareous indicator species were recorded in a herb-rich sward (80%) with no negative indicator species present. Some *Pteridium aquilinum* (5%) was present but it was not excessive. This assessment resulted in a 'Pass' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Euphrasia* sp. (D), *Rhinanthus minor* (F), *Centaurea nigra* (O), *Leucanthemum vulgare* (R), *Trifolium repens* (O), *Dactylis glomerata* (O), *Cynosurus cristatus* (F), *Senecio sylvaticus* (R), *Potentilla erecta* (O), *Plantago lanceolata* (F), *Agrostis capillaris* (R), *Pteridium aquilinum* (R), and *Hypochoeris radicata* (R). The relevé data from this Monitoring Stop is presented in Quadrat 10.

There is a slight heathy element to some of the thinner soils with *Calluna vulgaris* and *Erica cinerea* present. *Solidago virgaurea* is also present. *Potentilla anserina* and *Heracleum sphondylium* are present near the field margins. There is some encroachment of *Rubus fruticosus* agg. and *Pteridium aquilinum* from field boundaries.

**Monitoring Stop 11:**

This Monitoring Stop was located in a semi-improved field adjacent to the road. Areas of outcropping limestone rock remain with some calcareous indicator species such as *Carex flacca*, *Campanula rotundifolia*, and *Galium verum*. Other species such as *Trifolium pratense*, *Succisa pratensis*, *Rosa pimpinellifolia*, *Solidago virgaurea*, *Teucrium scorodonia*, *Calluna vulgaris*, *Leucanthemum vulgare*, and *Prunella vulgaris* also occur.

Only two calcareous indicator species were recorded in a herb-poor sward (20%) with two negative indicator species present and some encroachment by *Pteridium aquilinum* (<5%). The insufficient number of indicator species within the Stop resulted in a 'Fail' for the Monitoring Stop.

The Monitoring Stop was conducted in an area between these outcrops of limestone which has lost its species diversity, possibly following the application of fertiliser. Some calcareous elements remain but the sward is dominated by a thick thatch of *Festuca rubra* (A), *Holcus lanatus* (O), *Dactylis glomerata* (O), *Festuca arundinacea* (R) and *Trifolium pratense* (O). Calcareous elements remain including *Galium verum* (O), *Potentilla erecta* (O), *Geranium sanguineum* (O), *Centaurea nigra* (R), *Veronica chamaedrys* (R), *Agrostis canina* (R), *Arrhenatherum elatius* (R), *Rubus fruticosus* agg. (R), and *Pteridium aquilinum* (R). The relevé data for this Monitoring Stop is presented in Quadrat 11.

*Briza media* is still present in the sward as is *Cerastium fontanum* but were not recorded within the Monitoring Stop.

**Monitoring Stop 12:**

This Monitoring Stop was conducted in a field adjacent to the roadway and is accessible through a five barred gateway. Approximately two thirds of the field has exposed limestone pavement but a small flat area has been semi-improved (possibly by a spread of farm yard slurry). The sward is dominated by *Festuca rubra* and *Trifolium pratense*. Calcareous grassland elements such as *Daucus carota*, *Lotus corniculatus*, *Leucanthemum vulgare*, *Solidago virgaurea* and *Carlina vulgaris* still remain along with some scarce *Briza media*.

The Monitoring Stop was conducted in the semi-improved area. The herb:grass ratio was high (60%) but this was mainly due to the abundance of *Trifolium repens* and *Trifolium pratense*. Only two calcareous indicator species were present resulting in a 'Fail' for this Monitoring Stop.

Additional species present include *Trifolium repens* (O), *Trifolium pratense* (F), *Trifolium dubium* (R), *Cerastium fontanum* (R), *Bellis perennis* (R), *Lolium perenne* (R), *Holcus lanatus* (R) and *Festuca rubra* (A). The relevé data for this Monitoring Stop is presented in Quadrat 12.

## **Castletaylor Complex**

### **SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Rosaleen Dwyer            31/05/2006  
Faith Wilson  
Willie Crowley

**Total Site Area (Ha):** 137.23

**Area of Priority Grassland (N2000) (Ha):** 6ha crudely estimated.

**Area of Priority Grassland 2006 (Ha)\*:** 9 ha

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                      **Discovery Sheet No:**        **6" Sheets:**  
Galway                        52                                GA103, GA104.

**Digital Aerial Photos (Tile Nos.):**  
O3572-a, O3572-b, O3572-c, O3572-d.

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**  
000242

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This site is situated approximately 4 km south-east of Kilcolgan and lies in a gently undulating limestone topography. Although relatively small in area, the site contains a diverse range of habitats, including five EU Habitats Directive Annex I habitats - turloughs, limestone pavement, orchid-rich calcareous grassland, alpine heath and juniper scrub. The first three of these are listed as priority habitats under the Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The 1981 survey described the dry calcareous grassland that occurs amongst the limestone pavement and heath as species-rich, particularly with orchids, including *Spiranthes spiralis*, *Dactylorhiza incarnata*, *Platanthera bifolia*, *Gymnadenia conopsea*, *Epipactis helleborine* and the scarce *Neotinea maculata*.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - Patches of dry calcareous grassland occur scattered throughout the area dominated by limestone paving and heath in the north-western sector of the site. It appears to be species-rich with a good diversity of orchids. Curtis and Mc Gough recorded the following species during a survey in 1981 - *Spiranthes spiralis*, *Dactylorhiza incarnata*, *Platanthera bifolia*, *Gymnadenia conopsea* and *Epipactis helleborine*. The scarce *Neotinea maculata* has been recorded from the site.

#### *Description based on the 2006 Survey :*

The grassland types were seen to vary across the site, depending on depth of soil and calcareous influences. The northern part of the site is characterised by pockets of deeper soil while closer to the limit of the turlough, shattered limestone pavement predominates with a mosaic of limestone grassland and Juniper heath. Areas of dry *Ulex/Calluna* heath also occur to the north east of the turlough.

The deeper soils show a uniform vegetation with 7 or 8 indicator species, typically *Briza media*, *Carex caryophylla*, *Carex flacca*, *Conopodium majus*, *Galium verum*, *Lotus corniculatus*, and *Primula veris*. More shallow, rocky soils also support *Antennaria dioica*, *Hieracium pilosella*, *Linum catharticum*, *Geranium sanguineum*, and *Sesleria albicans*. The 2006 survey recorded fewer species of orchids than those listed previously for the site: only *Listera ovata*, *Platanthera chlorantha*, and *Orchis mascula* were recorded.



**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed by Curtis and Mc Gough in August 1981 when a number of rare orchid species were identified. It was subsequently surveyed during the 1995 NHA Survey. The site boundary was resurveyed in 2001 and the boundary was revised.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

At Castletaylor Complex, the Structures and Functions of the 6210 habitat were assessed at 8 Monitoring Stops. The results of the assessment are presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It can be seen from Table 1a that 3 of the 8 Monitoring Stops failed the assessment, resulting in an overall 'Fail' for this attribute at Castletaylor Complex SAC.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	5
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	5
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Map 2
Stop 02	1	Fail	Structures and Functions	Map 2
Stop 03	2	Pass	Structures and Functions	Map 2
Stop 04	3	Pass	Structures and Functions	Map 2
Stop 05	4	Fail	Structures and Functions	Map 2
Stop 06	4	Pass	Structures and Functions	Map 2

Stop 07	5	Pass	Structures and Functions	Map 2
Stop 08	5	Pass	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 5 separate management units.

Stops 1 and 2 comprise Management Unit 1. They are both located in the same field which appears to be grazed by both cattle and horses.

Management Unit 2 contains Stop 3. This field is not as tightly grazed as that in Management Unit 1 and a greater degree of uniformity in the vegetation was noticeable.

Management Unit 3 is separated from Unit 2 by two fields. This Management Unit is represented by a large field of relatively uniform vegetation, which is more than likely managed by a combination of mowing and grazing. Stop 4 is located in this Unit.

Although separated by a field boundary, Stops 5 and 6 are included in the same Management Unit, Unit 4. The landscape is similar, calcareous grassland with some exposed limestone and similar grazing pressures.

Stops 7 and 8 comprise Management Unit 5. They are both located on the property of the same landowner, Mrs. Eleanor Agnew, who maintains the grassland using two donkeys as grazers.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

The primary activities currently affecting this site are grazing levels (140), application of fertiliser (120), and the spread of *Pteridium aquilinum* (Bracken) (954). In general, however, current grazing pressures and fertiliser application are not thought to pose a significant threat to most of the grassland habitat within the site. Apart from Stops 1 and 2, the remainder of the Stops show good herb content and species diversity, suggesting current levels of management at those Stops are sufficient to maintain grassland habitat.

One area of agricultural improvement (103) was noted. Note 5, in the eastern part of the site, describes a field that is grass-dominated and showing evidence of a previous ring-feeder location. Some reseeded has occurred here and fertilisers have been applied. In general, however, reseeded and fertilising is not a serious threat across much of the rest of the site.

Stops 1 and 2 are located within the same large field, an area currently showing signs of significant invasion by Bracken (954). This field also presents an additional minor threat, the lack of hedgerow management (190). The woody hedgerow species *Crataegus monogyna* and *Prunus spinosa* were seen to be spreading from the unmanaged hedge line, adding to the encroachment of Bracken around the field margins (see description of Monitoring Stop 1).

In total, Bracken was seen to be present in 6 of the 8 Monitoring Stops. Excessive cover of this species in Stops 1 and 5 resulted in the failure of the Structures and Functions assessments at those Stops. This issue was seen to be most severe at Stop 1, where a corresponding reduction in herb content and species diversity was also noted.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
190	Agriculture & forestry activities not referred to above	-1	C
954	Biocénotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	C
120	Fertilisation	-1	C
140	Grazing	1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The primary management issue for this site will be the monitoring and control of

*Pteridium aquilinum*. This species was seen to be present in 6 of the 8 of the Monitoring Stops, with cover being excessive at Stop 1 and Stop 5. Urgent action will be needed in the field where Stops 1 and 2 are located as the expansion of this species from the field margins is currently well established. Throughout the rest of the site, encroachment is not currently an issue but its presence in most Stops suggests that regular monitoring of this species is required to prevent future encroachment problems.

The level of agricultural improvement noted in the eastern part of the site (see Note 5) is unusual for the SAC as a whole. If fertiliser application levels are reduced and a regime of mowing and grazing are introduced, it may be possible to improve species diversity here in time. For the remainder of the site, it is expected that if current grazing pressures and fertiliser application levels are maintained, the quality of the grassland in those areas assessed should be safeguarded.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

9ha of the habitat was mapped within the SAC with a further 2ha mapped in an area adjacent to the SAC in the north. However, as noted in the Natura 2000 explanatory notes the habitat occurs "scattered throughout an area dominated by limestone paving and heath in the north-western sector of the site" and thus it is difficult to accurately assess its area.

The Natura 2000 form 'crudely estimated' the area of habitat 6210 at Castletaylor to be 6ha. This would indicate an increase in extent of 3ha of the habitat, which is unlikely. It is thus assumed that the extent of habitat 6210 was previously underestimated.

Although the above figures would indicate that there has been no loss in extent of habitat 6210, an analysis of the ortho-rectified aerial photographs from the 1995, 2000 and 2005 series would indicate that there may have been small areas (particularly in the field where Monitoring Stop 01 was conducted) of the grassland lost to bracken encroachment over that ten year period. These areas are likely to be less than 0.5ha in extent.

The estimate of the extent of habitat 6210 at Castletaylor SAC is 9ha and this extent appears to have been relatively stable in the last ten years. Thus, the conservation assessment of extent at Castletaylor is considered to be Favourable.

### ***Structure and Functions:***

The assessment of the Structures and Functions of the 6210 habitat at Castletaylor resulted in an overall 'Fail' for this attribute. This is due to the fact that 3 of the 8 Stops which were monitored failed their assessment. In two of these Stops, Stops 1 and 5, excessive cover of *Pteridium aquilinum* occurred (20% and 10% respectively). In the third Stop which failed, Stop 2, an insufficient number of indicator species was recorded. This Stop occurs in the same field as the failed Stop 1.

In general, for those Stops that passed the assessment, herb content was good (between 40 - 60%) and 7 or 8 indicator species occurred. Species diversity is not high at this site. This may be due to the fact that relatively deep soil occurs across much of the site and therefore strongly calcareous species would not be as commonly found as on more shallow, rocky soils. In general, while some of the grassland habitat is situated on thin calcareous soil (Stops 5, 6, 7, and 8), other areas are representative of deeper, less calcareous situations. The most frequently occurring species noted within the Stops are more representative of grassland on deeper, more enriched soils e.g. *Primula veris*, *Conopodium majus*, *Lotus corniculatus*, and *Galium verum*, with some *Carex caryophyllea*, and *Carex flacca*. In these soils, a consistent quality was noted. In more shallow soils, additional species occurring included *Antennaria dioica*, *Hieracium pilosella*, and *Linum catharticum*.

As the failure rate for those assessed Stops was seen to be greater than 25%, the Structures and Functions of the 6210 habitat at this site is described as being Unfavourable - bad.

***Future Prospects:***

Although the assessment of the Structures and Functions of the 6210 habitat at Castletaylor are described as Unfavourable - bad, it is believed that if the current issue of Bracken encroachment is dealt with, and if current management practices are maintained or even improved, the Future Prospects for the 6210 habitat at Castletaylor are good.

The fact that there seems to have been no significant loss of 6210 habitat at the site in the last 10 years is also seen to be a positive factor for future grassland extent. There is also the possibility that the extra area of calcareous grassland described outside the northern boundary of the SAC could be included within the site, adding an additional 2 ha of habitat to the overall extent.

In addition, if the area of semi-improved grassland in the eastern part of the site (see Note 5) is managed correctly in the future, species diversity and grassland quality may be improved in that location.

In summary, although the Extent of the habitat is seen to be good, the current condition of the grasslands failed its assessment due mainly to excessive cover of Bracken. A degree of agricultural improvement also exists which may reflect a trend in this direction in the future. In the absence of any current indications that management practices will change in favour of the 6210 habitat, the overall description for the Future Prospects of the 6210 habitat at Castletaylor are described as being Unfavourable - inadequate. These prospects would improve if the encroachment issue were to be dealt with as soon as possible.

***Conservation Assessment:***

It is estimated that there has not been any significant loss in 6210 habitat extent since Castletaylor Complex SAC was first described. However, this estimate is based on best scientific judgement as there was no accurate assessment of the habitat's extent when the site was first designated.

The assessment of the habitat's Structures and Functions was seen to result in a 'Fail' for this attribute. This failure was seen to be due mainly to the excessive cover of *Pteridium aquilinum* in two Stops and the insufficient number of indicator species in one Stop. Soil depth also varied across the site, with deeper soils producing less of a calcareous influence in the resulting vegetation. The encroachment issue, in particular, needs to be managed if an overall improvement of the site's Structures and Functions, and hence the Conservation Status, are to occur.

Although the current monitoring process results in a Favourable assessment of Extent, the unfavourable assessment of Structures and Functions cannot be ignored. In addition, the Future Prospects are seen to be uncertain. The overall assessment of the Conservation Status of the 6210 habitat at Castletaylor are therefore described as being Unfavourable - bad (see Table 3). It is believed that if the current issue of Bracken encroachment is dealt with, and if current management practices are maintained or even improved, the Future

Prospects for the 6210 habitat at Castletaylor would improve.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
Extent			
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	



## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

### Note 1:

This is an area of grassland and scrub outside the current SAC boundary. It occurs directly north of the NW corner of the SAC. The SAC is accessed through this area.

A drain forms a potential new northern boundary should this area be included within the SAC. Close to the area of the drain, the ground is poached by cattle. Large tussocks of *Molinia caerulea* dominate with smaller patches of *Anthoxanthum odoratum* and *Briza media* also occurring. The low-lying areas between the tussocks are muddy and bare with occasional appearances of *Pinguicula vulgaris*. Other species occurring include *Succisa pratensis*, *Potentilla erecta*, *Pedicularis sylvatica*, and scattered *Orchis mascula* (see Photographs 1 to 4).

There is less disturbance further south in this field and ground cover is better. Scattered tussocks of *Schoenus nigricans* give way to flat, undisturbed areas with *Festuca rubra*, *Potentilla anserina*, *Potentilla erecta*, *Pedicularis sylvatica*, *Polygala serpyllifolia*, *Plantago lanceolata*, *Lotus corniculatus*, *Centaurea nigra*, *Succisa pratensis*, *Cirsium dissectum* and *Luzula campestris*.

Mature scrub (*Ulex europaeus*) occurs in patches on lighter, thinner soil, where limestone boulders are out-cropping. Between the gorse bushes, the grassland is drier and more noticeably calcareous with species such as *Conopodium majus*, *Primula veris*, *Leontodon hispidus*, *Galium verum* and *Carlina vulgaris* (see Photograph 5).

### Note 2:

This area is outside but close to the Stop 3 assessment area. Bracken encroachment is an issue in this area but calcareous indicators are frequent. Small occasional hummocks occur with *Anthoxanthum odoratum*, *Hieracium pilosella*, *Lotus corniculatus*, *Polygala vulgaris*, *Briza media*, *Carex caryophyllea*, *Carex flacca*, *Conopodium majus*, *Primula veris*, *Carlina vulgaris*, *Plantago maritima*, and *Galium verum*. Occasional small, bushes of *Calluna vulgaris* occur (<10cm high) which appear to be dying off. The orchids *Dactylorhiza fuchsii* and *Orchis mascula* also occur.

### Note 3:

This is an area of shattered limestone pavement with Juniper heath (see Photographs 10 and 11). Amongst the limestone, typical species occur such as *Teucrium scorodonia*, *Hieracium pilosella*, *Thymus praecox*, *Lotus corniculatus*, *Anthoxanthum odoratum*, *Briza media*, *Carlina vulgaris*, *Carex flacca*, *Antennaria dioica*, *Potentilla erecta*, *Pedicularis sylvatica*, *Taraxacum officinale* agg., *Hypericum perforatum*, *Festuca rubra*, *Asplenium ruta-muraria*, *Polygala vulgaris* and *Orchis mascula*. Young fronds of *Pteridium aquilinum* are also scattered throughout. In addition to *Juniperus communis*, *Prunus spinosa* and *Crataegus monogyna* also occur.

## Note 4:

The vegetation in this area is similar to that described in N3 except that here, *Prunus spinosa* replaces *Juniperus communis* on the shattered limestone. Additional species also occurring here include *Geranium sanguineum*, *Mycelis muralis*, *Potentilla anserina*, *Hieracium pilosella*, *Hedera helix*, *Carex flacca*, *Rosa pimpinellifolia*, *Potentilla sterilis*, *Primula veris*, *Achillea millefolium*, *Conopodium majus*, *Rhinanthus minor*, *Phyllitis scolopendrium*, *Viola persicifolia* and *Orchis mascula*.

## Note 5:

This field is grass-dominated and shows evidence of previous disturbance and enrichment. A ring feeder was previously located in one area of the field. *Urtica dioica* and *Potentilla anserina* dominate in that area with other species such as *Lolium perenne*, *Taraxacum officinale* agg., *Galium aparine*, *Rumex acetosa*, *Veronica chamaedrys*, and *Ranunculus repens* occurring. *Listera ovata* also occurs. See Photos 15-17.

Throughout the rest of the field, additional species include *Centaurea nigra*, *Anthoxanthum odoratum*, and *Pteridium aquilinum*. Bracken encroachment is not a serious issue in this field. At some points within this field, limestone rocks outcrop and where the soil is thinner, greater species diversity occurs.

## Note 6:

This lower-lying area is subject to flooding from the turlough. *Potentilla anserina* dominates the ground cover with *Filipendula ulmaria* and *Dactylis glomerata* also occurring (see Photo 24).

## Note 7:

This is an area of Juniper heath on shattered limestone. Scattered *Ulex europaeus* also occurs. There is good soil cover between the rocks, supporting species such as *Anthoxanthum odoratum*, *Molinia caerulea*, *Carlina vulgaris*, *Teucrium scorodonia*, *Geranium sanguineum*, *Orchis mascula*, *Festuca rubra*, *Geranium robertianum*, *Briza media*, *Lotus corniculatus*, *Dryas octopetala*, *Avenula pubescens*, *Viola persicifolia*, *Carex flacca* and *Hypericum pulchrum*. Young saplings of *Ilex aquifolium* and *Sorbus hibernica* are scattered. *Pteridium aquilinum* occurs but is not very common in this area (see Photo 31-32) .

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This field shows significant evidence of bracken encroachment, with *Pteridium aquilinum* spreading from the edges of the field towards the centre. In addition, the lack of hedgerow management has resulted in the spread of *Crataegus monogyna* and *Prunus spinosa* inwards from the edges of the field. Only a circular area towards the centre of the field remains unaffected by bracken or scrub encroachment.

Stop 1 is located in the zone of bracken encroachment. In this area, clumps of *Primula veris* are scattered and sward height is approximately 20cm high. Ground litter is evident (15% cover) and horse droppings are scattered.

Within the Stop, herb cover is low (20%), with only three indicator species occurring, *Primula veris*, *Conopodium majus*, and *Galium verum*. While no negative indicator species were recorded, cover of Bracken is high at 20%.

Also occurring within the Stop are *Taraxacum officinale* agg., *Centaurea nigra*, *Ranunculus repens*, *Trifolium pratense*, *Potentilla erecta*, *Plantago lanceolata*, *Anthoxanthum odoratum*, and *Cerastium fontanum*. Two individuals of *Listera ovata* also occurred. Outside the area of Stop 1, *Rubus fruticosus* agg., *Veronica chamaedrys*, and *Rumex acetosa* were also noted.

Due to the low herb cover, the insufficient number of indicator species and the high incidence of Bracken, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 2:**

This Monitoring Stop is located in the centre of the field described in Stop 1, in an area which remains free from bracken or scrub encroachment. The sward height is lower (15cm) and ground cover is good.

Within the Stop, herb percentage is high at 60%. While species diversity is higher than at Stop 1, only five indicator species are recorded. No negative indicator species or scrub/Bracken was recorded.

Other species occurring within the Stop are *Centaurea nigra*, *Plantago lanceolata*, *Anthoxanthum odoratum*, *Potentilla erecta*, *Succisa pratensis*, and *Festuca rubra*. Outside the area of the Stop, *Conopodium majus*, *Orchis mascula*, and *Hypericum perforatum* also occur.

Grazing patterns in this field appears to be moderate to light. It is sufficient to maintain open grassland in the centre of the field where Stop 2 is located but it is not preventing the spread of bracken from the unmanaged hedgerow nearby where Stop 1 is located.

The insufficient number of indicator species results in a 'Fail' for the assessment of Structures and Functions at this Stop.

**Monitoring Stop 3:**

This is a good area of grassland which shows little evidence of disturbance. Occasional dried cowpats were noted.

Within the Stop, herb content was good at 40% and 7 calcareous indicator species were recorded. No negative indicators occurred and Bracken was present in only minor percentages (<5%).

Additional species in this Stop include *Anthoxanthum odoratum*, *Plantago lanceolata*, *Achillea millefolium*, *Potentilla erecta*, *Trifolium pratense*, *Pedicularis sylvatica*, and *Luzula campestris*. *Pteridium* is encroaching with blackthorn scrub from the eastern side of the field.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 4:**

This Stop is located in an area of flat, calcareous grassland which shows good vegetation cover. The Stop is situated southeast of an old ruined tower marked on the 6" map. Current grazing pressures are light but as very little litter was recorded, overall pressures are deemed to be moderate.

Within the Stop, herb cover was good (60%) and 7 indicator species were recorded. No negative indicators were noted and while Bracken was present, it occurred in low percentages (<5% cover).

Additional species within the Stop include *Holcus lanatus*, *Dactylis glomerata*, *Plantago lanceolata*, *Plantago media*, *Centaurea nigra*, *Lathyrus montana*, *Achillea millefolium*, *Rhinanthus minor*, and *Potentilla erecta*. Outside the Stop area, closer to the hedge line, *Primula veris* and *Conopodium majus* occur in patches.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 5:**

This is an area of shattered pavement but with good soil and vegetation cover (pavement occupies <40% of the area). It is located above the turlough zone, separated from the turlough by an area of juniper heath. Encroachment by *Pteridium aquilinum* and *Prunus spinosa* is a problem in this area - over an area of 5m<sup>2</sup>, encroachment reaches to 20%.

Within the Stop, herb content was good (50%) and 9 indicator species were recorded. These include *Geranium sanguineum* and *Sesleria albicans*, two species typical of western locations. No negative indicators were noted but Bracken occupied 10% cover.

Additional species within this Monitoring Stop are *Anthoxanthum odoratum*, *Thymus praecox*, *Achillea millefolium*, *Plantago lanceolata*, and *Viola persicifolia*. This latter species reflects the proximity of the turlough. Very low shrubs of *Calluna vulgaris* also occur. Outside the Stop, *Rosa pimpinellifolia*, *Orchis mascula*, and seedlings of *Fraxinus excelsior*, and *Euonymus europaeus* are scattered.

The excessive cover of Bracken results in a 'Fail' for the assessment of Structures and Functions at this Stop.

**Monitoring Stop 6:**

This area of grassland occurs between the Juniper heath located at the top of the turlough flood zone and the edge of the SAC boundary to the north. *Prunus spinosa* is encroaching on the northern side of the Stop, spreading out from an unmanaged hedge line. The area of grassland occupies a narrow strip of approximately 20m wide between the Juniper heath and the scrub. The area is moderately grazed and the sward is low (10cm high). The ground is hummocky and cattle tracks cut across the area to a small water hole (small turlough).

Within the Stop, herb cover is 40% and 9 indicator species were recorded. These include *Gentiana verna* and *Sesleria albicans*, two species typical of western locations. No negative indicator species occur and Bracken cover is low (5%).

Also occurring within the Stop are *Anthoxanthum odoratum*, *Centaurea nigra*, *Bellis perennis*, *Thymus praecox*, *Potentilla erecta*, and *Carex pilullifera*. Outside the Stop, *Teucrium scorodonia* also occurs with occasional scattered *Juniperus communis* and *Dryas octopetala*.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 7:**

This is a grazed area of calcareous grassland adjacent to the house of the landowner, Mrs. Eleanor Agnew. This grassland is currently grazed by two donkeys. The vegetation is kept low, approximately 5cm high, except in two or three deep hollows where rank grasses predominate. Across the area, calcareous species occur .

Within the Stop, herb content is good (50%) and 8 indicator species occur. No negative indicators or Bracken occurs within the Stop.

Outside the Stop, additional species occurring include *Achillea millefolium*, *Plantago lanceolata*, *Centaurea nigra*, *Ranunculus bulbosus*, *Veronica chamaedrys*, *Bellis perennis*, *Potentilla erecta*, *Leucanthemum vulgare*, *Orchis mascula* and encroaching *Pteridium aquilinum*. Around outcropping rocks, *Thymus praecox* and *Linum catharticum* also occur.

In the deeper hollows, *Dactylis glomerata*, *Festuca rubra* and *Anthoxanthum odoratum* occur with *Brachypodium sylvaticum*, *Avenula pubescens* and *Taraxacum* agg. Woody species include *Malus domestica* and *Quercus robur*.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 8:**

This is a second area of open grassland located within the woodland owned and managed by Mrs. Eleanor Agnew. The landowner also grazes this area with two donkeys. The soil is generally thin with outcropping limestone rocks. Small areas of bare ground occur which are colonising with *Succisa pratensis* and *Centaurea nigra*. In general, despite the bare patches of ground, the vegetation itself is quite species-rich.

Within the area of the Stop, herb content is high (60%) and 7 indicator species occur. *Linum catharticum* is especially concentrated around outcropping rocks with other species such as *Leucanthemum vulgare*, *Bellis perennis*, and *Rosa pimpinellifolia*. No negative indicator species occur and Bracken cover is low (5%).

Also occurring within the Stop are *Potentilla erecta*, *Anthoxanthum odoratum*, *Achillea millefolium*, *Hypochoeris radicata*, and *Euphrasia* spp. Outside the area of the Stop, additional species occur such as *Teucrium scorodonia*, *Polygala vulgaris*, *Rhinanthus minor*, *Fragaria vesca*, *Veronica chamaedrys*, *Thymus praecox*, *Briza media*, and *Carex pilullifera*.

Grazing levels in this area are medium to heavy and the sward height is low at 5cm. Bare ground occupies 10% of the Stop. While *Pteridium aquilinum* covers approximately 5% of the Stop area, it occupies 20% of the total area of the grassland.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

## **Coole-Garryland Complex**

### **SITE DETAILS**

**Surveyed By:**                      **Survey Dates:**

**Total Site Area (Ha):** 864.61

**Area of Priority Grassland (N2000) (Ha):** 8.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**

Galway

**6" Sheets:**

GA122.

**Digital Aerial Photos (Tile Nos.):**

O3743-b, O3743-c, O3743-d, O3744-a, O3744-c, O3801-a, O3801-b, O3801-c, O3801-d, O3802-a, O3802-c, O3859-a, O3859-b.

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

000252

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.



## **SITE DESCRIPTION**

The Coole-Garryland Complex is situated in a low-lying karstic limestone area west of Gort, County Galway. It contains a series of seasonal lakes (turloughs), which are fed by springs and a partly submerged river, surrounded by woodland, pasture and limestone heath. The more well-known turloughs present in the site include Lydacan, Crannagh North, Raheen, Crannagh South, Coole, Garryland, Newtown and Hawkhill.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site described the calcareous grassland as follows. The turloughs are fringed by a range of habitats on limestone pavement, including scrub communities containing Buckthorn (*Rhamnus catharticus*) and Hawthorn (*Crataegus monogyna*). In places, heath communities have developed over the limestone pavement, consisting of Ling Heather (*Calluna vulgaris*), Juniper (*Juniperus communis*), Blue Moor-grass (*Sesleria albicans*) and occasional Yew (*Taxus baccata*). In addition, the site contains good examples of smooth pavement and associated species-rich grasslands. Small areas of orchid-rich grassland occur at Coole-Garryland. The colourful array of orchids which can be found here include Pyramidal Orchid (*Anacamptis pyramidalis*), Spotted Orchids (*Dactylorhiza* spp.), Fragrant Orchid (*Gymnadenia conopsea*), Fly Orchid (*Ophrys insectifera*) and Greater Butterfly Orchid (*Platanthera chlorantha*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - although relatively small in size the habitat exhibits a good diversity of calcareous species along with numerous orchids. Common orchid species include *Anacamptis pyramidalis*, *Dactylorhiza fuchsii*, *Dactylorhiza maculata*, *Dactylorhiza traunsteineri*, *Gymnadenia conopsea*, *Orchis insectifera* and *Platanthera chlorantha*. The presence of *Sesleria albicans* contributes to the diversity of this community.

#### *Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was first surveyed during the 1993 NHA survey. The site was subsequently resurveyed in 1996 and 2000 by NPWS staff.

**SITE MONITORING AND MANAGEMENT UNITS**

## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

## **Galway Bay Complex**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	22/08/2006
Faith Wilson	25/08/2006
Willie Crowley	20/09/2006
	25/09/2006
	27/09/2006

**Total Site Area (Ha):** 14409

**Area of Priority Grassland (N2000) (Ha):** 3.

**Area of Priority Grassland 2006 (Ha)\*:** 21

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Clare	45	CL002, CL003, CL003a, GA093,
Galway	46	GA094, GA095, GA102, GA103,
	51	GA112, GA113.
	52	

#### **Digital Aerial Photos (Tile Nos.):**

O3623-a, O3345-d, O3347-d, O3407-c, O3407-d, O3408-a, O3408-b, O3408-c, O3408-d, O3409-a, O3409-b, O3409-c, O3409-d, O3410-a, O3410-b, O3410-c, O3410-d, O3411-a, O3469-a, O3469-b, O3469-d, O3470-a, O3470-b, O3470-c, O3470-d, O3471-a, O3471-c, O3472-c, O3519-a, O3519-b, O3519-c, O3519-d, O3520-a, O3520-b, O3520-c, O3520-d, O3521-a, O3521-b, O3521-c, O3521-d, O3522-a, O3522-c, O3569-a, O3569-b, O3569-d, O3570-a, O3570-b, O3570-c, O3623-b, O3623-c, O3623-d, O3624-a, O3624-b, O3624-c, O3624-d, O3625-a, O3625-b, O3625-c, O3625-d, O3626-a, O3626-c, O3679-b, O3680-b, O3680-c, O3680-d, O3681-a, O3681-b, O3681-c, O3681-d, O3682-a, O3682-b, O3682-c, O3683-a, O3684-a, O3684-b, O3738-b, O7035-a, O7035-b, O7035-c, O7035-d, O7038-b, O7038-c, O7038-d

#### **Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

#### **SAC Site Code:**

000268



**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Situated on the west coast of Ireland, this site comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The Burren karstic limestone fringes the southern sides and extends into the sublittoral. West of Galway city the bedrock geology is granite. There are numerous shallow and intertidal inlets on the eastern and southern sides, notably Muckinish, Aughinish and Kinvara Bays. A number of small islands composed of glacial deposits are located along the eastern side. These include Eddy Island, Deer Island and Tawin Island. A diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the EU Habitats Directive, occur within the site, making the area of high scientific importance.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

There was no previous description of the calcareous grassland in the site within the site synopsis.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Within this extensive coastal site, orchid-rich calcareous grassland appears to be largely restricted to an area just west of Salthill. At this location the habitat is confined to steeply sloping areas of base-rich gravel soil which flank the glacial mounds of Knocknagoneen, Blake's Hill (also known as Gentian Hill) and Seaweed Point.

The species-rich calcicole grassland flora is well developed and includes plant species such as *Anthyllis vulneraria*, *Campanula rotundifolia*, *Gentiana verna*, *Anacamptis pyramidalis*, *Dactylorhiza fuchsii*, *Antennaria dioica*, *Listera ovata*, *Lotus corniculatus*, *Linum catharticum*, *Blackstonia perfoliata*, *Briza media*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Galium verum*, *Polygala vulgaris*, *Sesleria albicans* and *Centaurea scabiosa* (J. Conaghan personal observation). Many of these species e.g. *Gentiana*, *Blackstonia* and *Centaurea* are very rare in Co. Galway west of Lough Corrib.

The habitat occurs in a mosaic with areas of heath comprised of *Calluna vulgaris*, *Erica cinerea*, *Dryas octopetala* and small amounts of *Juniperus communis*. In the past the nationally scarce orchid *Neotinea maculata* has been recorded from this general vicinity however the species has not been noted recently. In addition to this well known area, small areas of the habitat may occur in association with limestone pavement elsewhere within this extensive site e.g. east of Lough Murree.

#### *Description based on the 2006 Survey :*

The 2006 survey identified that the areas of calcareous grassland are restricted to two main areas: Gentian Hill (Blake's Hill) near Barna and an area of calcareous grassland with frequent outcropping boulders north-west of Kinvara at Ballybrangan. Typical indicator species present include *Antennaria dioica*, *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Galium verum*, *Hieracium pilosella*, *Linum catharticum*, *Lotus corniculatus*, *Sanguisorba minor*, *Sesleria albicans*, *Anthyllis vulneraria*, *Daucus*

carota and *Primula veris*.

Large areas of grassland surveyed within the site do not correspond to the Annex I habitat and have a strong coastal influence as evidenced by the presence of species such as *Artemisia maritima*, *Plantago coronopus*, *Armeria maritima* and *Raphanus raphanistrum* spp. *maritimus*.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

Areas of vegetation near Rusheen Lough and Lough Atalia were surveyed by M. Sheehy Skeffington in 1987. This whole site was first comprehensively surveyed during the 1993 NHA Survey. Most of the site notes relate to boundary information with only a handful of general habitat notes relating to calcareous grassland within the site. The site was surveyed by NPWS staff in 1998 when the site boundary was extended.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

This large site had only general notes to describe the habitats present in the NHA and the precise location of calcareous grassland within the site was unclear. The aerial photographs for the site (OSI 2000) were studied and 12 target survey areas were selected for field survey. Many of these areas when surveyed were seen not to be calcareous grassland and notes were taken in these areas. The locations of the notes are shown on Map 2 (Sheets 1 - 12).

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Twelve Monitoring Stops were conducted and their locations are depicted on Map 2 (sheets 1 - 12). A summary description of each of the Monitoring Stops is presented in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b below that Structures and Functions were assessed at eight of the twelve Monitoring Stops. Two Stops, Stops 5 and 9, were seen to be more representative of a loss in habitat extent while two other Stops, Stops 2 and 3, were deemed not to be 6210 habitat. All four Stops were excluded from the assessment of Structures and Functions.

Of the eight Stops assessed for Structures and functions, six Stops were seen to pass. The two which failed (Stops 10 and 12), did so as a result of encroachment by Bracken. This results in an overall failure rate of 25% in the Structures and Functions at this site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	9
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	5
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
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Stop 01	1	Pass	Structures and Functions	Sheet 1 of 12
Stop 02	1	Fail	Not used in assessment	Sheet 1 of 12
Stop 03	1	Fail	Not used in assessment	Sheet 1 of 12
Stop 04	1	Pass	Structures and Functions	Sheet 1 of 12
Stop 05	2	Fail	Extent	Sheet 11 of 12
Stop 06	3	Pass	Structures and Functions	Sheet 11 of 12
Stop 07	4	Pass	Structures and Functions	Sheet 7 of 12
Stop 08	5	Pass	Structures and Functions	Sheet 7 of 12
Stop 09	6	Fail	Extent	Sheet 10 of 12
Stop 10	7	Fail	Structures and Functions	Sheet 8 of 12
Stop 11	8	Pass	Structures and Functions	Sheet 8 of 12
Stop 12	9	Fail	Structures and Functions	Sheet 8 of 12

The areas of calcareous grassland surveyed within the site were divided into nine management units based on existing field boundaries.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The main threats to the grassland habitats within the site arise from agricultural improvement of fields (103) and the spread of Bracken (954). Fertilisation (120) was noted in the areas described in Notes 2, 4, 5, 8, 9, 17, 19 and 22, and in Monitoring Stops 5 and 9.

The abandonment of traditional grazing practices (141) causing reduced grazing levels (149) has resulted in the development of rank grassland (Note 1, 4 and 10) or encroachment by *Pteridium aquilinum* or scrub (954) as seen in Notes 13, 14, 21 and 22 and Monitoring Stops 6, 8, 10, 11 and 12.

The use of ring feeders (171) to feed stock has resulted in the development of large areas of *Urtica dioica* - see Note 6. There was a large volume of dumped top soil, rubble and building materials in the general vicinity of this area also (Note 6). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	C
954	Biocœnotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	B
422	Discharges: disposal of industrial waste	-1	C
120	Fertilisation	-1	B
141	Grazing: abandonment of pastoral systems	-1	C
149	Grazing: undergrazing	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The spread of *Pteridium aquilinum* and encroaching scrub within the site requires immediate attention (see Notes 13, 14, 21 and 22 and Monitoring Stops 6, 8, 10, 11 and 12). Agricultural improvement of grassland was noted in several areas within the SAC (see Notes 2, 4, 5, 8, 9, 17, 19 and 22 and Monitoring Stops 5 and 9) and this activity needs urgent monitoring.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

21ha of the habitat was mapped within the SAC with a further 3ha mapped in an area adjacent to the SAC just north of Kinvara. However, as noted in the NATURA 2000 explanatory notes, the area of the habitat is difficult to estimate because of its fragmentary and sinuous nature.

The NATURA 2000 form estimated the area of habitat 6210 in the Galway Bay Complex to be 3ha. This would indicate an increase in extent of 18ha of the habitat, which is extremely unlikely and it is thus assumed that the extent of habitat 6210 was previously underestimated. The explanatory notes that accompany the NATURA 2000 form state that the only known area of this habitat in the Galway Bay Complex SAC is Gentian Hill near Barna (Monitoring Stops 1 - 4), but suggest that small areas of the habitat may occur in association with limestone pavement elsewhere in the site such as east of Lough Murree close to Ballyvelaghan in the SW of the site (Monitoring Stop 9). Thus during the 2006 survey several areas considered to potentially contain calcareous grassland were investigated.

The largest extent of the habitat was found NW of Kinvara in Ballybrangan (Monitoring Stops 10, 11 and 12) where 17ha of the habitat was mapped including 3ha that lies outside of the SAC. In addition, 5ha of the habitat was mapped at Gentian Hill with smaller areas of the habitat found at Muckinish East (0.5ha) near Bell Harbour (Monitoring Stops 5 and 6), Inishroo (1ha) near Corranroo (Monitoring Stops 7 and 8) and at Knockavorneen Hill (<1ha) east of Lough Murree (Monitoring Stop 9). Parts of these areas that were likely to have once supported calcareous grassland were agriculturally improved through reseeded with *Lolium perenne* (see Monitoring Stops 5 and 9) at some stage in the past. However, it is not known whether this 'improvement' occurred either before or after the site was designated.

Although the overall figures of the extent of habitat 6210 (3ha estimated in NATURA 2000 and 21ha estimated during the Grassland Monitoring Project) would indicate that there has been no loss in extent of the habitat, evidence of agricultural improvement in areas that may have formerly been habitat 6210 were recorded during the current survey. Given the lack of baseline information it is difficult to assess the original extent of calcareous grassland. However as there is likely to have been a small decrease in the extent of the habitat at the Galway Bay Complex, the conservation assessment of extent is considered to be Unfavourable - inadequate.

### ***Structure and Functions:***

Six of the eight Monitoring Stops used to assess Structures and Functions passed the assessment, resulting in an overall failure rate of 25% for the Structures and Functions of



the site. Both of the Stops which failed the assessment did so on account of excessive cover of Bracken.

Of the Stops which passed, it was seen that up to eleven indicator species were recorded and orchids were noted at most locations. However, the overall condition of the grassland within the site is believed to have deteriorated principally as a result of lack of grazing, resulting in encroachment by *Pteridium aquilinum* and scrub. A concurrent loss of indicator species has also occurred in some places, with levels of fertiliser application and reseeding resulting in habitat loss elsewhere.

As up to a 25% loss in quality has been recorded, the Structures and Functions of the site are thus described as Unfavourable - inadequate.

### ***Future Prospects:***

Gentian Hill was seen to be one of the main areas of calcareous grassland within the site (Monitoring Stops 1, 2, 3 and 4). This Hill is located within the ever-spreading suburbs of Galway City. Continued urbanisation of this area means that this area of grassland is now surrounded by housing developments and the continued traditional mowing/ grazing regime and agricultural management of this area is uncertain. Unless management intervention by local NPWS staff occurs it is likely to become abandoned and rank.

The area to the north-west of Kinvara at Ballybrangan (Monitoring Stops 10, 11 and 12) is more likely to continue to be grazed at current levels and thus the Future Prospects for this section of grassland is good if encroachment by scrub and *Pteridium aquilinum* is controlled. Encroachment by scrub and *Pteridium aquilinum* also threatens the areas of calcareous grassland at Muckinish East near Bell Harbour (Monitoring Stop 6) and at Inishroo near Corranroo (Monitoring Stop 8).

The area at Muckinish East near Bell Harbour (Monitoring Stop 5) and the area adjacent to Knockavorneen Hill (Monitoring Stop 9) are both likely to have originally been calcareous grassland and are now agriculturally improved. These areas will require significant active management if they are to be returned to calcareous grassland.

There is estimated to have been some loss in habitat extent at this site, although this cannot be accurately gauged due to insufficient information on prior grassland extent. The Structures and Functions of the habitat are also seen to be challenged, with a 25% failure rate recorded during this survey. In addition, given that the future management of the widely separated areas of 6210 grassland are very uncertain, the Future Prospects for the habitat at this site are described as being Unfavourable - inadequate.

### ***Conservation Assessment:***

This site was first surveyed during the 1993 NHA Survey. Most of the survey notes recorded at that time relate mainly to boundary information with only a handful of general habitat notes relating to calcareous grassland within the site. Descriptions from the site synopsis and the NATURA 2000 forms suggest that the area of the habitat is difficult to estimate because of its fragmentary and sinuous nature.

During the current survey, evidence of agricultural improvement activities were noted and some areas which had been surveyed as part of the monitoring process were subsequently excluded from the assessment of habitat condition. However, it should be noted that there was no information to indicate if these examples of agricultural improvement occurred either prior to or subsequent to the site's designation as a cSAC. In the absence of useful previous data therefore, the current estimate of 21 ha was assessed as being Unfavourable - inadequate.

The current condition of the remaining grassland areas was seen to be reasonable. Some areas are showing signs of insufficient management with the concurrent spread of Bracken resulting. A failure rate of 25% in the assessment of Structures and Functions resulted in a result of Unfavourable - inadequate for this attribute.

The Future Prospects for the habitat at this site are uncertain. Gentian Hill, in the suburbs of Galway City, faces significant pressure from residential developments already surrounding the Hill and current management practices there are already showing signs of this pressure. Other areas along the coast of Galway Bay need urgent attention if Bracken encroachment is not to result in loss of habitat.

Given that the Extent, Structures and Functions and Future Prospects for the site are all described as Unfavourable - inadequate, the overall Conservation Status for the site is therefore described as being Unfavourable - inadequate (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - inadequate</i>
	Future Prospects		
	Structure and Function		
	Extent		

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

Note 1.

This is a small headland/promontory beyond the castle/Oranmore town which was identified from aerial photographs (OSI 2000) as potentially having calcareous grassland present. This is an area of coastal grassland which merges with elements of saltmarsh/rocky shoreline vegetation. Outcropping limestone boulders are a feature of this area. Species present include; *Festuca rubra* (A), *Lotus corniculatus* (F), *Leontodon taraxacoides* (F), *Plantago maritima* (R), *Plantago lanceolata* (F), *Tripleurospermum maritimum* (R), *Rumex acetosa* (O), *Lolium perenne* (F), *Cynosurus cristatus* (R), *Raphanus raphanistrum* (R), *Trifolium repens* (O), *Agrostis stolonifera* (O), *Galium verum* (R) and *Cerastium fontanum* (R). This relevé data is presented in Quadrat 1.

Additional species recorded include *Potentilla anserina* and *Seriphidium maritimum* (near the margins of the saltmarsh).

Note 2:

This is a semi-improved field dominated by *Lolium perenne* with occasional *Plantago lanceolata*, *Trifolium repens*, *Heracleum sphondylium*, *Rumex acetosella*, *Cirsium arvense*, *Cerastium fontanum*, *Cynosurus cristatus*, *Arrhenatherum elatius*, *Holcus lanatus*, *Dactylis glomerata*, *Ranunculus repens*, *Rumex obtusifolius* and *Potentilla erecta*. This area is mown and grazed.

Note 3:

Similar to N2. Mown and grazed.

Note 4:

Ungrazed field with abundant *Dactylis glomerata*, *Rumex* sp., *Cirsium arvense* and *Lolium perenne*. *Urtica dioica* is found in dense patches along the boundaries of this rank grassland.

Note 5:

This is a semi-improved area of coastal grassland with occasional outcroppings of limestone boulders. A brackish stream/tear in this area has *Atriplex* sp. and *Spergularia media*. The sward is dominated by *Festuca rubra*, *Cynosurus cristatus*, *Holcus lanatus* and *Lolium perenne*. *Plantago lanceolata*, *Plantago maritima* and *Potentilla anserina* were also present. *Thymus praecox* and *Lotus corniculatus* were found near outcropping boulders.

Note 6:

There is considerable dumping of top soil, rubble and building materials in several places within this part of the site. Ring feeders have also been regularly used in this area and large patches of *Urtica dioica* are developing.

## Note 7:

There is a large population of *Glaucium flavum* in this area. The sward was dominated by *Festuca rubra* and *Cynosurus cristatus* with *Trifolium repens* (R), *Lotus corniculatus* (R), *Trifolium dubium* (R), *Poa* sp. (R), *Sesleria albicans* (R), *Koeleria macrantha* (R), *Plantago lanceolata* (O), *Cerastium* sp. (R), *Bellis perennis* (R). This relevé data is presented in Quadrat 2. Other species found in the sward but outside the relevé include *Armeria maritima*, *Juncus* sp., *Cirsium arvense* and *Silene maritima*.

This area is grazed by sheep and large areas are vulnerable to inundation by the tide.

## Note 8:

This is an area of coastal grassland found on thin soil growing over a hummock of shingle. The sward was dominated by *Cynosurus cristatus* (D), *Armeria maritima* (D), *Galium verum* (F), *Lotus corniculatus* (O), *Plantago lanceolata* (O), *Trifolium repens* (R), *Plantago coronopus* (R), *Bellis perennis* (O), *Rhynchospora squarrosa* (R), *Trifolium dubium* (R) and *Leontodon taraxacoides* (R). This relevé data is presented in Quadrat 3. *Lolium perenne* is present on the lower slopes and flatter areas surrounding this hummock with frequent *Cirsium arvense*.

## Note 9:

This is an area of closely grazed brackish influenced coastal grassland with *Potentilla anserina*, *Lolium perenne*, *Agrostis stolonifera*, *Leontodon* sp., *Cirsium arvense* and *Trifolium repens*. A salt marsh creek is present through the centre of this area.

## Note 10:

This is an area of ungrazed grassland on the slopes of a hill above a salt marsh. The lower sections of this area have large populations of *Seriphidium maritimum*. The sward in the grassland is dominated by *Festuca arundinacea* and *Festuca rubra* with occasional *Galium verum*, *Trifolium repens* and *Agrostis stolonifera*. Other species that were present but rare include *Rumex acetosella*, *Lotus corniculatus*, *Dactylis glomerata*, *Cynosurus cristatus*, *Bellis perennis*, *Urtica dioica*, *Holcus lanatus* and *Cirsium vulgare*. This relevé data is presented in Quadrat 4. The underlying rocks no longer outcrop in this area - they are now covered by a thick thatch of grass. Herb cover is c.20% and the sward is 30cm high.

Other species recorded outside the quadrat include *Cirsium palustre* and *Plantago lanceolata*, while *Briza media*, *Achillea millefolium*, *Hypochoeris radicata* and *Asperula cynanchica* were found near the track leading into this field.

## Note 11:

The wall at the summit of the hill has *Campanula rotundifolia*, fruiting/seeding orchids, *Leucanthemum vulgare*, *Briza media*, *Plantago maritima*, *Blackstonia perfoliata*, *Solidago virgaurea*, *Senecio jacobaea*, frequent *Galium verum* and occasional *Primula veris*. *Carex flacca* was present at the base.

The field above this is dominated by *Centaurea nigra* and *Cirsium arvense* but is excluded from the SAC.

## Note 12:

This note was taken on the hill summit which is ungrazed and relatively species rich. Some areas have swards of *Centaurea nigra* while others are dominated by *Daucus carota*. Species present include *Daucus carota* (F), *Centaurea nigra* (O), *Heracleum sphondylium* (O), *Galium verum* (R), *Trifolium pratense* (F), *Rhinanthus minor* (F), *Plantago lanceolata* (F), *Hypochoeris radicata* (R), *Lotus corniculatus* (O), *Centaurea scabiosa* (O), *Odontites verna* (O), *Festuca rubra* (F) and *Dactylis glomerata* (F). This relevé data is presented in Quadrat 7.

## Note 13:

The western slopes of this site are dominated by *Ulex europaeus* scrub with frequent *Rubus fruticosus* agg., *Rosa pimpinellifolia*, *Pteridium aquilinum* and *Festuca arundinacea*. Some steep areas are still grass dominated and are terraced. A good diversity of calcareous species were found here on these leached soils. Species noted include *Lotus corniculatus*, *Solidago virgaurea*, *Briza media*, *Rosa pimpinellifolia*, *Succisa pratensis*, *Anthyllis vulneraria*, *Thymus praecox*, *Plantago maritima*, *Campanula rotundifolia*, *Linum catharticum*, a variety of fruiting/seeding orchids (minimum of 3 species), *Euphrasia* sp., *Antennaria dioica*, *Hieracium pilosella*, *Molinia caerulea*, *Gentiana verna*, *Salix repens*, *Carlina vulgaris*, *Dryas octopetala* and *Gentianella campestris*.

Above these terraced areas *Ulex europaeus*, *Ulex gallii*, *Salix repens* and *Erica cinerea* are present. *Cotoneaster* sp. was also present along these slopes. Further encroachment of scrub on these steep slopes pose a threat to the site. There was also some littering along the track which is well used.

## Note 14:

This is an area of limestone pavement and outcropping boulders adjacent to the road. This area is becoming encroached by *Rubus fruticosus* agg., *Pteridium aquilinum*, *Prunus spinosa* and *Crataegus monogyna* scrub. There is very little grassland present here - 80% boulders. Species present include *Solidago virgaurea*, *Succisa pratensis* and *Campanula rotundifolia*.

## Note 15:

This is a spit vegetated with coastal grassland consisting of *Plantago lanceolata*, *Galium verum*, *Bellis perennis*, *Festuca rubra*, *Carex arenaria*, *Lotus corniculatus*, *Ranunculus repens*, *Achillea millefolium*, *Plantago coronopus* and *Plantago maritima*. This closely grazed turf is located on a low sand bank which is eroding at the face.

## Note 16:

This is an area of coastal grassland/turf. The closely grazed sward is dominated by *Armeria maritima*, *Festuca rubra* and *Plantago maritima*. There are frequent outcropping limestone boulders. The adjoining creek is brackish and the field to the west is regularly inundated by seawater - seaweed debris present. This area is backed by a band of *Artemisia maritima*.

## Note 17:

This is an area of neutral grassland dominated by *Cynosurus cristatus* with encroachment by *Pteridium aquilinum* and *Crataegus monogyna* scrub. Other species present include *Agrostis* sp., *Prunella vulgaris*, *Trifolium repens*, *Plantago lanceolata*, *Lolium perenne*, *Trifolium pratense*, *Ranunculus repens*, *Dactylis glomerata*, *Succisa pratensis*, *Briza media*, *Potentilla erecta*, *Galium verum*, *Achillea millefolium*, *Rumex acetosa*, *Lotus corniculatus*, *Euphrasia* sp., *Festuca rubra*, *Holcus lanatus* and *Cerastium* sp. This area is currently ungrazed.

## Note 18:

This is an area of coastal grassland with frequent outcropping limestone boulders. Typical species present include *Poa* sp., *Festuca rubra*, *Potentilla anserina*, *Holcus lanatus*, *Trifolium repens*, *Plantago lanceolata*, *Cerastium fontanum*, *Achillea millefolium*, *Rumex acetosa*, *Cirsium arvense*, *Plantago maritima*, *Agrostis stolonifera*, *Armeria maritima* and *Pteridium aquilinum*. This area was tightly grazed by sheep and is prone to inundation by salt water - seaweed debris present.

## Note 19:

This is an area of coastal grassland closer to the shoreline and similar to N16. The majority of these fields have however been reseeded with *Lolium perenne* and *Trifolium repens*. Other species present include *Ranunculus repens*, *Taraxacum* agg., *Bellis perennis*, *Cirsium arvense*, *Plantago lanceolata* and *Achillea millefolium*. There is no evidence of any former calcareous grassland on the site. There is some scarce outcropping limestone.

## Note 20:

This is an area of coastal grassland/upper saltmarsh dominated by *Festuca rubra* with *Aster tripolium*, *Cochlearia officinalis*, *Salicornia* sp., *Limonium humile*, *Agrostis stolonifera* and *Atriplex* sp.

## Note 21:

The majority of this field has been excluded from the SAC - the boundary does not appear to follow any logical feature. This field should be included within the SAC as it has a good variety of calcareous grassland indicator species present amidst the outcropping limestone boulders. Species present include *Briza media*, *Lotus corniculatus*, *Sanguisorba minor*, *Carex flacca*, *Calluna vulgaris*, *Galium verum*, *Campanula rotundifolia*, *Potentilla erecta*, *Daucus carota* and *Succisa pratensis*. There is some encroachment by *Pteridium aquilinum* and frequent *Crataegus monogyna* scrub.

## Note 22:

This is an improved area within a field of outcropping limestone rocks and boulders. This area is located in a small depression and may be subject to flooding - hence nutrient enrichment? Species present within the sward include *Lolium perenne*, *Ranunculus repens*, *Plantago lanceolata*, *Cynosurus cristatus*, *Taraxacum* agg., *Trifolium repens*, *Achillea millefolium*, *Lotus corniculatus*, *Potentilla erecta*, *Leucanthemum vulgare* and *Rumex acetosa*. This area is becoming encroached by *Pteridium aquilinum*.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop was located on a sloping field near the summit of Blake's Hill (also known as Gentian Hill). The sward here is currently ungrazed and appears to be managed by mowing. The substrate appears to be a sandy-based soil which is relatively deep on flatter areas of the hill.

Within the Stop, herb cover was good (60%) and 7 indicator species were recorded. No negative indicator species were recorded and scrub/Bracken did not occur. However, the abundance of *Cirsium arvense* suggested enrichment in the past and should be monitored to prevent it becoming too invasive. Several fruiting/seeding orchids were recorded.

Species present include; *Centaurea nigra* (O), *Dactylis glomerata* (O), *Euphrasia* sp. (R), *Trifolium pratense* (R), *Plantago lanceolata* (O), *Rhinanthus minor* (F), *Festuca rubra* (O), *Prunella vulgaris* (R), *Cirsium arvense* (O), *Potentilla erecta* (R), *Achillea millefolium* (R), *Lathyrus pratensis* (R), *Cerastium fontanum* (R), *Odontites verna* (R), *Ranunculus acris* (R), *Rumex acetosella* (R) and *Hypochoeris radicata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 5.

There are frequent fruiting/seeding orchids in the sward surrounding the Monitoring Stop. There is some *Pteridium aquilinum* and *Rubus fruticosus* agg. present on the upper slopes. This field would appear to be winter grazed - some poach marks present.

**Monitoring Stop 2:**

This Monitoring Stop was located on a flatter terrace on the shoulder of the hill below Monitoring Stop 1 where soils are deeper.

Within the Stop, herb cover was high (80%) but no calcareous indicator species were present. The high herb content, however, was seen to be due to the dominance of *Potentilla anserina*, *Centaurea nigra* and *Rhinanthus minor*. No listed negative indicator species were recorded but *Cirsium arvense* was seen to be frequent in the vegetation.

The sward within the Stop was dominated by *Potentilla anserina* (D), with *Dactylis glomerata* (F), *Centaurea nigra* (F), *Odontites verna* (R), *Trifolium pratense* (O), *Euphrasia* sp. (R), *Rhinanthus minor* (F), *Vicia* sp. (R), *Ranunculus acris* (O) and *Agrostis* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 6. Elsewhere in the sward, *Achillea millefolium*, *Pteridium aquilinum*, *Daucus carota*, *Rumex* sp. and *Senecio jacobaea* were also present.

The absence of indicator species would usually result in a failure of the Structures and Functions attribute. However, because of the fact that the Stop was conducted on deeper soils and taking into account that the Natura 2000 Explanatory Notes indicate that habitat 6210 is confined to the steeply sloping areas of Gentian Hill, this Stop was not included in the assessment of Structure and Functions. This is because it was unlikely to have been the habitat in recent times.

**Monitoring Stop 3:**

This Monitoring Stop was located on a flat plateau on the southern shoulder of the hill. This area had a herb cover of 80% but only 4 indicator species were recorded. This would usually result in a 'Fail' for this Monitoring Stop. However, taking into account that the Natura 2000 Explanatory Notes indicate that habitat 6210 is confined to the steeply sloping areas of Gentian Hill, this Stop will not be assessed for Structure and Functions. This is because it is unlikely to have been the habitat in recent times.

Additional species recorded within the Monitoring Stop include *Centaurea nigra* (F), *Rhinanthus minor* (F), *Trifolium pratense* (O), *Achillea millefolium* (O), *Plantago lanceolata* (O), *Euphrasia* sp. (R), *Vicia cracca* (R), *Cerastium fontanum* (R), *Dactylis glomerata* (F), *Cynosurus cristatus* (R), *Veronica chamaedrys* (R), *Ranunculus acris* (O), *Festuca rubra* (R) and *Taraxacum* agg. (R). The relevé data for this Monitoring Stop is presented in Quadrat 8. *Rosa pimpinellifolia* was present near the track.



**Monitoring Stop 4:**

This Monitoring Stop was conducted on the slope of the hill above the cliff face at the southern point of the hill. The exposed nature of this slope has reduced growth in this location and the sward is much lower and tighter. Herb cover was high at 80% and 7 indicator species were recorded resulting in a 'Pass' for this Monitoring Stop. A single fruiting/seeding orchid was also recorded.

Additional species recorded include *Rhinanthus minor* (F), *Plantago lanceolata* (O), *Centaurea nigra* (O), *Euphrasia* sp. (F), *Hypochoeris radicata* (O), *Trifolium repens* (O), *Gentianella amarella* (O), *Anacamptis pyramidalis* (R) and *Centaureum erythraea* (R). The relevé data for this Monitoring Stop is presented in Quadrat 9.

Outside the Monitoring Stop *Blackstonia perfoliata* and *Campanula rotundifolia* are present. The western slopes have *Centaurea scabiosa*, *Succisa pratensis*, *Prunella vulgaris*, *Potentilla erecta*, *Dactylis glomerata*, *Solidago virgaurea* and *Senecio jacobaea*.

**Monitoring Stop 5:**

This Monitoring Stop was located in a field adjacent to Bell Harbour which has been improved. This field has frequent outcropping limestone boulders and has been reseeded. This improvement has led to a low species diversity (no indicator species were recorded), poor herb cover (15%) and abundant *Lolium perenne* which result in a 'Fail' for the Monitoring Stop.

Species present include *Lolium perenne* (A), *Agrostis stolonifera* (O), *Urtica dioica* (R), *Trifolium pratense* (R), *Trifolium repens* (O), *Pteridium aquilinum* (R), *Ranunculus repens* (O), *Plantago major* (R), *Veronica chamaedrys* (R), *Cirsium dissectum* (R), *Cerastium* sp. (R), *Poa annua* (R), *Taraxacum* agg. (O), *Geranium molle* (R) and *Plantago lanceolata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 10. There are frequent *Rumex* spp. outside the Monitoring Stop, and some encroachment by *Rubus fruticosus* agg., *Crataegus monogyna* and *Prunus spinosa* in this field. There are also some large patches of *Urtica dioica* outside the Monitoring Stop and numerous black silage wrappers are present indicating frequent ring feeding activity.

Due to the improved nature of this Stop, it is not included in the assessment of Structures and Functions. It is included instead in the assessment of loss of Extent.

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**Monitoring Stop 6:**

This Monitoring Stop was located in a field with numerous outcropping limestone rocks and thin soils. There is some evidence of scrub encroachment in this field by *Crataegus monogyna*, *Prunus spinosa*, *Rubus fruticosus* agg. and *Pteridium aquilinum*. Attempts have been made to control the spread of some of these areas of scrub by burning. The sward is currently closely grazed and 7 indicator species were recorded with a herb cover of 50%. The encroachment by scrub is not yet at a significant enough level to threaten the calcareous grassland within the site and this Monitoring Stop 'Passed'.

Additional species recorded within the Monitoring Stop include *Cynosurus cristatus* (O), *Rosa pimpinellifolia* (R), *Trifolium repens* (O), *Bellis perennis* (R), *Plantago lanceolata* (O), *Achillea millefolium* (O), *Thymus praecox* (R), *Succisa pratensis* (O), *Pteridium aquilinum* (R), *Leucanthemum vulgare* (R), *Potentilla erecta* (R), *Viola* sp. (R), *Plantago maritima* (R) and *Ranunculus repens* (O). The relevé data for this Monitoring Stop is presented in Quadrat 11.

Outside the Monitoring Stop there are frequent outcropping limestone rocks with *Pteridium aquilinum*, *Rubus fruticosus* agg., *Teucrium scorodonia*, *Solidago virgaurea*, *Hypericum* sp., *Briza media*, *Thymus praecox*, *Succisa pratensis*, *Rosa pimpinellifolia* and *Centaurea nigra*. Closer to the road there is evidence of some localised improvement and several remnant silage wrappers were present.

**Monitoring Stop 7:**

This Monitoring Stop was located on a small hillock of frequent outcropping limestone boulders. Herb cover was 40% and this Monitoring Stop had 7 indicator species, no negative indicators or encroachment by scrub within the Monitoring Stop resulting in a 'Pass' for this Monitoring Stop.

The adjoining area is becoming heathy and encroached by *Pteridium aquilinum* with frequent *Calluna vulgaris*. Additional species recorded within the Monitoring Stop include *Calluna vulgaris* (O), *Plantago lanceolata* (R), *Pteridium aquilinum* (R), *Festuca rubra* (F), *Viola* sp. (R), *Potentilla erecta* (O), *Brachypodium sylvaticum* (R), *Hypericum* sp. (R), *Agrostis capillaris* (R), *Danthonia decumbens* (R), *Hypochoeris radicata* (R) and *Succisa pratensis* (R). Outcropping rocks account for c.15% of this Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 12.

Outside the Monitoring Stop there was *Cirsium palustre* (rare), *Prunus spinosa*, *Achillea millefolium*, *Teucrium scorodonia*, *Rubus fruticosus* agg., *Carlina vulgaris* and *Thymus praecox*. Some clay pigeon shooting is occurring on lower coastal grassland areas.

**Monitoring Stop 8:**

This Monitoring Stop was similar to Monitoring Stop 7 and was conducted on a small hillock with outcropping limestone boulders above an area of coastal grassland/upper salt marsh. 11 indicator species and one fruiting/seeding orchid were recorded, with a herb cover of 50% and no negative indicator species. *Pteridium aquilinum* within the Monitoring Stop was <5% resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded in the Monitoring Stop include *Plantago maritima* (R), *Plantago lanceolata* (R), *Calluna vulgaris* (O), *Agrostis capillaris* (R), *Cynosurus cristatus* (R), *Achillea millefolium* (O), *Succisa pratensis* (R), *Anthoxanthum odoratum* (R), *Thymus praecox* (O), *Potentilla erecta* (O), *Trifolium repens* (O), *Armeria maritima* (R), *Festuca rubra* (O) and *Ranunculus repens* (R). The relevé data for this Monitoring Stop is presented in Quadrat 13.

The sward was relatively closely grazed and outcropping boulders form c.10% of the Monitoring Stop and c.20% in the general area. There were frequent anthills present. Encroachment by *Rubus fruticosus* agg., *Prunus spinosa* and *Pteridium aquilinum* is becoming an issue in this area. Calcareous grassland was restricted to the higher hummocks of ground.

**Monitoring Stop 9:**

This Monitoring Stop was conducted in an area with frequent outcropping limestone boulders on the hillside above and outcropping limestone pavement below. Patches of deeper soil have been improved. The Monitoring Stop was conducted in these areas and the sward was dominated by *Lolium perenne* (D), *Trifolium pratense* (O), *Trifolium repens* (O), *Potentilla anserina* (O), *Plantago major* (R) and *Polygonum aviculare* (R). The relevé data for this Monitoring Stop is presented in Quadrat 14.

This improvement has resulted in a poor sward with only 10% herb cover and no indicator species dominated by *Lolium perenne*. Due to the improved nature of this Stop, it is not included in the assessment of Structures and Functions. It is included instead in the assessment of loss of Extent.

**Monitoring Stop 10:**

This Monitoring Stop was located in the field adjoining N21 which has frequent outcropping limestone boulders and rocks. Between these rocks there are areas of species rich calcareous grassland which are becoming encroached by *Pteridium aquilinum* which resulted in a 'Fail' for this Monitoring Stop despite good herb cover (40%) and the presence of 8 indicator species.

Additional species recorded within the Monitoring Stop include *Cynosurus cristatus* (O), *Succisa pratensis* (O), *Pteridium aquilinum* (R), *Agrostis capillaris* (R), *Trifolium repens* (O), *Plantago lanceolata* (R), *Viola* sp. (R), *Potentilla erecta* (R), *Prunella vulgaris* (R), *Calluna vulgaris* (R), *Teucrium scorodonia* (R), *Festuca rubra* (F), *Achillea millefolium* (R), *Thymus praecox* (R), *Leucanthemum vulgare* (R) and *Primula* sp. (R). Exposed rock accounts for c.20% of the Monitoring Stop, which also had good moss cover. The relevé data for this Monitoring Stop is presented in Quadrat 15.

**Monitoring Stop 11:**

This Monitoring Stop was located in a small area with less exposed limestone rocks and boulders than Monitoring Stop 10. This area has been recently grazed. Ten indicator species were recorded here with herb cover of 40% and the presence of several fruiting/seeding orchids resulted in this stop 'Passing' despite a small amount of *Pteridium aquilinum* (2%).

Additional species recorded within the Monitoring Stop include *Pteridium aquilinum* (R), *Viola* sp. (R), *Potentilla erecta* (R), *Festuca rubra* (O), *Succisa pratensis* (F), *Euphrasia* sp. (R), *Trifolium repens* (O), *Agrostis* sp. (R), *Danthonia decumbens* (R), *Rhinanthus minor* (R), *Prunella vulgaris* (R), *Calluna vulgaris* (R), *Hieracium* sp. (R), *Hypochoeris radicata* (R), *Thymus praecox* (R), *Centaurea nigra* (R), *Pimpinella saxifraga* (R), *Solidago virgaurea* (R), fruiting/seeding orchids (R), *Vicia cracca* (R), *Plantago lanceolata* (R) and *Centaureum erythraea* (R). The relevé data for this Monitoring Stop is presented in Quadrat 16.

*Carlina vulgaris*, *Blackstonia perfoliata*, *Teucrium scorodonia* and *Rosa pimpinellifolia* were present outside the Monitoring Stop as were several ant hills.

**Monitoring Stop 12:**

This Monitoring Stop was located between outcropping boulders. Ten indicator species were recorded with 50% herb cover but the Stop 'Failed' as a result of encroachment by *Pteridium aquilinum*.

Additional species recorded within the Monitoring Stop include *Pteridium aquilinum* (R), *Agrostis* sp. (R), *Succisa pratensis* (R), *Festuca rubra* (O), *Trifolium repens* (O), *Thymus praecox* (R), *Plantago lanceolata* (R), *Teucrium scorodonia* (R), *Euphrasia* sp. (R), *Cynosurus cristatus* (R), *Potentilla erecta* (R), *Leucanthemum vulgare* (R) and *Calluna vulgaris* (R). The relevé data for this Monitoring Stop is presented in Quadrat 17.

## Lough Corrib

### SITE DETAILS

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	01/08/2006
Faith Wilson	04/08/2006
Willie Crowley	

**Total Site Area (Ha):** 20583

**Area of Priority Grassland (N2000) (Ha):** 92.

**Area of Priority Grassland 2006 (Ha)\*:** 10-20

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### SITE LOCATION INFORMATION

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Galway	38	GA026, GA027, GA039, GA040,
Mayo	39	GA041, GA054, GA055, GA056,
	45	GA068, GA069, GA081, GA082,
	46	GA094, MA112, MA113, MA120,
		MA121, MA122, MA122a, MA123.

### Digital Aerial Photos (Tile Nos.):

O2667-a, O2667-b, O2667-c, O2667-d, O2668-a, O2668-b, .O2668-c, O2668-d, O2669-c, O2734-a, O2734-b, O2734-c, O2734-d, O2735-a, O2735-b, O2736-c, O2736-d, O2737-a, O2737-b, O2737-c, O2737-d, O2738-a, O2738-b, O2738-c, O2738-d, O2739-a, O2739-b, O2739-c, O2739-d, O2802-a, O2802-b, O2802-c, O2802-d, O2803-a, O2803-b, O2803-c, O2803-d, O2804-a, O2804-b, O2804-c, O2804-d, O2805-a, O2805-b, O2805-c, O2805-d, O2806-a, O2806-b, O2806-c, O2806-d, O2807-a, O2807-b, O2807-c, O2807-d, O2808-c, O2870-a, O2870-b, O2870-c, O2870-d, O2871-a, O2871-b, O2871-c, O2871-d, O2872-a, O2872-b, O2872-c, O2872-d, O2873-a, O2873-b, O2873-c, O2873-d, O2874-a, O2874-b, O2874-c, O2874-d, O2875-a, O2875-b, O2875-c, O2875-d, O2876-a, O2876-b, O2876-c, O2876-d, O2877-a, O2877-b, O2877-c, O2877-d, O2942-a, O2942-b, O2942-c, O2942-d, O2943-a, O2943-b, O2943-c, O2943-d, O2944-a, O2944-b, O2944-c, O2944-d, O2945-a, O2945-b, O2945-c, O2945-d, O3011-a, O3011-b, O3011-c, O3011-d, O3012-a, O3012-b, O3012-c, O3012-d, O3013-a, O3013-b, O3013-c, O3013-d, O3014-a, O3014-b, O3014-c, O3014-d, O3015-a, O3015-b, O3015-c, O3015-d, O3016-a, O3016-b, O3016-c, O3016-d, O3017-a, O3017-b, O3017-c, O3017-d, O3080-a, O3080-b, O3080-c, O3080-d, O3081-a, O3081-b, O3081-c, O3081-d, O3082-a, O3082-b, O3082-c, O3082-d, O3083-a, O3083-b, O3083-c, O3083-d, O3084-a, O3084-b, O3084-c, O3084-d, O3085-a, O3085-b, O3085-c, O3085-d, O3149-a, O3149-b, O3149-c, O3149-d, O3150-a, O3150-b, O3150-c, O3150-d,

O3151-a, O3151-b, O3151-c, O3151-d, O3152-a, O3152-b, O3152-c, O3152-d, O3215-a, O3215-b, O3215-c, O3215-d, O3216-a, O3216-b, O3216-c, O3216-d, O3217-a, O3217-b, O3217-c, O3217-d, O3218-a, O3218-b, O3218-c, O3218-d, O3280-a, O3280-b, O3280-c, O3280-d, O3281-a, O3281-b, O3281-c, O3281-d, O3282-a, O3282-b, O3282-c, O3282-d, O3344-a, O3344-b, O3344-c, O3344-d, O3345-a, O3345-b, O3345-c, O3345-d, O3408-a, O3408-b, O3408-c, O3408-d

**Other Aerial Photographs:**

**SITE DESIGNATIONS**

**SAC Site Code:**

000297

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Lough Corrib is situated to the north of Galway city and is the second largest lake in Ireland with an area of approximately 18,240 ha (the entire site is 20,556 ha). The lake can be divided into two parts: a relatively shallow basin, underlain by Carboniferous limestone, in the south and a larger, deeper basin, underlain by more acidic granite, schists, shales and sandstones, to the north. The surrounding lands are mostly pastoral farmland, to the south and east, and bog and heath, to the west and north. In addition to the lake basin, adjoining areas of conservation interest, including woodland, grassland and limestone pavement, have been incorporated into the site.

This site is of major conservation importance and includes twelve habitats listed on Annex I of the EU Habitats Directive. Six of these are priority habitats - petrifying springs, Cladium fen, active raised bog, limestone pavement, bog woodland and orchid-rich calcareous grassland. The other annexed habitats present include hard water lakes, lowland oligotrophic lakes, floating river vegetation, alkaline fens, Molinia meadows and old Oak woodlands.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site described the orchid rich grassland as follows: Open areas of orchid-rich calcareous grassland are also found in association with the limestone exposures. These can support a typically rich vegetation, including many orchids such as Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Early-purple Orchid (*Orchis mascula*), Frog Orchid (*Coeloglossum viride*), Fragrant Orchid (*Gymnadenia conopsea*), Marsh Helleborine (*Epipactis palustris*), Greater Butterfly-orchid (*Platanthera chlorantha*) and Irish Lady's-tresses (*Spiranthes romanzoffiana*). The latter is protected under the Flora (Protection) Order, 1999.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This habitat occurs in association with limestone pavement, heath and scrub around the lake shore. It supports a typical species-rich calcareous flora including many orchid species such as *Anacamptis pyramidalis*, *Dactylorhiza fuchsii*, *Orchis mascula*, *Coeloglossum viride*, *Gymnadenia conopsea*, *Epipactis palustris*, *Platanthera chlorantha* along with the protected species *Spiranthes romanzoffiana* (Flora Protection Order 1987). Other species usually associated with this habitat include *Geranium robertianum*, *Geranium sanguineum*, *Carlina vulgaris*, *Gentiana verna*, *Thymus praecox*, *Briza media*, *Rosa pimpinellifolia*, *Linum catharticum* and *Prunus spinosa*.

#### *Description based on the 2006 Survey :*

The 2006 survey found that the areas of calcareous grassland within the site were typically found as narrow strips between field boundaries and areas of fen/wet grassland closer to the lakeshore or in a mosaic with exposed rocks, alkaline fen and wet grassland. In the latter, the areas of calcareous grassland were restricted to the drier areas around outcropping rocks.

The 2006 survey recorded a number of additional species to those species listed above including *Blackstonia perfoliata*, *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Hieracium pilosella*, *Sesleria albicans* and *Lotus corniculatus*. Species such as *Gentianella campestris*, *Daucus carota*, *Carlina vulgaris*, *Antennaria dioica* and *Galium verum* were less frequently encountered. Much of the calcareous grassland within the site grades into areas of alkaline fen and so species such as *Hydrocotyle vulgaris*, *Parnassia palustris*, *Schoenus nigricans*, *Molinia caerulea*, *Mentha aquatica* and various sedges were also common.



**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This large site has been the subject of several surveys. The original NHA survey was conducted in 1997. A boundary amendment survey was conducted in 2003. Several NHA sites have been subsumed into the site - these include the Owenriff River which was surveyed by NPWS staff in 2001 and other NHAs. The site boundaries were then further revised during the NPWS river boundary project in 2005.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

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## **SITE MONITORING AND MANAGEMENT UNITS**

This is a large extensive site. The site survey was approached using a combination of existing NHA notes, areas identified in the MPSU management plan habitat map, and interpretation of the OSI 2000 aerial photographs to identify areas of potential calcareous grassland within the site. Fourteen survey areas which were relatively easily accessed were selected and visited in the field and their locations are shown on the overview of the site on Map 1 (Sheets 1 - 14).

Sixteen Monitoring Stops were conducted within the site. Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that eight of the Monitoring Stops were not included in the assessment of Structures and Functions. On analysis of the field survey results, Stop 10 was seen to reflect a loss of habitat Extent and was therefore not included in the assessment of Structures and Functions. The remaining Stops (1, 2, 8, 12, 14, and 15) were seen to be more representative of a wet calcareous grassland. Species such as *Schoenus nigricans*, *Filipendula ulmaria*, and *Parnassia palustris* were present to varying degrees, reflecting the wetter conditions close to the lake shore. These Stops were not included in the assessment of the 6210 habitat but are seen as a unique feature of local distinctiveness.

Of the nine Stops assessed for Structures and Functions, only one was seen to fail the assessment process.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	16
<b>Number of Monitoring Stops:</b>	16
<b>Number of Stops That Pass:</b>	8
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Not used in assessment	Sheet 14 of 14
Stop 02	2	Fail	Not used in assessment	Sheet 13 of 14
Stop 03	3	Pass	Structures and Functions	Sheet 12 of 14
Stop 04	4	Pass	Structures and Functions	Sheet 12 of 14
Stop 05	5	Fail	Structures and Functions	Sheet 12 of 14
Stop 06	6	Pass	Structures and Functions	Sheet 11 of 14
Stop 07	7	Pass	Structures and Functions	Sheet 11 of 14
Stop 08	8	Pass	Not used in assessment	Sheet 11 of 14
Stop 09	9	Pass	Structures and Functions	Sheet 3 of 14
Stop 10	10	Fail	Extent	Sheet 3 of 14
Stop 11	11	Pass	Structures and Functions	Sheet 3 of 14
Stop 12	12	Fail	Not used in assessment	Sheet 4 of 14
Stop 13	13	Pass	Structures and Functions	Sheet 4 of 14
Stop 14	14	Fail	Not used in assessment	Sheet 6 of 14
Stop 15	15	Fail	Not used in assessment	Sheet 7 of 14
Stop 16	16	Pass	Structures and Functions	Sheet 7 of 14

As the Monitoring Stops were conducted over a broad geographic distribution around the lake each area of calcareous grassland in which a stop was conducted was treated as an individual management unit.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

There was some evidence of agricultural improvement (103), reseeded and fertilisation (120) of the areas of calcareous grassland within the site (see Monitoring Stops 5 and 10 and Notes N7, N10, N13, N15, N17, N18 and N21). The use of ring feeders (171) was noted at one location (note 7).

Many areas of the shoreline of Lough Corrib are developed to allow the storage of fishing boats, slips and launching areas (609) as angling (220) is a popular activity on the lake. Undergrazing (149) has resulted in the encroachment of scrub/*Pteridium aquilinum* at several locations (954) (see Notes 8 and 9) and has also resulted in the development of rank grassland (See Note 13). Lack of grazing is likely to have resulted in a loss of species diversity and to have contributed to several stops failing due to lack of calcareous indicators (Monitoring Stops 1, 2, 5, 11 and 14) and poor herb cover (Monitoring Stops 12 and 15). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	C
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-1	C
120	Fertilisation	-1	C
149	Grazing: undergrazing	-1	B
220	Leisure fishing	-1	A
609	Sport & leisure structures: other sport/leisure complexes	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Lack of grazing activity within the site has resulted in the loss of species diversity (Monitoring Stops 1, 2, 5, 11 and 14) and encroachment by scrub/*Pteridium aquilinum* (Notes 8 and 9) and rank grassland (Note 13). Grazing is the key management tool in maintaining species diversity and herb cover in calcareous grasslands and an agreement with landowners for appropriate grazing regimes needs to be established. The practice of agricultural improvement within the site (see Monitoring Stops 5 and 10 and Notes N7, N10, N13, N15, N17, N18 and N21) also needs to be addressed.

Access and launching facilities for fishing boats seems to be at a low level of intensity at present but should further developments such as built piers and moorings become developed, the threat from this activity would increase.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2. However, as highlighted in the Natura 2000 explanatory notes, the extent of this habitat at Lough Corrib is "difficult to assess owing to its gradation into other habitats".

Just over 5ha of the habitat was mapped, but it should be realised that this is likely to be an under-estimation due to the fact that:

- small areas of the habitat occur in a mosaic with limestone pavement, heath and scrub and,
- the entire SAC was not surveyed.

Due to time constraints, 14 relatively small areas (usually <1km of shoreline) were surveyed. These were chosen, after an analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2, as they were thought to be the most likely to contain the habitat type 6210. However, although elements of calcareous grassland were found in parts of all 14 areas, only seven of them were considered to contain a significant area (i.e. >20m x 20m) where the habitat was the dominant habitat type. Thus, although there is likely to be further unsurveyed areas of habitat 6210 in the Lough Corrib SAC, these areas are likely to be small and not amounting to any more than that already mapped. Thus an estimate of 10ha is given for the overall extent of habitat 6210 in the Lough Corrib SAC.

The Natura 2000 explanatory notes estimated the area of habitat 6210 in the Lough Corrib SAC to be 92ha. The results of the current survey indicate that this was more than likely to be an over-estimation. However, given the lack of baseline information, it is difficult to assess what the actual original extent of calcareous grassland was. Nevertheless, considering that evidence of agricultural improvement was noted at Monitoring Stop 5 and notes 10, 13, 15, 17, 18 and 21, it is likely that there has been at least some loss in extent of habitat 6210 in the years since the site was designated. For this reason the Extent of calcareous grassland within the site is assessed as Unfavourable - inadequate.

### ***Structure and Functions:***

Of the sixteen Monitoring Stops recorded at Lough Corrib, an analysis of the survey results excluded seven from the assessment of Structures and Functions. Eight of the nine Monitoring Stops which were used to assess Structures and Functions passed the assessment process.

Stop 5 failed due to a lack of indicator species. Unlike most other sites surveyed during the 2006 grasslands Monitoring Project, no Monitoring Stop at Lough Corrib failed as a result of encroachment by *Pteridium aquilinum* or scrub, although this was noted as a threat at several locations within the site (see notes 8 and 9).

Of the remaining seven Stops which were not included in the assessment of Structures and Functions, Stop 10 was included instead in the assessment of loss in habitat extent. With frequent *Lolium perenne* and no calcareous indicator species, Stop 10 was seen to represent a potential (provided it was the habitat in the past) loss in habitat 6210, rather than indicating a poor quality area of the habitat.

For Stops 1, 2, 8, 12, 14, and 15, these Stops were conducted in areas where *Schoenus nigricans* was recorded as being more than occasional. Thus it was considered that in these cases, the Stops should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat. Interestingly, two of these five Stops pass all the other criteria for the Structure and Functions of the habitat, having sufficient calcareous indicator species in particular. These Stops are seen to reflect local distinctiveness and are presented as a positive feature in the overall assessment of the Conservation Status of the site.

However, as there was an 11% failure rate in the assessment of Structures and Functions, this attribute is described as being Unfavourable - inadequate at Lough Corrib SAC.

#### ***Future Prospects:***

The Future Prospects for calcareous grassland within the site will depend on management agreements between NPWS and private landowners, particularly in relation to grazing regimes. If there is no further agricultural improvement of calcareous grassland within the site, the Future prospects for the calcareous grassland within the site are good. Scrub encroachment does not appear to be a major threat to the areas of calcareous grassland surveyed but could become so in the absence of grazing. The Future Prospects for the calcareous grassland within the site are thus assessed as Unfavourable - inadequate.

#### ***Conservation Assessment:***

The Extent of calcareous grassland within the site is difficult to estimate correctly. However, it is thought that the extent has decreased as a result of agricultural improvement. This impact was noted in several of the areas surveyed. An assessment of Unfavourable - inadequate was the result of the assessment of extent.

Undergrazing, or lack of sufficient grazing pressures, was also seen to be affecting the current grassland extent, contributing to poor habitat condition in some locations. On the whole, however, the condition of the grassland deemed to be 6210 habitat was seen to be relatively good, with only one of nine assessed Stops failing the assessment process. However, this failure rate of 11% must result in an 'Unfavourable - inadequate' description for the habitat condition.

The Future Prospects for the calcareous grassland within the site are also assessed as Unfavourable - inadequate. The future will very much depend on management agreements between local landowners and NPWS and this is not assured. The overall Conservation Status Assessment for the site must thus be described as Unfavourable - inadequate (see Table 3).

However, it must be noted that there are some positive features at this site. Grassland

quality is generally good and the distinctiveness of the wet calcareous grassland at the shores of the lake significantly adds to the overall value of the site.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - inadequate</i>
	Future Prospects		
	Structure and Function		
	Extent		

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

Note 1:

Area of wet grassland/fen with *Prunella vulgaris*, *Ranunculus acris*, *Iris pseudacorus*, *Juncus acutiflorus*, *Hydrocotyle vulgaris*, *Mentha aquatica*, *Trifolium repens*, *Ranunculus repens*, *Carex flacca*, *Filipendula ulmaria*, *Solanum dulcamara*, *Cerastium fontanum*, *Plantago lanceolata* and *Luzula campestris*.

Note 2:

Grazed area with fen/wet grassland dominated by *Carex flacca*, with *Juncus acutiflorus*, *Juncus articulatus*, *Schoenus nigricans*, *Parnassia palustris*, *Mentha aquatica*, *Luzula* sp., *Salix repens*, *Schoenus nigricans*, *Molinia caerulea*, *Hydrocotyle vulgaris*, *Trifolium repens*, *Prunella vulgaris*, *Centaurea nigra*, *Lotus corniculatus* and occasional *Corylus avellana* seedlings.

Note 3:

Located in area corresponding to NHA N8.53. Area of fen closely grazed and dominated by *Schoenus nigricans* with frequent *Carex* spp. See photo 5. *Prunella vulgaris* is occasional and clumps of *Myrica gale* are present. *Briza media*, *Lotus corniculatus*, *Succisa pratensis*, *Leontodon hispidus*, *Centaurea nigra* and *Polygala serpyllifolia* are rare. *Blackstonia perfoliata* is present along drier margins. This area is likely to flood.

Note 4:

Area of calcareous heath/grassland dominated by *Calluna vulgaris*, with frequent *Lotus corniculatus*, *Myrica gale*, *Potentilla erecta*, and occasional *Succisa pratensis*, *Centaurea nigra*, *Briza media* and *Schoenus nigricans*. *Carex flacca* and *Carlina vulgaris* are rare. See photo 9.

This data is presented in Quadrat 11.

Outcropping areas of limestone support *Crataegus monogyna* and *Ulex europaeus* scrub with occasional *Juniperus communis*, *Leucanthemum vulgare*, *Rosa pimpinellifolia*, and rarely *Rhamnus catharticus* and *Galium verum*.

Note 5:

Area of fen with *Schoenus nigricans*, *Phragmites australis*, *Cladium mariscus*, *Carex* spp. and *Myrica gale* at margins. Also present was *Mentha aquatica*, *Ranunculus flammula* and *Filipendula ulmaria*. See photo 11.



## Note 6:

Area of calcareous grassland with occasional *Juniperus communis* merging with fen dominated by *Schoenus nigricans*, *Carex* sp. and *Hydrocotyle vulgaris*. See photo 16. The fen is found in small depressions within the grassland. This area is closely grazed with numerous outcropping limestone boulders. *Blackstonia perfoliata*, *Lotus corniculatus*, *Hieracium pilosella*, *Thymus praecox*, *Briza media* and *Leucanthemum vulgare* are present.

## Note 7:

Damage - recent clearance of scrub by machinery, burning of removed vegetation and disturbance to the ground. Ground is now recolonising with *Polygonum persicaria*, *Plantago major*, *Chamomilla suaveolens*, *Pteridium aquilinum*, *Polygonum aviculare*, *Lolium perenne*, *Leucanthemum vulgare* and *Rubus fruticosus* agg. There are occasional areas of exposed limestone rock with *Rosa pimpinellifolia*. A ring feeder was previously erected in this area. See photo 18.

## Note 8:

Area of grassland becoming invaded by *Prunus spinosa*, *Rubus fruticosus* agg. and *Pteridium aquilinum*. *Rosa pimpinellifolia* was occasional. *Filipendula ulmaria*, *Centaurea nigra*, *Leucanthemum vulgare*, *Festuca arundinacea* and *Primula veris* were present.

## Note 9:

This area is dominated by *Schoenus nigricans* with *Ranunculus flammula*, *Hydrocotyle vulgaris* and *Mentha aquatica* amidst outcropping limestone boulders. There are abundant *Alnus glutinosa* saplings in this area, which is backed by encroaching *Ulex europeus* scrub. See photos 27 and 28.

## Note 10:

This site is dominated by wet grassland with abundant *Juncus* spp. and fen dominated by *Schoenus nigricans* in the centre. Dry grassland is located on the upper slopes of this area and is dominated by *Cirsium palustre*, *Lolium perenne*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Agrostis* sp., *Rumex acetosa* and *Trifolium repens*. See photos 29, 30 and 31.

## Note 11:

Located near NHA N5.29.

This is an ungrazed area dominated by *Schoenus nigricans* with abundant *Sesleria albicans*, occasional *Briza media*, *Carex flacca*, *Molinia caerulea*, *Gymnadenia conopsea*, *Centaurea nigra*, *Prunella vulgaris* and *Potentilla erecta*. *Succisa pratensis*, *Polygala vulgaris*, *Linum catharticum*, *Blackstonia perfoliata*, *Vicia cracca*, *Campanula rotundifolia*, *Pinguicula* sp., *Parnassia palustris* and *Galium boreale* are rare. See photos 32 and 33.

This data is presented in Quadrat 12.

This area is likely to flood in the winter months. *Typha latifolia* and *Schoenoplectus lacustris* ssp. *lacustris* are found near the margin of the waters edge. There is good moss cover throughout and occasional outcrops of limestone boulders. A swathe of *Epilobium* spp. is present in the centre. *Galium verum*, *Leucanthemum vulgare* and *Plantago maritima* are present alongside roadside margins where conditions are likely to be drier.

Lapwing present.

## Note 12:

Located near the location of NHA N5.31.

As for Note 11 with *Potentilla fruticosa* around margins. Wetter in areas dominated by *Schoenus nigricans* with frequent outcropping limestone. Other species present in these wet areas include *Filipendula ulmaria*, *Mentha aquatica*, *Fraxinus excelsior* seedlings and occasional *Gymnadenia conopsea* and *Daucus carota*. *Cotoneaster* was present along track margins. See photo 34.

Farmer has cleared a wall between this area and the pier - possibly with a view to enabling machinery in to improve the land.

## Note 13:

This is a semi-improved field with occasional *Lolium perenne*, amidst a sward of *Cynosurus cristatus*, *Festuca arundinacea*, *Dactylis glomerata*, *Rumex acetosa*, *Achillea millefolium*, *Lathyrus pratensis*, *Trifolium repens*, *Cerastium fontanum*, *Lotus corniculatus*, *Trifolium pratense* and *Centaureum erythraea*.

This field is currently grazed by cattle and sheep and extends down to the shoreline and north along the waters edge. See photo 41.

## Note 14:

Located near the location of NHA N8.112. This is an area of calcareous grassland/heath between outcropping limestone boulders. See photo 46.

The sward is dominated by *Schoenus nigricans* and *Sesleria albicans*, with frequent *Juniperus communis*, and occasional *Briza media*, *Succisa pratensis*, *Lotus corniculatus*, *Solidago virgaurea*, *Carex flacca*, *Molinia caerulea* and *Thymus praecox* (around outcrops).

*Carlina vulgaris*, *Geranium sanguineum*, *Prunella vulgaris*, *Rosa pimpinellifolia*, *Gymnadenia conopsea*, *Vicia* sp. and *Galium boreale* are all rare.

This area is backed by *Ulex europaeus* and *Corylus avellana* scrub, and merges with an area dominated by *Schoenus nigricans* closer to the lake shoreline.

## Note 15:

This is a less species rich field than that described in Monitoring Stop 13 and is semi-improved or possibly reseeded. The sward is dominated by *Festuca arundinacea*, *Dactylis glomerata*, *Centaurea nigra* and frequent *Potentilla anserina*. This area is currently ungrazed with a sward of 80cm high. There is frequent *Lathyrus pratensis* and occasional *Achillea millefolium*, *Lotus corniculatus*, *Agrostis stolonifera*, *Plantago lanceolata* and *Ranunculus acris*. See photo 48, 49 and 51.

## Note 16:

This area contains an ungrazed sward 5 - 20cm high near an amenity area with a picnic table and barbecue area. Species present include *Schoenus nigricans*, *Briza media*, *Cynosurus cristatus*, *Festuca arundinacea*, *Trifolium pratense*, *Leucanthemum vulgare*, *Lotus corniculatus*, *Ranunculus acris*, *Filipendula ulmaria*, *Succisa pratensis*, *Parnassia palustris*, *Prunella vulgaris*, *Centaurea nigra*, *Molinia caerulea*, *Gymnadenia conopsea*, *Campanula rotundifolia* and *Rhinanthus minor*. See photo 52.

## Note 17:

This is an area of improved grassland with outcropping limestone boulders. The area has been reseeded with *Lolium perenne* and is currently grazed by cattle. Other species present include frequent *Cirsium arvense*, *Trifolium repens*, *Plantago lanceolata* and *Ranunculus repens*. The area of improved grassland covers the full extent of the bay. See photo 53.

## Note 18:

This is an improved field reseeded with *Lolium perenne* with a large patch of *Juncus conglomeratus* in the centre. *Potentilla anserina*, *Trifolium repens* and *Rumex obtusifolius* are frequent with occasional *Cirsium arvense*. See photos 54 and 55.

## Note 19:

This area is wetter than the adjacent area where Monitoring Stop 15 is located. *Schoenus nigricans* and *Parnassia palustris* are abundant with a corresponding decrease in other herbs. Other species occurring include *Briza media*, *Potentilla erecta*, *Lotus corniculatus*, *Pinguicula vulgaris* and *Mentha aquatica*. See photos 59 and 62.

Note 20:

Damp meadow with *Centaurea nigra* and *Potentilla anserina*.

Note 21:

This is a semi-improved grassland dominated by *Cynosurus cristatus*, *Festuca rubra*, *Dactylis glomerata*, and *Agrostis capillaris*. The herb component included *Ranunculus repens*, *Trifolium repens*, *Prunella vulgaris*, *Hypochoeris radicata* and *Bellis perennis*. Further survey of this area was not possible as access was denied by the landowner. See photo 54 and 55.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located in a drier part of the site near a field boundary in an area identified as a potential calcareous grassland location. See photo 3. Seven indicator species were recorded in a herb rich (40%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum*.

This would usually result in a 'Pass' for this Monitoring Stop. However, because *Schoenus nigricans* was recorded as abundant, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat, particularly as *Parnassia palustris* (R) and *Filipendula ulmaria* (R), were also recorded within the Stop.

Additional species present within the quadrat of the Monitoring Stop include *Centaurea nigra* (O), *Prunella vulgaris* (F), *Succisa pratensis* (O), *Leucanthemum vulgare* (O), *Plantago lanceolata* (R), *Anagallis tenella* (O), *Rhinanthus minor* (R), *Euphrasia* spp. (O), *Festuca rubra* (R), *Pinguicula* sp. (O), *Potentilla erecta* (O) and *Corylus avellana* seedlings (R). This data is presented in Quadrat 1.

Additional species recorded in the vicinity of the Monitoring Stop include *Campanula rotundifolia*, *Polygala serpyllifolia*, *Bellis perennis*, *Cynosurus cristatus*, *Lathyrus pratensis* and *Trifolium pratense*. *Mentha aquatica* was present in small wet areas within the sward.

This area is lightly grazed by cattle. The areas of grassland are restricted to the drier areas on thin soils surrounding outcropping limestone boulders. The vegetation becomes wetter as you approach the lake, grading into a fen type vegetation.

**Monitoring Stop 2:**

The Monitoring Stop was located in an area of limestone pavement and outcropping limestone rocks on a small peninsula adjoining the area of fen described in Note 3. This area was near the location of N8.53. See photo 6. Only six indicator species were recorded in a herb rich (40%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum*.

The lack of indicator species would usually result in a 'Fail' for this Monitoring Stop. However, because *Schoenus nigricans* was recorded as abundant, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat, particularly as *Filipendula ulmaria* (R), was also recorded within the Stop.

The overall area of grassland in which the Monitoring Stop was conducted is very small (<20 square metres). Overall grassland accounts for approximately 20% of the area of the peninsula with the remainder dominated by exposed limestone pavement, fen, exposed limestone rocks and *Ulex europeus* scrub.

Additional species recorded within the Monitoring Stop include *Prunella vulgaris* (F), *Euphrasia* sp. (O), *Rubus fruticosus* (O), *Carex* sp. (O), *Thymus praecox* (F), *Rhinanthus minor* (R), *Potentilla erecta* (R) and *Festuca rubra* (R). This data is presented in Quadrat 2.

*Cotoneaster* was present on the limestone pavement. *Carlina vulgaris* was present outside the Monitoring Stop as was *Centaureum erythraea* and *Salix repens*. Some patches of *Calluna vulgaris* and *Myrica gale* were developing within the site.

**Monitoring Stop 3:**

This Monitoring Stop was located on a flat area of shoreline near the location of N8.16. This area is currently grazed by cattle. Elements of calcareous heath were present - occasional patches of *Juniperus communis* were located outside the Monitoring Stop. See photo 12. Seven indicator species were recorded in a herb rich (70%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum* resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Cynosurus cristatus* (R), *Leucanthemum vulgare* (F), *Anagallis tenella* (O), *Plantago maritima* (O), *Ranunculus acris* (R), *Anthoxanthum odoratum* (O), *Thymus praecox* (O), *Trifolium repens* (O), *Trifolium pratense* (F), *Ranunculus repens* (R), *Polygala vulgaris* (R), *Bellis perennis* (O), *Prunella vulgaris* (O) and *Festuca arundinacea* (O). This data is presented in Quadrat 3.

There are some areas of outcropping limestone in this area. *Crataegus monogyna* seedlings are occasional while *Carlina vulgaris* and *Schoenus nigricans* were both present outside the Monitoring Stop but rare.

As you approach the lake *Hydrocotyle vulgaris* increases in abundance in association with *Schoenus nigricans*, *Bellis perennis* and *Parnassia palustris*.

If the current grazing regime were to be altered scrub encroachment could become a threat as there were many *Prunus spinosa* and *Crataegus monogyna* seedlings throughout but these were closely grazed.

The field to the south of the SAC boundary at this point has been reseeded with *Lolium perenne* and there area a few scattered plants of this near the gateway entering the calcareous grassland but it is not present in most of the site.

**Monitoring Stop 4:**

This Monitoring Stop was carried out near the location of N8.24 on the shoreline of Lough Corrib in an area with outcropping limestone boulders. The area was closely grazed by horses. See photos 14 and 15. Eight indicator species were recorded in a herb rich (60%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum* resulting in a 'Pass' for this Monitoring Stop. The presence of *Schoenus nigricans* as occasional as well as *Parnassia palustris* (R), *Hydrocotyle vulgaris* (R), *Filipendula ulmaria* (R) in the Stop indicates that the area may be grading towards a wetter habitat type than habitat 6210.

Additional species recorded within the Monitoring Stop include clumps of *Centaurea nigra* (O), *Thymus praecox* (O), *Potentilla erecta* (O), *Succisa pratensis* (O), *Trifolium pratense* (O), *Polygala vulgaris* (R), *Prunus spinosa* seedling (R), *Crataegus monogyna* seedling (R), *Rhinanthus minor* (R), *Leucanthemum vulgare* (O), *Prunella vulgaris* (O) and *Euphrasia salsiburgensis* (R). This data is presented in quadrat 4.

*Gymnadenia conopsea* was present within the site but was not recorded within the Monitoring Stop. Were the grazing regime to be reduced scrub encroachment would pose a threat to this site.

**Monitoring Stop 5:**

Located near NHA N8.18 in an area of grazed semi-improved grassland with abundant *Leucanthemum vulgare*, *Trifolium pratense* and *Trifolium repens*, occasional *Cynosurus cristatus*, *Plantago lanceolata*, *Hieracium pilosella*, *Ranunculus acris*, *Rhinanthus minor* and *Ranunculus repens*. *Lolium perenne* is present along field margins. This field is currently grazed by cattle. See photo 17. Only four indicator species were recorded in a herb rich (50%) sward with a small amount of *Lolium perenne* and no encroachment by scrub/*Pteridium aquilinum* resulting in a 'Fail' for this Monitoring Stop.

This data is presented in quadrat 5.



**Monitoring Stop 6:**

Located on the shoreline of Lough Corrib. Bounded to the north by an area of fen with abundant *Schoenus nigricans* and to the south by an area of *Crataegus monogyna*/*Prunus spinosa* scrub with *Pteridium aquilinum* and *Rubus fruticosus*. Seedlings of these are scattered throughout and are currently kept in check by grazing cattle. See photo 19. Ten indicator species were recorded in a herb rich (40%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum* resulting in a 'Pass' for this Monitoring Stop. The presence of *Schoenus nigricans* as occasional in the Stop indicates that the area may be grading towards a wetter habitat type than habitat 6210.

There are abundant outcropping limestone boulders along this shoreline. Occasional clumps of *Juniperus communis* are found higher up the shoreline towards the area of scrub.

Additional species present include *Succisa pratensis* (O), *Thymus praecox* (O), *Vicia cracca* (F), *Prunella vulgaris* (O), *Potentilla erecta* (O), *Molinia caerulea* (O), *Centaurea nigra* (O), *Cynosurus cristatus* (O), *Galium boreale* (R) and *Anthoxanthum odoratum* (R). This data is presented in Quadrat 6.

There are occasional areas of *Rubus fruticosus* and *Rosa pimpinellifolia* developing between the boulders.

**Monitoring Stop 7:**

This Monitoring Stop is located in an area of species rich calcareous grassland on the shoreline of Lough Corrib. There are occasional outcroppings of limestone in this area. This site is currently ungrazed. See photo 21. Nine indicator species were recorded in a herb rich (60%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum* resulting in a 'Pass' for this Monitoring Stop.

Additional species recording within the Monitoring Stop include *Rhinanthus minor* (O), *Leucanthemum vulgare* (F), *Prunella vulgaris* (F), *Molinia caerulea* (O), *Schoenus nigricans* (R), *Thymus praecox* (O), *Succisa pratensis* (O), *Potentilla erecta* (O), *Euphrasia* spp. (R), *Trifolium repens* (O), *Plantago maritima* (R) and *Galium boreale* (R).

This data is presented in Quadrat 7.

**Monitoring Stop 8:**

This Monitoring Stop was located in an area of closely grazed grassland along the shoreline of Lough Corrib. See photos 24, 25 and 26. Seven indicator species were recorded in a herb rich (40%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum*.

This would usually result in a 'Pass' for this Monitoring Stop. However, because *Schoenus nigricans* was recorded as frequent, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat.

Additional species recorded within the Monitoring Stop include *Rhinanthus minor* (O), *Prunella vulgaris* (O), *Succisa pratensis* (R), *Anagallis tenella* (O), *Galium boreale* (R), *Euphrasia* sp (R), *Thymus praecox* (R), *Plantago lanceolata* (R) and *Festuca rubra* (R). This data is presented in Quadrat 8.

This area was quite sedge rich but all were closely grazed making identification difficult.

**Monitoring Stop 9:**

This Monitoring Stop was located in an area of species rich dry grassland on the shoreline of Lough Corrib opposite Inchquin island near the location of NHA N5.11. See photo 35. Nine indicator species were recorded in a herb rich (80%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum* resulting in a 'Pass' for this Monitoring Stop. The presence of *Schoenus nigricans* as occasional in the Stop indicates that the area may be grading towards a wetter habitat type than habitat 6210 particularly as *Parnassia palustris* (R) was also present within the Stop.

Additional species recorded within the Monitoring Stop include *Euphrasia* sp (O), *Prunella vulgaris* (R), *Thymus praecox* (O), *Trifolium pratense* (O), *Trifolium repens* (R), *Danthonia decumbens* (R), *Cynosurus cristatus* (R) and *Anthoxanthum odoratum* (R).

This relevé data is presented in Quadrat 9.

There is a small area of *Lolium perenne* in the sward near the gateway to the field just to the east of the SAC boundary. This may have just spread from the adjoining field into the SAC.

Other species present in this area but outside the Monitoring Stop include *Daucus carota*, *Polygala serpyllifolia*, *Trifolium pratense*, *Plantago lanceolata*, *Leucanthemum vulgare*, *Bellis perennis* and *Achillea millefolium*.

This field is grazed by geese. Outcropping limestone is a feature of this area.

**Monitoring Stop 10.**

This Monitoring Stop was located near the location of NHA N5.11. This is an improved field which is closely grazed by sheep. See photo 36. There are occasional outcrops of limestone. No indicator species were recorded in a herb rich (60%) sward with frequent *Lolium perenne* and no encroachment by scrub/*Pteridium aquilinum* resulting in a 'Fail' for this Monitoring Stop. The high % herb cover (60%) is based solely on the abundance of *Trifolium repens* in the sward.

The sward is dominated by *Lolium perenne*, *Trifolium repens*, *Bellis perennis*, *Cirsium arvense*, *Taraxacum* agg., *Achillea millefolium* and *Leontodon taraxacoides*. *Geranium molle* and *Prunella vulgaris* are also present but are rare.

The farmer has vehicular access to this field - hence it's improvement.

**Monitoring Stop 11:**

This Monitoring Stop was conducted in an ungrazed area with high herb cover (70%) and a sward height of 20 - 50cm. This area is unimproved, but only six calcareous indicator species were recorded. This would usually result in a 'Fail' for this Monitoring Stop, but the orchid *Gymnadenia conopsea* was also recorded and this is considered to be a seventh positive indicator species. See photos 38, 39 and 40. No scrub or bracken was noted and thus the Stop is given a Pass for Structure and Functions of habitat 6210.

Additional species present include frequent *Vicia cracca*, *Prunella vulgaris*, *Rhinanthus minor* and occasional *Potentilla fruticosa*, *Filipendula ulmaria*, *Achillea millefolium*, *Succisa pratensis* and *Trifolium pratense*. *Leucanthemum vulgare*, *Schoenus nigricans* and *Molinia caerulea* are rare. The relevé data for this Monitoring Stop is presented in Quadrat 12.

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**Monitoring Stop 12:**

This Monitoring Stop was conducted near the location of NHA N8.79 in an area with frequent outcropping limestone boulders above the high water level. See photo 42. This area is dominated by tussocks of *Schoenus nigricans* and is currently ungrazed. This is a small peninsula, which juts out into the lake and is backed by *Ulex europaeus* and *Corylus avellana* scrub. There is some young *Juniperus communis* present towards the rear of the site.

Ten indicator species were recorded in a herb poor (20%) sward with no negative indicators or encroachment by scrub/*Pteridium aquilinum*. This would usually result in a 'Fail' for this Monitoring Stop. However, because *Schoenus nigricans* was recorded as dominant, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat.

Additional species recorded within the Monitoring Stop include *Juniperus communis* (O), *Prunella vulgaris* (R), *Centaurea nigra* (O), *Parnassia palustris* (R), *Viola* sp. (O), *Corylus avellana* seedlings (O), *Anagallis tenella* (R), *Euphrasia* sp. (R), *Thymus praecox* (O), *Carex pulicaris* (R) and *Molinia caerulea* (R). Approximately 25% of the relevé consisted of limestone boulders.

This data is presented in Quadrat 10.

The development of scrub in this area is likely given the absence of grazing.

Other species recorded outside the Monitoring Stop include *Trifolium pratense*, *Geranium sanguineum*, *Calluna vulgaris*, *Galium boreale*, *Potentilla erecta*, *Vicia cracca*, and *Leucanthemum vulgare*. Several fruiting/seeding orchids were present.

This area of grassland grades into an area of *Schoenus nigricans* fen with *Mentha aquatica*, *Pinguicula* sp. and *Eupatorium cannabinum*.

**Monitoring Stop 13:**

This Monitoring Stop was located on the eastern shoreline of Lough Corrib. This area is used by locals for picnicking and a small picnic area and BBQ area have been set up. The area is currently ungrazed with a sward height of 40cm. The area is rich in herbs (60%) but has c.10% bare ground and may have been disturbed in the recent past through vehicle use etc. There are frequent small outcropping limestone rocks in this area. Seven indicator species were recorded resulting in a 'Pass' for this Monitoring Stop. See photo 50.

Additional species present include *Schoenus nigricans*, *Euphrasia* spp., *Solidago virgaurea*, *Thymus praecox*, *Juniperus communis*, *Rosa pimpinellifolia*, *Vicia cracca*, *Leucanthemum vulgare*, *Prunella vulgaris*, *Trifolium pratense*, *Galium boreale*, *Rhinanthus minor*, *Carex flacca* and *Parnassia palustris*.

**Monitoring Stop 14:**

This Monitoring Stop is located in an area between the roadway and the lake shore. See photo 56. It is a narrow strip of calcareous grassland and wet grassland, measuring approximately 20-30m wide. The section closest to the roadway shows signs of improvement, more than likely from nutrient run-off from the road material. A minor degree of reseeding is also evident. As the grassland strip dips towards the lake shore, low-lying hollows hold damper grassland vegetation. Indeed the presence of *Schoenus nigricans* as occasional in the Stop indicates that the area may be already grading into a wetter habitat type than is more typical for habitat 6210, particularly as *Parnassia palustris* (R) and *Molinia caerulea* (O) were also present within the Stop. This would usually result in a 'Fail' for this Monitoring Stop. Therefore, due to the presence of *Schoenus nigricans*, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat.

Within the Stop, grasses dominate (*Cynosurus cristatus*, *Festuca rubra*, *Festuca ovina* and *Molinia caerulea*). Herb cover is correspondingly low (30%). Only 4 calcareous indicator species were recorded. No negative indicators or scrub/bracken occur. 12 additional species were recorded within the Stop, reflecting the mixed moisture content of the grassland in this area (see relevé 14 for full details).

Outside the Stop, additional species recorded include *Blackstonia perfoliata*, *Galium verum*, *Filipendula ulmaria*, *Solidago virgaurea*, *Heracleum sphondylium*, *Plantago maritima*, *Rhinanthus minor* and *Eupatorium cannabinum*. Fruiting heads of unidentified orchids were distributed across this area.

Due to the low herb cover and the lack of indicator species, this Stop is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 15:**

Like Monitoring Stop 14, the area in which Monitoring Stop 15 is located occurs between the road and the lake shore. See photos 57, 58, 59, 60, 61, 62, 63 and 64. Unlike Monitoring Stop 14 however, Monitoring Stop 15 shows a more natural, undisturbed vegetation. Grazing or other disturbance indicators are minimal. Once again, the grassland is a mosaic of wet and dry grassland and is characterised by well-developed tussocks of *Molinia caerulea* and *Schoenus nigricans* and a high frequency of *Parnassia palustris*. Unidentified orchid seed heads are frequent throughout.

Within Monitoring Stop 15, herb content is low (30%) as grasses and sedges dominate the vegetation. Nonetheless, 7 calcareous indicator species were recorded, along with 12 additional species, which reflect the mixed moisture content of the soil (see relevé 15 for full details). The low herb cover would usually result in a 'Fail' for this Monitoring Stop. However, because *Schoenus nigricans* was recorded as frequent, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat particularly as *Parnassia palustris* (F), *Molinia caerulea* (O), *Filipendula ulmaria* (R) were also recorded within the Stop.

Outside the Monitoring Stop, closer to the drier edges of the roadway, additional species occurring include *Galium verum*, *Daucus carota*, *Rhinanthus minor*, *Centaurea nigra*, *Achillea millefolium*, *Ranunculus acris*, *Filipendula ulmaria* and *Dactylis glomerata*.

**Monitoring Stop 16:**

Monitoring Stop 16 is located in a narrow strip of dry grassland on thin, stony soil which occurs between a trackway and the edge of dense scrub and bracken. This encroachment is likely to become a problem if not managed in the near future. Between the trackway and the lake shore, the ground slopes gently to the edge of the lake. A grassland mosaic similar to that described in Monitoring Stop 15 occurs in that low-lying ground. The only disturbance appears to be from passing cattle who travel along this path to nearby fields.

Within the Monitoring Stop, herb cover is at 40%. The vegetation is species-rich with 12 indicator species recorded and with an additional 21 species also occurring (see relevé 16 for details). No negative indicators or scrub/bracken was noted.

Additional species recorded outside the Monitoring Stop but occurring in the same area of dry grassland include *Solidago virgaurea*, *Ranunculus acris*, *Succisa pratensis*, *Rhinanthus minor*, *Hypericum pulchrum*, *Blackstonia perfoliata* and *Vicia cracca*.

This Monitoring Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Barrigone****SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Rosaleen Dwyer            27/07/2006  
Willie Crowley

**Total Site Area (Ha):** 66.35

**Area of Priority Grassland (N2000) (Ha):** 21.

**Area of Priority Grassland 2006 (Ha)\*:** 12

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:**                        **Discovery Sheet No:**        **6" Sheets:**  
Limerick                        64                                LI010.

**Digital Aerial Photos (Tile Nos.):**

O4859-a, O4859-b, O4859-c.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

000432

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Barrigone is situated approximately 5km west of Askeaton, County Limerick. The site comprises an area of dry, species-rich, calcareous grassland and patches of scrub on a gentle, north-east-facing slope. The underlying limestone outcrops occasionally, and the proximity of the site to the Shannon Estuary adds a maritime influence.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows; The open calcareous grassland supports an impressive range of plant species. Cowslip (*Primula veris*), Mountain Everlasting (*Antennaria dioica*), Carlina Thistle (*Carlina vulgaris*), Wild Thyme (*Thymus praecox*), Wood Sage (*Teucrium scorodonia*) and Violets (*Viola* spp.) are present, while Burnet Rose (*Rosa pimpinellifolia*) is abundant and scattered throughout the grassland. The maritime influence is evident in the presence in the sward of Sea Plantain (*Plantago maritima*).

The orchid flora is particularly well-developed and diverse, with eight species being recorded on recent visits. These include Fragrant Orchid (*Gymnadenia conopsea*), Frog Orchid (*Coeloglossum viride*), Butterfly Orchid (*Platanthera bifolia*), Pyramidal Orchid (*Anacamptis pyramidalis*) and the scarce Irish Orchid (*Neotinea maculata*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - Dry calcareous grassland occurs throughout much of this site in association with limestone pavement and scrub, though it is best developed in the western and eastern sectors. Information is available from a number of sources, notably the AFF report, the NHA survey of 1994 and a NPWS site visit in July 1997. The grassland contains many characteristic calcicole species including *Carlina vulgaris*, *Sanguisorba minor*, *Euphrasia salisburgensis*, *Primula veris*, *Centaurea nigra*, *Rhinanthus minor*, *Blackstonia perfoliata*, *Linum catharticum* and *Anthyllis vulneraria*.

The orchid flora is particularly well developed and diverse - in July 1997 the following were recorded; *Platanthera bifolia*, *Anacamptis pyramidalis*, *Gymnadenia conopsea*, *Coeloglossum viride*, *Dactylorhiza fuchsii*, *D. maculata* ssp. *ericetorum* and *Orchis mascula*. In addition, the scarce *Neotinea maculata* occurs with a sighting in May 1999 (S. Reynolds).

The site also has the protected species *Viola hirta*. It is also notable for its invertebrate fauna, especially ants (Hymenoptera) and butterflies, including *Euphydryas aurinia*, the latter probably more so in damper grassland patches where *Succisa pratensis* occurs.

#### *Description based on the 2006 Survey :*

The Natura 2000 assessment for the 6210 habitat indicated that "the calcareous grassland habitat occurs in close association with limestone pavement and scrub and thus it is difficult to assess its area". During the 2006 Grassland Project Survey, the area of orchid-rich grassland at this site was seen to be very limited in its extent.



Significant areas of scrub were encountered and in many places this scrub was impenetrable. In addition, changes to the original boundary of the SAC has meant the exclusion of an area of species-rich rocky grassland and the inclusion of areas of semi-improved grassland and scrub. During the 2006 Survey, patches of calcareous grassland were seen to occur along the edges of unmanaged tracks, on thin, rocky soils in areas where scrub and bracken had not yet encroached, and interestingly, in the grassy verge along the Limerick to Askeaton road..

The quality of the calcareous grassland along the unmanaged tracks was understandably poor. Rank conditions predominated in these areas. Grassland indicator species were few in such places as other grasses and bracken provided excessive competition.

On the thin, rocky soils associated more with exposed, shattered limestone, indicator species occurred more frequently. Species noted here include *Avenula pubescens*, *Briza media*, *Daucus carota*, *Galium verum*, *Lotus corniculatus*, and *Primula veris*. Other indicator species also occurred across the rocky soil but were less frequent. These include *Anthyllis vulneraria*, *Carex flacca*, *Hieracium pilosella*, *Linum catharticum*, and more rarely *Leontodon hispidus*, *Blackstonia perfoliata*, *Sanguisorba minor*, *Carlina vulgaris*, *Ranunculus bulbosus* and *Koeleria macrantha*. In addition to these indicators, orchid species also occur such as *Dactylorhiza fuchsii* and *Gymnadenia conopsea*. However, the threat from scrub (*Crataegus monogyna*, *Prunus spinosa*, and *Corylus avellana*) and bracken encroachment in these rocky areas is serious and in the absence of management, loss of calcareous indicator species is likely.

Along the Limerick to Askeaton roadway, a verge of good quality calcareous grassland occurs. Sward height is low over much of the sloping verge, with typical indicator species occurring (Monitoring Stop 14). If left unmanaged, conditions will become rank. Further in from the roadway is a species-rich hay meadow (see Site Notes 4 and 5). While calcareous indicator species were few on this deeper soil, herbs dominated with abundant *Centaurea nigra* and other species occurring such as *Rhinanthus minor*, *Agrimonia eupatoria*, *Plantago lanceolata*, *Ranunculus acris*, *Hypochoeris radicata*, *Dactylorhiza fuchsii*, and *Potentilla anserina*.

Areas of semi-improved grassland were also noted within the SAC. These open grassland areas are concentrated in the eastern side of the site and were being grazed by horses at the time of surveying. These grasslands were typically dominated by *Cynosurus cristatus* with some *Dactylis glomerata*, *Anthoxanthum odoratum*, *Centaurea nigra*, *Trifolium repens*, *Trifolium pratense*, and some *Lolium perenne*. Only one field (Monitoring Stop 3) showed evidence of re-seeding with a *Lolium perenne*-dominated seed mix.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1994 NHA Survey. The site was also the subject of a number of field surveys by the BSBI County Recorder (S. Reynolds) during 1984 - 1996 with a list of characteristic flowering plants and ferns compiled in September 1996. A comprehensive species list was also compiled in July 1997 following a site visit by NPWS research staff.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

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## **SITE MONITORING AND MANAGEMENT UNITS**

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

At Barrigone, 16 Monitoring Stops were assessed. The results of the assessment are presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It can be seen from Table 1b that 3 of the Stops were not included in the assessment of Structures and Functions. Stop 1 was subsequently not included in any assessment because when 1995 aerial photographs became available after survey work was completed, an examination of the Photographs suggests that this field may already have been in the process of being improved at the time this site was initially surveyed. If it can be assumed that the 6210 habitat did not occur at this location at the time of designation, then monitoring of this area is not required.

Stop 3 is also not assessed for Structures and Functions and is included instead in the assessment of Extent. 1995 aerial photographs indicate a rough grassland and scrub habitat in this location. During the 2006 survey, agricultural improvements were noted. Therefore, it is assumed that as the improvements recorded on the day of survey were undertaken subsequent to the initial site survey and designation, a loss of habitat has occurred. This Stop is therefore included in the assessment of Extent and not Structures and Functions.

Stop 12 is also not used in any assessment. This area in the north east of the site was included within the SAC in 1999, subsequent to the original NHA survey. While there are no notes to indicate the habitat in this additional area, an examination of 1995 aerial

photographs suggests that this field may already have been semi-improved when it was included within the SAC. If it can be assumed that the 6210 habitat did not occur at this location at the time of designation, then there is no requirement to assess this field.

Of the 13 Monitoring Stops which were assessed for Structures and Functions, only 2 were seen to pass. This results in an overall significant failure of the condition of the 6210 habitat at this site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	7
<b>Number of Monitoring Stops:</b>	16
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Not used in assessment	Map 2
Stop 02	2	Fail	Structures and Functions	Map 2.
Stop 03	1	Fail	Extent	Map 2
Stop 04	2	Fail	Structures and Functions	Map 2
Stop 05	2	Fail	Structures and Functions	Map 2
Stop 06	2	Fail	Structures and Functions	Map 2
Stop 07	2	Fail	Structures and Functions	Map 2
Stop 08	3	Fail	Structures and Functions	Map 2
Stop 09	3	Pass	Structures and Functions	Map 2
Stop 10	4	Fail	Structures and Functions	Map 2
Stop 11	4	Fail	Structures and Functions	Map 2
Stop 12	5	Fail	Not used in assessment	Map 2
Stop 13	4	Fail	Structures and Functions	Map 2
Stop 14	6	Pass	Structures and Functions	Map 2
Stop 15	7	Fail	Structures and Functions	Map 2
Stop 16	7	Fail	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 7 separate management units.

Stops 1 and 3 (Management Unit 1) are semi-improved or improved pastures, currently being grazed by cattle. Stops 2, 4, 5, 6, and 7 are assigned to Management Unit 2 as they are located in areas of scrub and bracken encroachment where there does not appear to be any signs of current management. Stops 8 and 9 are located in Management Unit 3, an area of revegetating calcareous grassland, adjacent to the edge of an active quarry. No current management practices are evident.

Stops 10, 11, and 13 (Management Unit 4) are located in a landscape similar to that of

Management Unit 2, an area of scrub and bracken encroachment. Stop 12 is a semi-improved field, currently grazed by horses. It is assigned to Management Unit 5. Stop 14 is also the only Stop in a Management Unit (Unit 6). This Stop is located on a grassy roadside verge whose management is most likely subject to County Council operations. The final Management Unit, Unit 7, covers Stops 15 and 16. This is an area of rocky calcareous grassland with exposed limestone. It shows very little current management and, unlike other parts of the site, it is not yet as extensively encroached by scrub and bracken.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

In general, the main threat to the site is seen to be a lack of adequate grazing pressures (149). This has resulted in the expansion of Bracken and scrub species (954) across the site. Almost half of the site, the eastern section, is in private ownership while much of the western section is owned by Roadstone Quarries (MPSU ownership map, 2004). Information from the Local Conservation Ranger indicates that grazing practices over the entire site have diminished in recent years. While some grazing still occurs (horses and cattle), the lack of sufficient grazing pressure has resulted in the uncontrolled spread of scrub and bracken in areas which had not previously suffered from encroachment. The Conservation Officer indicated that this has had a significant impact, particularly on the rockier grassland areas. This was evident during the current survey with 10 of the 16 Monitoring Stops failing on the excessive percentage of scrub or bracken (see also notes 1 and 8).

There is also a potential threat from an active quarry (301). This quarry is owned by Roadstone and it occurs immediately south of the SAC boundary. An access road cuts through the SAC, from the main Limerick to Askeaton road into the quarry. Examination and comparison of 1995 and 2000 aerial photographs indicate that the quarrying activities have encroached into the SAC on the north eastern corner of the quarry. The current intensity of this impact is determined to be B (medium intensity) as the area of encroachment is small, approximately measuring over half a hectare. However, the impact is deemed to be an irreparable negative influence (-2) and further expansion of the quarry would begin to significantly affect the integrity of the SAC in this area.

Electricity pylons traverse the site (149), running approximately north to south across part of the eastern section. In other situations, this practice may produce more negative results. However, at Barrigone it has had more of a positive influence in that, underneath the power lines, tracks were cleared through scrub. This has allowed a calcareous grassland to reassert itself in the cleared areas (see Stops 2, 4, and 5). Nonetheless, these Stops failed in their assessments as bracken and young scrub seedlings are beginning to encroach, due mainly to insufficient grazing pressures (149).

A track or a circuit has been constructed in part of the north-eastern section of the site. It begins at the southern end of the road which accesses the domestic dwelling located outside the SAC and continues along the site boundary before cutting northwards through the scrub towards the semi-improved fields at Note 2. Monitoring Stops 10 and 11 are located along this track. The local Conservation Ranger indicated this track is a recent development, where the landowner intended to develop either a walking route or a horse exercise circuit. For the habitat 6210, the impact of this activity is seen to have potential positive results in opening up the areas of scrub and allowing grassland to re-establish. However, in the absence of adequate grazing pressures (149), this may not occur.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
511	Energy transport: electricity lines	1	C
120	Fertilisation	-1	C
149	Grazing: undergrazing	-1	A
301	Sand & gravel extraction: quarries	-2	C
604	Sport & leisure structures: circuit, track	1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Lack of adequate grazing pressures resulting in encroachment by scrub and Bracken is the main management issue at Barrigone. The encroachment by scrub and bracken is resulting in a deterioration of the grassland extent and quality. While some grazing by horses and cattle is still practiced, this is occurring mainly in the eastern section. In that area of the site, large, open, semi-improved fields are visible both on the 1995 and 2000 aerial photographs (see description of Stops 1, 3 and 12, and Note 2). This may indicate that management of this part of the site has been more consistent in recent years. While these semi-improved fields are not included in the assessment of 6210 habitat, the effect of fertilising (120) across the site is recorded as being low in intensity.

Current grazing of the remainder of the site is less evident and appears to be inadequate to control the spread of scrub and bracken. The local Conservation Ranger indicated that grazing pressures have indeed decreased and that management of scrub had not been sanctioned. A previous offer by a landowner to sell land within the SAC to NPWS has not been taken up and consequently, management by the landowner is now less consistent.

## CONSERVATION STATUS

### ***Extent:***

The Extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

12ha of the habitat was mapped within the SAC with a further 2ha mapped in an area adjacent to, and that was formerly within, the SAC. However, as noted in the Natura 2000 explanatory notes, the habitat 'occurs in close association with limestone pavement and scrub and thus it is difficult to accurately assess its area'. Thus, for example, in estimating the Extent of the habitat, the small pockets of limestone pavement that occur in the large area of calcareous grassland in the north-west of the site (area of Stop 16) were ignored assuming that they would be balanced out by the pockets of calcareous grassland occurring amongst the limestone pavement that were not investigated in the mid-north of the site.

The Natura 2000 form (dated May 1999) estimates that 30% or 21ha of Barrigone can be assigned to the habitat 6210. This would indicate a loss in Extent of 9ha of the habitat in the last 7 years. However, from analysis of the aerial photographs (1995 and 2000 series), it can be considered that this is likely to be an over-estimation due, at least in part, to the different methods used in assessing Extent. The loss in Extent can be attributable to three factors:

1. Scrub encroachment
2. Quarrying
3. Agricultural improvement.

The loss in extent to scrub encroachment is the most difficult of these to quantify as the scrub occurs scattered throughout the grassland, forming a mosaic habitat. From analysis of the aerial photos it would appear that scrub encroachment is most vigorous in the south-east of the site where even former trackways are now beginning to 'fill in'.

It is estimated using ArcView GIS that over 1ha of habitat 6210 was lost to scrub encroachment in this area of the site between 1995 and 2000, with another 1ha likely to have been lost over the remainder of the site in the same time period. This has led to an overall loss in Extent of 6210 habitat to scrub encroachment within the SAC of ca. 2ha. A further unquantified loss in Extent to scrub has occurred in the area that is now outside of the SAC.

In the years between the aerial photos of 1995 and 2000, 2.5ha of scrub and grassland were lost to quarrying. However, less than 1ha of this occurred within the SAC. Thus, assuming an approximate 50:50 scrub: grassland divide in the area lost, the loss of habitat 6210 within the SAC to quarrying is less than 0.5ha, with a further loss of ca. 1.0ha occurring outside of the SAC.

The loss in Extent to agricultural improvement has been restricted to a small area of



grassland in the south-east of the site that has been agriculturally improved (Stop 3). This is less than 0.5ha in extent.

Thus the overall loss in Extent of habitat 6210 between 1995 and 2000 can be estimated to be ca. 3ha (or 20% of the original extent). This is considered to be Unfavourable - bad. The results of the next section (Structure and Functions) show that such a loss in extent is likely to continue, as many of the areas surveyed were shown to be suffering from the early stages of scrub encroachment.

### ***Structure and Functions:***

An evaluation of the data from the 16 Monitoring Stops resulted in three of the Stops being excluded from assessment of Structures and Functions. 1995 aerial photographs were available subsequent to the field survey. An examination of these photographs suggests that two Stops (Stop 1 and 12) were not in fact 6210 habitat when the site was designated. These areas were seen to have been long-established semi-improved grassland on comparatively deep soil. These two Stops have been excluded from any assessment process. A third Stop, Stop 3, was deemed to demonstrate loss of 6210 habitat and is therefore included instead in the assessment of Extent.

Of the remaining 13 Stops assessed for Structures and Functions, only 2 Stops (Stops 9 and 14) were seen to Pass. This results in an overall Fail for the Structures and Functions at this site. Stops were seen to fail either as a consequence of encroachment by scrub or bracken or because insufficient numbers of positive indicator species were recorded. At some of the failed Stops (Stops 5, 6, 7, 8, 9, and 10), encroachment occurred in association with a corresponding lack of indicator species and low herb cover. At only 1 of the failed Stops (Stop 13), where encroachment was not an issue, lack of sufficient indicator species and herb cover resulted in a Fail.

However, at some of the Stops (Stops 2, 5, 11, 14, 15, and 16) even where scrub or bracken caused a Stop to Fail its assessment, the target number of indicator species was recorded. This indicates that the 6210 grassland is still present in the current understorey of spreading scrub and bracken.

Due primarily to the serious problem of encroachment, the Structures and Functions of the 6210 habitat at Barrigone are described as being Unfavourable - bad.

### ***Future Prospects:***

A limited level of fertilising currently occurs in the long-established semi-improved fields in the eastern half of Barrigone. However, agricultural improvement via reseedling or the heavy use of fertilisers is not likely to be a major concern at this site.

At Barrigone, the primary management issues significantly affecting the Future Prospects of the site are those of insufficient grazing and the absence of scrub/bracken control. These issues have been highlighted by the local Conservation Ranger over recent years and few, if any, controlling measures appear to have been put in place to control encroachment.

It is estimated that approximately 20% of the original extent of 6210 habitat was lost since

1995. However, this is in fact likely to be an underestimate as 2006 aerial photographs were not available for comparison at the time of writing this report. It can only be assumed that between 2000 and 2006, the immature shrubs noted in the 2000 photographs became established, dense patches of scrub. Furthermore, in the absence of grazing or other management controls, it was evident from the field survey that additional areas of initial encroachment have occurred across the site since 2000. These areas of encroachment could be recovered now with a combination of scrub/bracken removal and a suitable, consistent, grazing regime. Without management of these pioneer encroachment areas, the Future Prospects for Barrigone are very poor and further loss of grassland habitat is certain..

While some horses and cattle are currently grazing parts of the site, current grazing pressures are not sufficient to either reduce the encroachment or to maintain the limited areas of grassland throughout the rest of the site. Horses, in particular, will not force a route through even mildly prickly vegetation, so as current young saplings of *Crataegus monogyna* and *Prunus spinosa* mature, more areas of rocky grassland and shattered limestone will be lost to scrub and bracken. Given these circumstances, the Future Prospects for the site would be deemed to be poor.

One of the landowners at Barrigone had previously offered his land for sale to NPWS. This offer was not taken up at that time and subsequently, management of that land by the landowner has been inconsistent. Scrub and bracken has been seen to spread rapidly without any control measures in place (Conservation Officer, pers. com.). If this land were to be bought by NPWS in the near future, remedial measures could be initiated. The data from the assessments of Structures and Functions also indicate that the indicator species for the 6210 habitat currently still exist beneath the colonising scrub and bracken. Control of this encroachment in areas of thin, rocky soil is likely to be successful and open areas of calcareous grassland could be re-established. While this would significantly improve the Future Prospects for the grassland at Barrigone, current resources and policies would need to change.

Despite the loss of Extent and the current failure of Structures and Functions, remedial action taken immediately could restore 6210 grassland, particularly on the more shallow, rocky soils. However, resources and an active management regime would need to be put in place immediately. Consideration could also be given to the acquisition of some of the land (one of the landowners had previously unsuccessfully offered his land for sale to NPWS). Taking all of these factors into account, the Future Prospects for Barrigone are deemed to be Unfavourable - inadequate.

### ***Conservation Assessment:***

Barrigone has seen a considerable loss in the extent and the integrity of 6210 habitat. Scrub and bracken encroachment has become a major management issue at the site, due mainly to an insufficient level of grazing. An assessment of Extent estimates a loss of calcareous grassland habitat to be in excess of 20%. In addition, encroachment by scrub and bracken since the 2000 aerial photographs would suggest that this loss is more than likely an underestimate. Agricultural improvement does not currently pose a serious threat to the remaining grassland habitat.

The Structures and Functions of the site are failing, mainly due to scrub/bracken encroachment. A corresponding lack of required indicator species occurs where bracken and scrub are seen to have become well established (Stops 5, 6, 7, 8, 9, and 10).

On a positive note, however, at some of the Stops (Stops 2, 5, 11, 14, 15, and 16) even where scrub or bracken caused a Stop to Fail its assessment, the target number of indicator species was still recorded. This suggests that the 6210 grassland is still present in the current understorey of spreading scrub and bracken. If control measures were to be put in place immediately, it would be reasonable to expect that the 6210 habitat would recover in those areas. Such control measures may be easier to implement and monitor if the land which had previously been offered to NPWS were now to be bought.

The assessments of both Extent and Structures and Functions are seen to be Unfavourable - bad. However, the Future Prospects of the site are deemed to be Unfavourable - inadequate as it is believed that the 6210 habitat at Barrigone is deemed to be recoverable if immediate management action is taken.

Despite the chances that the Future Prospects for the site could be good if action is taken immediately, the other 2 assessment attributes are described as Unfavourable - bad. Therefore, the overall Conservation Assessment for Barrigone is seen to be Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is an area similar to that described in Stop 10 but scrub encroachment is more severe here (see Photographs 18 and 19)..

**Note 2:**

This is a semi-improved field (see Photograph 23). It is dominated by grasses such as *Dactylis glomerata* (F), *Holcus lanatus* (O), *Arrhenatherum elatius* (R), and *Poa pratensis* (O). Herb species recorded include the indicator species *Galium verum* (R), *Daucus carota* (O), and *Lotus corniculatus* (O). Additional species include *Potentilla anserina* (F), *Cirsium arvense* (O), *Stachys sylvatica* ((O), *Lathyrus pratensis* (O), *Odontites vernus* (O), *Agrimonia eupatoria* (R), *Veronica chamaedrys* (O), *Centaurea nigra* (O), *Senecio jacobea* (R), *Ranunculus repens* (R), and *Potentilla reptans* (R). Stands of *Urtica dioica* occurred in patches.

Horses were grazing in this area on the day of surveying and they had access to most of the semi-improved areas of grassland in this section of the site. Some of these other grasslands were less species-rich than Note 2. These fields are visible on 1995 aerial photographs, suggesting they were already semi-improved at the time this site was originally surveyed.

**Note 3:**

This open grassland area located north-west of Stop 12 is similar to that described in Stop 12. However, unlike the area of Stop 12, there is little evidence of current grazing or management here and therefore the vegetation is correspondingly taller.

## Note 4

This field is a rare example of a fine, species-rich, hay meadow (see Photographs 27, 28, and 29). When the soil is deep, the target calcareous indicator species are generally absent. Therefore it is not considered to be the 6210 habitat and was not assessed as part of this monitoring project. Nonetheless, it is a rare habitat today and current management practices (mowing and grazing) should be encouraged to continue.

The field slopes gently upwards away from the fence line marking the edge of the roadside verge which was described in Stop 13. There are few rocks or stones in this field and mature *Crataegus monogyna* is scattered throughout. There are no seedlings or young sapling present. The more low-lying areas of the field are damper in nature.

The vegetation in the field is herb-rich (80% cover) and is tall (40cm) prior to mowing. Due to the deeper nature of the soil, only 3 calcareous indicator species were recorded i.e. *Daucus carota* (F), *Galium verum* (F), and *Lotus corniculatus* (F). Other species occurring include *Centaurea nigra* (A), *Rhinanthus minor* (F), *Filipendula ulmaria* (O), *Potentilla anserina* (O), *Plantago lanceolata* (O), *Trifolium pratense* (O), *Agrimonia eupatoria* (R), *Ranunculus acris* (R), *Potentilla erecta* (R), and *Pteridium aquilinum* (R). Grasses include *Cynosurus cristatus* (R), *Dactylis glomerata* (R), *Anthoxanthum odoratum* (O), *Agrostis capillaris* (R), and *Festuca rubra* (R).

Also occurring in minor percentages across the field are *Lathyrus pratensis*, *Heracleum sphondylium*, *Hypochoeris radicata*, and *Senecio jacobea*. *Dactylorhiza fuchsii* are scattered throughout with unidentified fruiting orchids. *Pteridium aquilinum* occurs around the field margins and a minor degree of spreading from the edges is occurring.

## Note 5

The field slopes more steeply upwards in this location. The vegetation is not as dense as that in the lower end of the field (see Note 4) and occasional bare patches occur.

## Note 6

This is a small minor outcrop of limestone pavement.

## Note 7

The vegetation in this area is similar to that described at Stop 15.

## Note 8

This small, open, field is one of several in this area. It is similar in nature to the damper end of the hay meadow described in Note 4 except that here, the vegetation is not as species-rich and the ground is rockier. Scrub is also encroaching to a minor degree here. Light grazing is evident.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Stop is located in a semi-improved field (see Photograph 1) which has few calcareous indicator species remaining. Light grazing occurs and recent cowpats are distributed across the field. Vegetation is generally tall throughout the field and bracken cover is low. No orchids were noted.

Within the Stop, herb cover was low (30%) and only 2 indicator species were recorded. The negative indicator, *Lolium perenne*, also occurred, reflecting the improved nature of this field. Very little bracken occurred (<5%).

In addition to the 2 indicator species, other species occurring include *Dactylis glomerata*, *Cynosurus cristatus*, *Cirsium arvense*, *Trifolium repens*, *Rumex acetosa*, *Prunella vulgaris*, *Heracleum sphondylium*, *Plantago lanceolata*, *Rubus fruticosus* agg., *Filipendula ulmaria*, *Vicia cracca*, *Lathyrus pratensis*, and *Stachys sylvatica* (see relevé 1 for full details).

Outside the area of the Stop, additional species occurring in the field include *Avenula pubescens*, *Agrostis stolonifera*, *Centaurea nigra*, *Odontites vernus*, *Ranunculus acris*, and *Senecio jacobea*. In wetter hollows, *Mentha aquatica* and *Filipendula ulmaria* were more frequent.

The low percentage of herbs and the insufficient number of indicator species would normally result in a 'Fail' result for Structures and Functions at this Stop. However, examination of 1995 aerial photographs suggests that this field may already have been in the process of being improved at the time this site was initially surveyed. If it can be assumed that the 6210 habitat did not occur at this location at the time of designation (there are no NHA notes referring to the habitat in this field), then this Stop is not included in an assessment of either Structures and Functions or of Extent.

**Monitoring Stop 2:**

The area in which Stop 2 is located occurs close to the line of high power electricity lines. Pylons cross this end of the site and an access track was cut through the landscape beneath the power lines. This had the effect of clearing any scrub from underneath the lines. As a result, good calcareous grassland has an opportunity to survive in places, particularly where thin, rocky soil occurs. However, as young scrub seedlings and bracken patches are currently seen to be spreading, no recent management by either grazing or cutting appears to have occurred (see Photographs 2 and 6).

Stop 2 is located on thinner soil and on higher ground to that of Stop 1. Herb content is 40% and 9 indicator species were recorded. *Lolium perenne* though present was not abundant enough to warrant a fail for the stop. However, Bracken encroachment is a problem both within and outside the Stop.

In addition to the 9 indicator species, other species occurring within the Stop include *Cynosurus cristatus*, *Dactylis glomerata*, *Holcus lanatus*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Centaurea nigra*, *Trifolium pratense*, *Rosa pimpinellifolia*, *Thymus praecox*, *Cerastium fontanum*, *Achillea millefolium*, *Leucanthemum vulgare*, and *Euphrasia* spp.. Outside the Stop, *Senecio jacobea* is scattered. Scrub of gorse and blackthorn is also spreading from the areas of dense scrub across these more open areas.

The fact that Bracken occupies 10% cover results in a 'Fail' for this Stop in its assessment of Structures and Functions.

**Monitoring Stop 3:**

This is an improved field (see Photograph 5) dominated by *Lolium perenne*. It is very tightly grazed and cattle were grazing on the day on surveying.

Within the Stop, herb content was very low (20%) and only 1 calcareous indicator species was recorded, *Daucus carota*. While no bracken or scrub occurred within the Stop itself, these are beginning to spread from the edge of an unmanaged hedgerow.

Other species within the Stop reflect the improved and trampled nature of this area e.g. *Senecio jacobea*, *Trifolium repens*, *Polygonum aviculare*, *Cerastium fontanum*, *Juncus buffonius*, *Matricaria discoidea*, *Ranunculus repens*, *Hypochoeris radicata*, *Odontites vernus*, *Centaurea nigra*, *Plantago major*, and *Plantago media* (see relevé 3 for full details). Outside the Stop, *Cirsium arvense* and *Rumex acetosa* also occur.

If this Stop were assessed for Structures and Functions, it would Fail on the basis of lack of indicator species, insufficient herb content, and the presence of a negative indicator species, *Lolium perenne*. However, as 1995 aerial photographs indicate a rough grassland and scrub habitat in this location, it is assumed that the improvements recorded were undertaken subsequent to the initial site survey and designation. A loss of habitat has therefore occurred so this Stop is included in the assessment of Extent and not Structures and Functions.

**Monitoring Stop 4:**

Stop 4 is located adjacent to a Trigonometric Point, just east of the track under the overhead power lines (see Photograph 7). The grassland in this area is rocky and the soil is thin. There is very little evidence of grazing or any other management practice at this location.

Within the Stop, herb content is good (50%) and 8 indicator species were recorded. However, Bracken and scrub occupies 10% cover within the Stop and up to 20% outside the Stop.

In addition to the indicator species recorded, additional species present include *Anthoxanthum odoratum*, *Primula veris*, *Plantago lanceolata*, *Solidago virgaurea*, *Teucrium scorodonia*, *Rosa pimpinellifolia*, *Centaurea nigra*, *Leucanthemum vulgare*, *Potentilla erecta*, *Hedera helix*, *Prunus spinosa*, and *Pteridium aquilinum* (see relevé 4 for full details).

The presence of 10% cover of Bracken results in a 'Fail' at this Stop for Structures and Functions.

**Monitoring Stop 5:**

Like Stops 2 and 4, this Stop also occurs in an area close to the overhead power lines (see Photographs 8, 9, 10, 11). The soil is thin and rocky.

Within the Stop, herb content is good (50%) and 7 indicator species were recorded. While no negative indicators were noted, Bracken and scrub encroachment is an issue in this vicinity.

In addition to the 7 indicators, other species occurring include *Anthoxanthum odoratum*, *Centaurea nigra*, *Rosa pimpinellifolia*, *Teucrium scorodonia*, *Succisa pratensis*, *Hypericum pulchrum*, *Thymus praecox*, *Potentilla erecta*, *Leucanthemum vulgare*, *Hedera helix*, and *Rubus fruticosus* agg. (see relevé 5 for full details). Outside the Stop, *Daucus carota* and *Anthyllis vulneraria* also occur.

The excessive cover of Bracken in this Stop results in a 'Fail' for the assessment of Structures and Functions.



**Monitoring Stop 6:**

This Stop is located in an area of the site which is covered in extensive areas of dense scrub with patches of dense bracken. Narrow paths, used by cattle and horses, cut through the scrub but very little evidence of grazing was noted. No large open area of grassland remain, apart from a narrow strip of grassland along the edge of the tracks and in occasional openings in the scrub. Stop 6 is located along the edge of one of these tracks (see Photographs 12, 13).

Within the Stop, grasses dominate and herb content is correspondingly low (10%). Only 3 indicator species were recorded, *Avenula pubescens*, *Galium verum*, and *Lotus corniculatus*. Up to 50% cover within the Stop is accounted for by *Pteridium aquilinum* and *Rubus fruticosus* agg.. Grasses such as *Holcus lanatus*, *Dactylis glomerata*, *Anthoxanthum odoratum*, and *Agrostis stolonifera* dominate.

Other species within the Stop include *Centaurea nigra*, *Rhinanthus minor*, *Rumex acetosa*, *Potentilla erecta*, and *Potentilla anserina* also occur (see relev  6 for full details). Along damper sections of the track, *Mentha aquatica* and *Filipendula ulmaria* are frequent.

Due to the abundance of bracken, the lack of indicator species, and the low herb content, this Stop is deemed to ‘Fail’ its assessment of Structures and Functions.

**Monitoring Stop 7:**

This Stop is located in the same Management Unit as Stop 6. Scrub and bracken dominate and a vestige of grassland habitat occurs along trackways. Stop 7 is located in an open area where 2 trackways merge (see Photograph 14).

Within the Stop, herb content is low (20%) and only 3 indicator species were recorded, *Daucus carota*, *Galium verum*, and *Lotus corniculatus*. Bracken, blackthorn, and bramble together occupied 25% cover.

Other species recorded in Stop 7 include *Dactylis glomerata*, *Cynosurus cristatus*, *Holcus lanatus*, *Agrostis stolonifera*, *Centaurea nigra*, *Prunus spinosa*, *Lathyrus pratensis*, *Plantago lanceolata*, *Prunella vulgaris*, and *Veronica chamaedrys*. Outside the Stop, *Avenula pubescens* and *Agrimonia eupatoria* also occur. Seedlings of *Prunus spinosa* are also abundant along the edge of the track.

The excessive cover of scrub species together result in a ‘Fail’ at this Stop for the assessment of Structures and Functions.

**Monitoring Stop 8:**

Stop 8 and Stop 9 are both within the same Management Unit, Unit 3. They are located in an open area close to the edge of the SAC, adjacent to an active quarry. The shallow, sandy soils in this area support good calcareous vegetation. However, little or no management is evident and the grassland is becoming rank in places. Stop 8 is located in one such overgrown area (see Photograph 15).

Within the Stops, herb content is low (20%) but 6 indicator species were still recorded. While no negative indicators were recorded, *Rubus fruticosus* agg. accounts for up to 10% cover. If this were managed now, recovery of this area could be possible.

In addition to the 6 indicator species, other species occurring within the Stop include the grasses *Anthoxanthum odoratum* and *Holcus lanatus*, and the herbs *Centaurea nigra*, *Hypericum pulchrum*, *Plantago lanceolata*, *Hypochoeris radicata*, *Agrimonia eupatoria* and *Rosa pimpinellifolia* (see relevé 7 for full details). Outside the Stop, *Daucus carota* and fruiting orchids were noted.

The low herb content, the insufficient number of indicator species, and the presence of *Rubus fruticosus* agg., results in a 'Fail' for the Structures and Function at this Stop.

**Monitoring Stop 9:**

Like Stop 8, Stop 9 is located in an area of thin sandy soil, close to the edge of an active quarry (see Photograph 16). The vegetation in the vicinity of Stop 9 is regenerating and a degree of bare soil still occurs (20% within the Stop).

Within the Stop, herb content is good and 10 indicator species occur. NO negative indicator species occur. Bracken or scrub occurs only as seedlings and currently occupies less than 5% cover.

Other species occurring within the Stop include *Dactylis glomerata*, *Holcus lanatus*, *Anthoxanthum odoratum*, *Centaurea nigra*, *Trifolium pratense*, *Plantago lanceolata*, *Achillea millefolium*, *Potentilla anserina*, *Centaureum erythraea*, *Leucanthemum vulgare*, and *Prunella vulgaris* (see relevé 8 for full details).

This Stop shows a 'Pass' for Structures and Functions.

**Monitoring Stop 10:**

This Stop is located in Management Unit 4 with Stops 11 and 13. The land in these areas is relatively flat and scrub and bracken is widespread. Stop 10 is located in a small open (approximately 30m<sup>2</sup>) area beside the trackway (see Photograph 17).

Within the Stop, herb content is low (25%) and only 5 indicator species were recorded. Bracken and scrub was estimated at 10% cover within the Stop but at 20% over a larger area of 5m<sup>2</sup>.

Grasses dominate the vegetation in this area with *Avenula pubescens*, and *Anthoxanthum odoratum* being most frequent. Additional species to the indicator species include *Dactylis glomerata*, *Agrimonia eupatoria*, *Potentilla sterilis*, *Centaurea nigra*, *Plantago lanceolata*, *Leucanthemum vulgare*, *Trifolium pratense*, *Prunus spinosa*, *Pteridium aquilinum*, and *Veronica chamaedrys*.

Vegetation is relatively high at 40cm and this, in association with a plant litter cover of 15%, suggests that recent grazing pressures have not been sufficient to adequately manage this grassland. Mowing is unlikely due to the rocky nature of the substrate. Recent horse droppings were noted close to the trackway but it is unlikely that horses would penetrate too far into the scrub encroached area. As it is, young seedlings and saplings of *Prunus spinosa* are well distributed throughout this open area where Stop 10 is located.

Due to the low herb content, the insufficient number of indicator species, and the presence of Bracken and scrub, the Structures and Functions are deemed to have failed the assessment at this location.

**Monitoring Stop 11:**

This is an open area of rocky limestone grassland located within an area of scrub. It is accessed via a narrow track through the scrub. Bracken is also seriously encroaching in this area (see Photographs 20, 21, 22).

Within the Stop, herb content is still high (50%) and 9 indicator species were recorded. However, the percentage of encroachment within the Stop is high at 20% cover of bracken. Over a larger area of 5m<sup>2</sup>, Bracken cover is high at 40%.

This area is species-rich when compared to most of the previous Stops. In addition to the indicator species recorded, also occurring are *Festuca ovina*, *Anthoxanthum odoratum*, *Thymus praecox*, *Teucrium scorodonia*, *Solidago virgaurea*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Centaurea nigra*, *Potentilla erecta*, *Succisa pratensis*, and *Rosa pimpinellifolia* (see relevé 9 for full details). The vegetation shows a noticeable abundance of *Sanguisorba minor* both within the Stop and in this general area. Also occurring outside the Stop are *Plantago maritima* and *Linum catharticum*. Ant hills are distributed throughout.

Vegetation reaches to approximately 40cm in height and plant litter shows 20% cover, suggesting that recent grazing pressures have not been adequate. However, given that sufficient herb cover occurs and that a required number of indicator species are present, this grassland area shows good potential to recover if bracken is managed and grazing is introduced as soon as possible.

The excessive cover of scrub and Bracken results in a 'Fail' at this Stop for Structures and Functions.

**Monitoring Stop 12:**

This is a semi-improved field currently being grazed by two horses. A track runs through the centre of the field and telegraph poles also traverse the area (see Photograph 24).

No indicator species were recorded and herb content was only 20%. The dominant grasses are *Cynosurus cristatus* and *Holcus lanatus* with *Lolium perenne*, *Dactylis glomerata*, *Agrostis capillaris*, and *Phleum pratense*. Herbs include *Ranunculus repens*, *Odontites vernus*, and *Trifolium repens*. Outside the Stop, *Daucus carota*, *Cirsium arvense*, *Achillea millefolium*, *Centaurea nigra*, and *Rumex obtusifolius* also occur. Light grazing has managed the height of the grassland to an average of 15cm.

The low percentage of herbs and the insufficient number of indicator species would normally result in a 'Fail' result for Structures and Functions at this Stop. However, this Stop is treated similarly to Stop 1 and is not included in any assessment of 6210 habitat. This area in the north east of the site was included within the SAC subsequent to the original NHA survey. While there are no notes to indicate the habitat in this additional area, an examination of 1995 aerial photographs suggests that this field may already have been semi-improved when it was included within the SAC. If it can be assumed that the 6210 habitat did not occur at this location at the time of designation, then this Stop is not included in an assessment of either Structures and Functions or of Extent.

**Monitoring Stop 13:**

This is a rocky limestone grassland with thin soil and scattered boulders (see Photograph 25). The vegetation is grass-dominated (only 20% herbs cover) with *Avenula pubescens*, *Anthoxanthum odoratum*, and *Dactylis glomerata* being most frequent.

Only 5 indicator species were recorded with additional species including *Festuca ovina*, *Plantago lanceolata*, *Thymus praecox*, *Centaurea nigra* and *Rosa pimpinellifolia*. Outside the Stop, *Lotus corniculatus*, *Hieracium pilosella*, *Achillea millefolium*, and *Veronica chamaedrys* also occurred.

Very little cover of bracken occurred within the Stop (5%) but up to 10% occurred in the larger area of 5m<sup>2</sup>. If not managed as soon as possible, encroachment by bracken and bramble of the rocky grassland in this area will be a problem in the near future.

Due to the low percentage of herbs and the insufficient number of indicator species, this Stop is deemed to 'Fail' its assessment for Structures and Functions'.

**Monitoring Stop 14:**

This area of grassland occurs as a wide roadside verge along the main road from Askeaton to Limerick. The SAC boundary in this area follows the edge of the road. The roadside verge slopes gently upwards away from the road to a wire fence line at the top of the slope (see Photograph 26). The verge ranges in width from approximately 50m at its widest point to approximately 2m at its narrowest.

Stop 14 is located on the sloping verge where it is at its widest, approximately 10m down from the fence line. Being a roadside verge, this area is subject to very different management regime to the rest of the site. Therefore, it is assigned to its own Management Unit, number 5.

Within the Stop, herb cover reached 40% and 10 indicator species were recorded, the highest number recorded from any Stop within the SAC (Stop 15, located just outside the SAC boundary, recorded 11 species). No negative indicators and no bracken or scrub species occur. However, *Rubus fruticosus* agg. and some *Pteridium aquilinum* currently occurs close to the fence line and this has the potential to spread if not checked.

Also occurring within the Stop are *Blackstonia perfoliata*, *Polygala serpyllifolia*, and *Vicia cracca*. The orchid, *Gymnadenia conopsea*, was scattered across the slope with other species such as *Primula* sp., *Succisa pratensis*, *Agrimonia eupatoria*, *Anthyllis vulneraria*, *Euphrasia* spp. and *Carlina vulgaris*.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 15:**

This Stop is located approximately 20m outside the boundary of the SAC. It occurs in an area of rocky limestone grassland which stretches from within the SAC to the boundary of the active quarry located approximately 200m to the east. This excluded area had originally been included within the boundary of the SAC but was excluded on the basis of an appeal by the landowner. The parameters of this monitoring project allows for the placement of Stops outside the boundary if the habitat is deemed to extend outside the SAC.

The survey was undertaken during a prolonged period of dry and hot weather. The vegetation, therefore, had a dry and scorched appearance (see Photograph 30). Nonetheless, herb content in this entire area is good.

Within the Stop, herb content reached to 60%, with 11 indicator species being recorded (the highest total for the site). Also occurring within the Stop are *Anthoxanthum odoratum*, *Dactylis glomerata*, *Centaurea nigra*, *Rosa pimpinellifolia*, *Potentilla erecta*, *Rhinanthus minor*, *Achillea millefolium*, and *Cuscuta epithymum* (see relevé 11 for full details). Outside the Stop, additional species include *Carlina vulgaris*, and *Anthyllis vulneraria*.

While no negative indicator species were recorded, bracken and scrub encroachment is a problem in this area. *Pteridium aquilinum* and *Prunus spinosa* saplings accounted for 20% cover within the Stop but this increased to 30% in a larger area of 5m<sup>2</sup>. In addition, there is no evidence of grazing or other management practices in this area.

The percentage of encroachment (20% cover of bracken) results in a 'Fail' at this Stop for Structures and Functions.

**Monitoring Stop 16:**

The habitat in this area is very similar to that described in Stop 15 i.e. a rocky limestone grassland which shows encroachment by bracken and scrub (see Photograph 31).

Within the Stop, herb content within the Stop is at 40% with 9 indicator species occurring. The species-rich nature of the area is evident, with an additional 15 species recorded within the Stop (see relevé 12 for full details). Outside the Stop, *Anthyllis vulneraria* was also recorded growing on one of the scattered ant hills that are noticeable features in this area.

*Pteridium aquilinum* encroachment is occurring, with 10% cover being recorded within the Stop and 30% cover occurring in a larger area of 5m<sup>2</sup>. While no scrub was recorded within the Stop, *Prunus spinosa* seedlings and saplings are scattered across the area. In addition, there is no evidence of grazing or other management practices.

The percentage of encroachment (10% cover of bracken) results in a 'Fail' at this Stop for Structures and Functions.

## **Tory Hill**

### **SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 28/07/2006

**Total Site Area (Ha):** 76.9

**Area of Priority Grassland (N2000) (Ha):** About 5ha.

**Area of Priority Grassland 2006 (Ha)\*:** <1ha

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:** Limerick

**Discovery Sheet No:** 65

**6" Sheets:** LI022, LI031.

**Digital Aerial Photos (Tile Nos.):**

O4987-a, O4987-b, O4987-c, O4987-d.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

000439

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.



## **SITE DESCRIPTION**

Tory Hill is an isolated wooded limestone hill situated about 2 km NE of Croom, Co. Limerick. It represents an important feature of the surrounding countryside and is a prime example of a limestone hill set amongst a region of volcanic intrusions of differing shape and geology. The hill is of geomorphological interest for the end-moraine, left by retreating ice, on its northern flanks and for ice-marks that are clearly visible on the solid rock. The site includes Lough Nagirra and its associated wetland vegetation, located to the north and north-east of Tory Hill.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Areas of orchid-rich calcareous grassland, a habitat that is listed with priority status on Annex I of the E.U. Habitats Directive, are found on the eastern side of the hill and on its summit. A disused quarry contains excellent examples of this grassland type, and here no fewer than four orchid species occur, i.e. Bee Orchid (*Ophrys apifera*), Pyramidal Orchid (*Anacamptis pyramidalis*), Early-purple Orchid (*Orchis mascula*) and Common Spotted-orchid (*Dactylorhiza fuchsii*). Other plant species of calcareous grassland present in this habitat include Carlina Thistle (*Carlina vulgaris*), Yellow-wort (*Blackstonia perfoliata*), Wild Thyme (*Thymus praecox*), Crested Hair-grass (*Koeleria macrantha*), Downy Oat-grass (*Avenula pubescens*), Glaucous Sedge (*Carex flacca*), Hairy Rock-cress (*Arabis hirsuta*), Cowslip (*Primula veris*), Wild Carrot (*Daucus carota*), Red Fescue (*Festuca rubra*), Purging Flax, Quaking Grass, Yellow-oat Grass, amongst others. The presence of the scarce Bee Orchid is of note.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Dry calcareous grassland occurs along the summit of Tory Hill and in the disused quarry. It is considered best developed in the disused quarry. The habitat occurs in association with heath and outcropping limestone. An excellent range of calcareous species are represented, including the following: *Briza media*, *Avenula pubescens*, *Linum catharticum*, *Carlina vulgaris*, *Blackstonia perfoliata*, *Thymus praecox*, *Chrysanthemum leucanthemum*, *Koeleria cristata*, *Carex flacca*, *Primula veris*, *Anthyllis vulneraria*, *Ononis repens*, *Hypochoeris radicata*, *Festuca rubra* and *Galium verum*. The scarce *Arabis hirsuta* occurs. Orchid species are very well represented, with *Anacamptis pyramidalis*, *Dactylorhiza fuchsii*, *Orchis mascula* and the scarce *Ophrys apifera*. A very representative example of the habitat, with many of the indicator species listed in the Manual and including four orchid species.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the extent of the 6210 grassland habitat was seen to be very limited. The grassland which had previously been described as occurring along the summit of Tory Hill had been lost to scrub encroachment. The only examples found occur within the disused quarry, in small patches where recolonisation of the loose material had progressed to a sufficient stage to form grassland habitat.

The following calcareous indicator species were recorded during the 2006 survey: *Briza media*, *Carex flacca*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Primula veris*, *Daucus carota*, *Koeleria macrantha*, *Blackstonia perfoliata*, *Anthyllis vulneraria*, *Avenula pubescens* and less frequently *Carex caryophyllea*, *Carlina vulgaris* and *Sanguisorba minor*. *Gymnadenia conopsea* and *Gymnadenia conopsea* were the only two flowering orchids recorded but the fruiting heads of several unidentified orchids were also noted.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1993 NHA Survey. The site was also surveyed in 1998 and 1990 by NPWS research staff and again in 1998 by NPWS research staff following an application for a quarry within the site.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Four Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1a that of the 4 Monitoring Stops assessed, 1 failed the assessment of Structures and Functions, resulting in an overall 'Fail' for the attribute at this site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	1
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 2
Stop 02	1	Pass	Structures and Functions	Map 2

Stop 03	1	Pass	Structures and Functions	Map 2
Stop 04	1	Fail	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 1 Management Unit. The quarry is seen as a single unit, showing various stages of disturbance and regeneration. There are no indications of any grazing or other management practices within the quarry site.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

A major positive 'activity' is in operation at Tory Hill. The scree slopes and bare gravel soils in the disused quarry are displaying various stages of revegetating (990). With time and with correct management, this has the potential to significantly increase the extent of the 6210 grassland habitat at the site.

There are two current threats which are negatively impacting on the calcareous grassland at Tory Hill. Scrub encroachment (954) has already led to a loss in Extent of the habitat on the eastern slopes of the hill, leaving the area of the disused quarry as the only location for 6210 habitat. Within the quarry, the absence of any active grazing regime (149) has facilitated the early stages of uncontrolled spread of scrub and Bracken on the more stable scree slopes. There is also a danger that encroachment onto the scattered, flat, revegetating ledges will also occur. Of particular concern is the potential for *Cotoneaster* to spread within the quarry (see Note 6). This species can spread rapidly on the shallow sandy soils of the quarry, impacting on the grassland regeneration process which is otherwise progressing at a reasonable rate.

Another issue which may threaten the quarry in the future is the recommencement of extraction activities (300). The landowner has made several unsuccessful attempts in the past few years to obtain planning permission to reactivate the quarry. Local NPWS staff indicate that there is a group of residents in the locality who have actively objected to previous applications and are likely to oppose any future attempts. Any quarrying activities would have an irreparable impact on the 6210 habitat.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
149	Grazing: undergrazing	-1	B
990	Other natural processes	2	A
300	Sand & gravel extraction	-2	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Currently, scattered examples of 6210 habitat are deemed to occur in small patches, each measuring no more than 20m x 20m. Other areas of the quarry represent the early stages of calcareous grassland development, where scree slopes and flat gravelly ledges are in the process of revegetating. A good range of calcareous indicator species currently occur in

these revegetating areas and with proper management, 6210 habitat could be encouraged to develop. The established 6210 habitat described in this report occur in a mosaic with these revegetating areas. An integrated management approach is therefore required to maintain the current areas of established 6210 habitat while encouraging the further development of the revegetating grassland areas.

The main issue affecting the future of the 6210 habitat and the revegetating areas at Tory Hill is the absence of any current management protocols. Lack of management of the scrub encroachment issue on the eastern slopes of the hill have already resulted in a loss of grassland habitat in that location (although the original extent may not have been very extensive). Scrub and Bracken is currently showing signs of spreading within the quarry, where the 6210 habitat occurs in a very limited distribution. This will have deleterious consequences. Particular attention should be focused on controlling the spread of *Cotoneaster* species. Rank areas occurring on the floor of the quarry also need to be monitored.

Given the currently unstable nature of most of the quarry slopes at this point in time, any grazing regime using domestic animals would need to be carefully managed so as not to disrupt the revegetating process which is on-going. By the same token, removal of scrub from the unstable slopes would also need to be carefully executed.

## **CONSERVATION STATUS**

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

No significant area of habitat 6210, occurring on its own, was found at Tory Hill. However, 1.1ha of the disused quarry was mapped as "Recolonising Bare Ground containing elements of habitat 6210". Thus the extent of habitat 6210 at Tory Hill can be considered to be much less than 1ha (1% of the SAC).

The Natura 2000 Explanatory Notes state that the habitat is found "along the summit of Tory Hill and in the disused quarry and is considered best developed in the disused quarry." Thus it is obvious that the Natura Form includes the area of Recolonising Bare Ground in its estimate of extent of habitat 6210. However, considering that the Natura Form estimated the extent of the habitat to be 5ha, there has undoubtedly been a significant loss in extent of the habitat at the site. This loss can be attributed to scrub encroachment along the summit of Tory Hill where no large areas (>20m x 20m) of open grassland were recorded during the current survey. The loss is thus estimated to be close to 4ha or ca. 75-80% of the original 5ha resulting in a Conservation Assessment of Unfavourable - bad for Extent.

### ***Structure and Functions:***

4 Monitoring Stops were assessed. In general, species diversity is high across the site, with all Stops meeting or exceeding the target number of indicator species (2 of the Stops recorded 13 indicator species).

The development of a grass-dominated vegetation (70% cover) at Stop 4 resulted in a failure of the Structures and Functions attribute at that location. The spread of Bracken in the vicinity of Stop 4 is a threat, with cover reaching to 10% in a 5m x 5m area around the Stop. Cover of Bracken was recorded at <5% within the Stop. Nonetheless, species diversity at Stop 4 is good for the moment, with 13 indicator species occurring.

As one of the 4 Stops failed its assessment (25% failure rate), the Structures and Functions of the 6210 habitat at Tory Hill are described as being Unfavourable - inadequate.

### ***Future Prospects:***

The Future Prospects for the 6210 habitat at Tory Hill are uncertain. Currently, the Extent of the habitat is very limited, occurring as very small patches in a mosaic with less developed, revegetating grassland. In addition, any areas of 6210 habitat which may have occurred on the unquarried western side of Tory Hill have been lost to dense scrub. Scrub and Bracken encroachment within the quarry itself is a potential threat, particularly in the absence of any current management protocols.

The current landowner has tried unsuccessfully in the past to acquire permission to



reactivate the quarry for extraction purposes. It is likely that further attempts will be made in the future. However, a positive feature is the presence of a strong local group who are likely to continue to oppose such a development. Under the circumstances, unless other incentives are offered to the landowner by NPWS, it is highly improbable that a management regime will be put in place by the landowner which would be suitable to the maintenance and expansion of 6210 habitat within the quarry.

Nonetheless, a very good diversity of calcareous indicator species currently exists within the quarry. Four species of orchid were recorded in the past, including *Ophrys apifera*. Within the quarry itself, encroachment by scrub and Bracken is only commencing. This could be contained relatively easily if acted upon as soon as possible. As a result, the Future Prospects for the 6210 habitat at Tory Hill are described as being Unfavourable - inadequate and not Unfavourable - bad.

#### ***Conservation Assessment:***

The earlier descriptions for the 6210 habitat at Tory Hill refer mainly to the occurrence of orchid-rich grassland occurring in the quarry and on the summit of Tory Hill. Some reference was also made to calcareous grassland occurring on the eastern slopes and on the western slopes of the hill where it occurred in a limestone heath/scrub complex. The best examples of the grassland were said to occur in the quarry. The site as a whole was described as being of interest for its location in this part of Limerick where farming is otherwise intense, and also for the juxtaposition of fen habitats with orchid-rich calcareous grassland. Its geological and geomorphological importance was also noted.

During the 2006 survey, scrub encroachment on all of the upper slopes of the hill was seen to be dense, with the corresponding loss of any grassland areas which may have previously occurred in those areas. The only examples of 6210 habitat found were located in the quarry, occurring as small patches within a mosaic with revegetating communities. The Extent of the habitat is therefore difficult to estimate. Nonetheless, these small examples were seen to be rich in indicator species, with 13 species being recorded at 2 of the 4 Monitoring Stops assessed.

The revegetating communities are comparatively more extensive in their distribution within the quarry. However, these communities are not deemed to be 6210 habitat. While some calcareous indicator species naturally occur on the limestone-rich substrate, the percentage cover of bare ground is usually high with a corresponding low cover of herbs. Species more characteristic of unstable, moving, substrates also typically occur in the revegetating communities. The nature of the 6210 habitat is more stable, with good ground cover, a high herb content, and with a good range of indicator and grass species. With careful management, the current areas showing revegetation processes could produce good 6210 habitat in the future.

In general, however, the overall Conservation Assessment for the 6210 habitat at this site is described as being Unfavourable - bad (see Table 3). The 6210 habitat occurs to a very limited extent and its future is threatened by the absence of any current or any potential future management protocols. The early stages of scrub and Bracken encroachment are noticeable within the quarry and this will soon expand if control measures are not put in

place. Without some incentive, the current landowner is unlikely to implement any management plan. The quarry site has good potential, however, and additional areas of 6210 habitat could be created if management could be guaranteed.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
	Structure and Function	Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This point marks the top of the old quarry slopes. Dense scrub with some Bracken occurs on the unquarried slopes to the north, west, and south west. No open areas of grassland remain. The slopes of the quarry to the east show varying degrees of revegetation.

**Note 2:**

Narrow ledges occur on the slopes amongst varying degrees of loose or stabilised scree. As at Note 1, bare ground predominates.

**Note 3:**

A track cuts through the bottom of the quarry, showing various stages of regenerating vegetation. At Note 3, the vegetation along this track includes *Daucus carota*, *Hieracium pilosella*, *Lotus corniculatus*, *Linum catharticum*, *Blackstonia perfoliata*, *Briza media*, *Avenula pubescens*, *Centaurea nigra*, *Leucanthemum vulgare*, *Taraxacum officinale* agg., *Rubus fruticosus* agg., *Achillea millefolium*, *Reseda luteola*, *Verbascum thapsus*, and *Trifolium dubium*.

**Note 4:**

Narrow flat ledges occur on the sides of the quarry which show various stages of revegetation. This ledge is distinctive in its abundance of *Primula veris* (F) and *Thymus praecox* (F). Also occurring are *Briza media* (F), *Galium verum* (O), *Trifolium pratense* (O), *Succisa pratensis* (O), *Leucanthemum vulgare* (O), *Lotus corniculatus* (O), *Carlina vulgaris* (O), and *Centaurea nigra* (R).

**Note 5:**

The floor of the quarry in this area supports a rank vegetation with *Cirsium vulgare*, *Urtica dioica*, *Heracleum sphondylium*, *Arctium minus*, and *Scrophularia nodosa* (see Photo 18).

**Note 6:**

The non-native prostrate *Cotoneaster* species occurs along the track in this location. This has the potential to rapidly spread in the shallow sandy soils of the quarry. This species needs to be controlled.

**Note 7:**

This sloping field at the base of the western slopes is semi-improved (see Photo 26). It is dominated by grasses such as *Lolium perenne*, *Dactylis glomerata*, *Phleum pratense*, *Holcus lanatus*, and *Cynosurus cristatus*. Herbs present include *Trifolium repens*, *Rumex acetosa*, *Taraxacum officinale* agg., *Heracleum sphondylium*, *Potentilla anserina*, *Pteridium aquilinum*, *Urtica dioica*, *Centaurea nigra*, *Hypochoeris radicata*, *Daucus carota*, *Leucanthemum vulgare*, and *Prunella vulgaris*.

**Note 8:**

At the scrub/field interface, a narrow strip of less improved land occurs which contains additional species to those occurring through this field (see Note 6). Additional species include *Primula vulgaris*, *Galium verum*, *Avenula pubescens*, *Dactylis glomerata*, *Leucanthemum vulgare*, *Hypochoeris radicata*, *Achillea millefolium*, *Potentilla sterilis*, *Hypericum pulchrum*, *Prunella vulgaris*, and *Viola* spp.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

Stop 1 is located on a flat area on the quarry floor, located close to the end of the track which cuts through the quarry to this point (see Photo 06). A large boulder field occurs to the south, beyond the end of the track.

The western sides of the quarry show areas of loose scree occurring on the lower slopes while more stable, revegetating habitats occur on the upper slopes. To the east of the Stop, the low rim of the quarry is lined with scrub/woodland species and this habitat covers the east-facing slopes of Tory Hill, down to the wet grassland and fen at its base.

Within the Stop, the revegetation process has produced a grassland habitat with 7 calcareous indicator species. Herb content is good at 40% cover and no negative indicator species or scrub/Bracken occurs.

Additional species occurring within the Stop include *Alchemilla xanthochlora*, *Centaurea nigra*, *Trifolium pratense*, *Hypericum pulchrum*, *Thymus praecox*, *Potentilla reptans*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Holcus lanatus*, and *Festuca rubra* (see relevé 1 for full details). Outside the Stop, *Daucus carota*, *Carlina vulgaris*, and *Rosa canina* also occurred.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

### **Monitoring Stop 2:**

Stop 2 is located on a gently sloping ledge on the western slopes of the quarry, facing to the east. The ledge has revegetated well and a good range of calcareous species occur.

Within the Stop, herb content was 40% and 10 indicator species were recorded. No negative indicator species or scrub/Bracken were recorded.

Additional species occurring within the Stop include *Centaurea nigra*, and *Thymus praecox* (see relevé 2 for full details).

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 3:**

This Stop is located on a well-vegetated ledge on the west slopes of the quarry (see Photo 17). The EPA funded study on the 'Insects of Calcareous Grasslands' has a malaise trap and pitfall traps located on the same ledge.

Within the Stop, herb content was high at 60%. The vegetation was species-rich with 13 indicator species occurring. Also occurring within the Stop were *Leucanthemum vulgare*, *Thymus praecox*, *Danthonia decumbens*, and *Centaurea nigra* (see relevé 3 for full details).

Scrub consisting of *Crataegus monogyna*, *Fraxinus excelsior*, and *Sambucus nigra* is colonising the slopes above this ledge. Of note is the occurrence on these slopes of the non-native prostrate *Cotoneaster* species. This has the potential to rapidly spread in the shallow, stony soil of the quarry. *Pteridium aquilinum*, *Succisa pratensis*, and *Centaurea nigra* are also widespread with some scattered fruiting orchids and patches of *Galium verum*.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 4:**

This Stop is located on a north-facing slope close to the entrance gate to the quarry. These slopes show a degree of encroachment from Bracken with some scrub species also spreading downslope. The vegetation is distinctly grass-dominated in appearance.

Within the Stop, herb content is low at 30%. Species diversity was still high, however, with 13 calcareous indicator species occurring. No negative indicators were noted and while *Pteridium aquilinum* was seen to be present, it occurred in low quantities (<5% cover).

Also occurring within the Stop are *Cynosurus cristatus*, *Dactylis glomerata*, *Festuca rubra*, *Coeloglossum viride*, *Thymus praecox*, *Succisa pratensis*, *Achillea millefolium*, *Trifolium pratense*, and *Centaurea nigra* (see relevé 4 for full details). Outside the Stop, *Carlina vulgaris*, *Hieracium pilosella*, and *Prunella vulgaris* also occurred.

Due to the insufficient herb content, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

## **Lough Ree**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	29/06/2006
Willie Crowley	29/08/2006

**Total Site Area (Ha):** 13612

**Area of Priority Grassland (N2000) (Ha):** Likely to be in the order of several 10s of hectares.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**

Longford  
Roscommon  
Westmeath

**6" Sheets:**

LF017, LF021, LF022, LF025, LF026,  
RO036, RO037, RO040, RO042,  
RO043, RO046, RO049, WM015,  
WM022, WM029.

**Digital Aerial Photos (Tile Nos.):**

O2416-b, O2416-c, O2416-d, O2417-c, O2483-c, O2483-d, O2484-a, O2484-b, O2484-c, O2484-d, O2484-d, O2485-a, O2551-b, O2551-d, O2552-a, O2552-b, O2552-c, O2552-d, O2553-a, O2553-a, O2553-b, O2553-c, O2553-d, O2619-a, O2619-b, O2619-d, O2620-a, O2620-b, O2620-c, O2620-d, O2621-a, O2621-c, O2621-d, O2622-d, O2623-c, O2689-b, O2690-a, O2690-b, O2690-c, O2690-d, O2691-a, O2691-b, O2691-c, O2691-d, O2692-b, O2692-c, O2692-d, O2693-a, O2693-c, O2693-d, O2759-a, O2759-b, O2759-d, O2760-a, O2760-b, O2760-c, O2760-d, O2761-a, O2761-b, O2761-c, O2761-d, O2762-a, O2762-b, O2762-c, O2762-d, O2827-b, O2827-d, O2828-a, O2828-b, O2828-b, O2828-c, O2828-d, O2829-a, O2829-b, O2829-c, O2829-d, O2895-b, O2895-d, O2896-a, O2896-b, O2896-c, O2896-d, O2897-a, O2897-b, O2897-c, O2897-d, O2898-c, O2964-b, O2965-a, O2965-b, O2965-c, O2965-d, O2966-a, O2966-b, O2966-c, O2966-d, O2967-a, O3035-a, O3035-b, O3035-d.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

000440

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.



## **SITE DESCRIPTION**

Lough Ree is the third largest lake in the Republic of Ireland and is situated, in an ice-deepened depression in Carboniferous Limestone, on the River Shannon system between Lanesborough and Athlone. Some of its features (including the islands) are based on glacial drift. It has a very long, indented shoreline and hence has many sheltered bays. Although the main habitat, by area, is the lake itself, interesting shoreline, terrestrial and semi-aquatic habitats also occur.

The greater part of Lough Ree is less than 10m in depth, but there are six deep troughs running from north to south, reaching a maximum depth of about 36m just west of Inchmore. The lake has been classified as mesotrophic in quality, but the size of the system means that a range of conditions prevail depending on, for example, rock type. This gives rise to local variations in nutrient status and pH, which in turn result in variations in the phytoplankton and macrophyte flora, and species indicative of oligotrophic, mesotrophic, eutrophic and base-rich situations occur. The water of Lough Ree tends to be strongly peat-stained, restricting macrophytes to depths of less than 2m, and as a consequence, macrophytes are restricted to sheltered bays, where a typical Shannon flora occurs.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Dry calcareous grassland occurs scattered around the lake shore. This supports typical species such as Yellow-wort (*Blackstonia perfoliata*), Carline Thistle (*Carlina vulgaris*) and Quaking Grass (*Briza media*). Orchids also feature in this habitat e.g. Bee Orchid (*Ophrys apifera*) and Common Spotted-orchid (*Dactylorhiza fuchsia*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Dry calcareous grassland occurs in patches on calcareous boulder clay along the limestone shoreline of Lough Ree. Examples are mentioned in the AFF reports, such as at Meehan Wood and Coosan Lough. Hare Island is described in detail by the 1970 IBS study. Praeger (1934) also refers to calcareous grassland at Lough Ree. Common species include *Briza media*, *Lotus corniculatus*, *Blackstonia perfoliata*, *Rhinanthus minor*, *Campanula rotundifolia* and *Linum catharticum*. *Carlina vulgaris* and *Carex caryophyllaea*, diagnostic species of the habitat according to the manual also occur. *Ophrys apifera* occurs at the site (up to 5 known different locations) along with *Dactylorhiza fuchsii* - both of these species are diagnostic of dry grassland.

*Anacamptis pyramidalis* is not recorded for the site in the available literature but would most certainly occur and is noted in this area in the Atlas of British Flora. Other orchid species also occur at the site but these are more associated with damp grassland e.g. *Platanthera bifolia* and *Dactylorhiza incarnata*. The calcareous grassland which occurs around Lough Ree has species typical of dry grassland including two diagnostic species of the habitat. Further survey may show that species such as *Ophrys insectifera* and possibly even *Orchis morio* might occur (the latter was found in grassland south of Athlone in 1997 by Heery).

*Description based on the 2006 Survey :*

During the 2006 survey, the habitat 6210 calcareous grassland (either species-rich or orchid-rich) was seen to be extremely limited in extent. Of 9 areas around the lake which were targeted for survey, a good example of the habitat was found at only 1 location, Derrynagease Point on the south eastern shore. At Derrynagease, rocky outcrops supported 6210 habitat in a mosaic with lower lying wet grassland, the more dominant habitat on the peninsula. Good calcareous indicators were recorded such as *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Hieracium pilosella*, *Linum catharticum*, and *Lotus corniculatus*. The orchid *Spiranthes spiralis* was also recorded. No other orchids were noted.

Fragments of 6210 habitat also occur at Cashel, on the eastern shore across from Inchcleraun Island. The habitat occurs in very limited strips along trackways which cut through well-grazed *Cynosurus*-dominated sheep pasture. Bracken also occurs in high densities in this location. The 6210 habitat was also seen to have potentially occurred on a hill at Kilmore, north west of St. John's Point on the western shores of the lake. This hill currently supports a vegetation which shows signs of agricultural improvement but some calcareous indicator species such as those listed above, still occur in patches.

The remaining grassland areas around the lake which were surveyed during the 2006 survey are described as being either agriculturally improved grassland, wet grassland, or semi-improved grassland dominated by *Cynosurus cristatus*.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1994 NHA survey. Only two areas within the site were identified as potentially supporting dry calcareous grassland. Habitat maps in the MPSU Conservation Plan for Lough Ree were also examined and some of the larger areas highlighted in those maps as containing 6210 habitat were listed for survey. Other areas around the lake were also chosen based on a study of aerial photographs. Wherever grassland on the aerial photograph coincided with the 6 inch mapping symbol for outcropping rock, these areas were listed for survey.

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## **SITE MONITORING AND MANAGEMENT UNITS**

The survey target areas were chosen using a number of information sources. The NHA Survey in 1994 highlighted 2 areas which potentially held species-rich grassland. These were Derrynagease on the south eastern shore and Kilmore Hill on the south western shore. Both of these areas were listed for survey and both were visited.

Habitat maps in the MPSU Conservation Plan for Lough Ree were also examined and some of the larger areas highlighted in those maps as containing 6210 habitat were listed for survey. Other areas around the lake were also chosen based on a study of aerial photographs. Wherever grassland on the aerial photograph coincided with the 6 inch mapping symbol for outcropping rock, these areas were listed for survey. Due to the restrictions of fieldwork, none of the islands on Lough Ree could be visited.

Following these criteria, 16 potential areas for survey were highlighted. Due to time constraints, 9 locations were finally selected based on probability of occurrence and their maximum potential size. Of these 9 locations, only 3 areas contained grassland that could be described as 6210 habitat, albeit varying considerably in representivity and condition. These were the 2 locations noted in the 1994 NHA survey (Derrynagease Point and Kilmore Hill) and one other location at Cashel, on the east shore of the lake.

All other locations were seen to be either agriculturally improved as a result of reseeded coupled with fertiliser application, or were in fact wet grassland habitat. Some areas were also seen to be more representative of semi-improved *Cynosurus*-dominated pasture. As there are no previous records available for any of the locations visited apart from Derrynagease Point and Kilmore Hill, 'best expert judgement' was used to estimate whether or not loss in habitat had occurred since Lough Ree was first designated in 1999.

Four Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

The notes from the NHA survey that relate to lowland dry grassland or calcareous grassland are presented in Appendix 1. The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the overview of the site on Map 1.

During the 2006 survey, a series of site notes, additional to the Monitoring Stop notes, were recorded. These describe other areas of grassland which were not included in the monitoring assessment, other habitats within the site, any noted damaging activities, and other encountered areas showing encroachment by scrub or bracken. These notes are presented in Appendix 5 and their indicative locations are given on Map 2.

A photographic record of the site was also created and details of these photographs are presented in Appendix 3 and their indicative locations are shown on Map 3.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	3
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 1
Stop 02	1	Pass	Structures and Functions	Sheet 1
Stop 03	2	Fail	Structures and Functions	Sheet 2
Stop 04	3	Fail	Structures and Functions	Sheet 3

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 3 separate management units.

Management Unit 1 contains Stops 1 and 2. Derrynagease Point is managed as a commonage and access across the peninsula is open. Both sheep and cattle graze the area.

Management Unit 2 contains Stop 3. The grassland and scrub woodland at Cashel is a long-established area of well-grazed pasture. Sheep and horses were noted on the day of survey. Mown paths through the encroaching bracken keep access open throughout the Management Unit. Only the section in the vicinity of the Monitoring Stop was seen to show characteristics of 6210 habitat. Remaining areas of open grassland were seen to be more improved and were more typical of *Cynosurus*-dominated communities.

Management Unit 3 contains Stop 4. Kilmore Hill shows signs of past improvement and a strong fence divides the hill into 2 management units. Stop 4 is placed in the south western half where management by grazing is at a moderate level. The other management unit on the north east of the fence appears to be less intensively managed and scrub and Bracken has almost covered the hillside.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

The most noticeable impact on the grassland habitats surveyed during the 2006 project was agricultural improvement (103). This normally took the form of reseeded with a *Lolium perenne*-dominated grass mix coupled with the application of fertiliser (120). This was noted as occurring at a number of survey locations e.g. south west of the town of Lanesborough (see N9, N10, and N11), and at N16 and N19. The application of fertiliser was seen to be widespread, resulting in good agricultural grazing conditions at most locations visited. Levels of application varied from very light to relatively heavy. While reseeded, fertiliser application, and burning (180) was also noted at Leveran Point (see notes N4, N5, and N6), these activities are deemed to have followed the clearance of scrub habitat from this peninsula and was therefore not included in the assessment process.

Grazing (140) is also a widespread management practice on this site. Correct grazing levels are essential to the management of quality grassland habitat and sheep, cattle, and horses were all noted on the site during the survey. Cattle were more frequent on the more agriculturally improved pastures while horses and sheep were noted on the semi-improved *Cynosurus* grassland at Cashel on the eastern shore of the lake.

During the 1994 NHA survey of this site, overgrazing by sheep (142) had been noted at Kilmore Hill, on the western shore of the lake. This hill now appears to be managed as two separate management units and the north eastern unit is showing signs of insufficient management (141). Grazing pressures are lighter and scrub and Bracken are spreading rapidly (954). The south western section of the hill still shows some evidence of slight overgrazing in that soil disturbance by the grazing animals on the rocky slopes is evident.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
180	Burning	0	C
103	Cultivation: agricultural improvement	-1	B
120	Fertilisation	-2	A
140	Grazing	1	B
141	Grazing: abandonment of pastoral systems	-1	B
142	Grazing: overgrazing by sheep	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

During the 2006 survey, the following management issues were identified:

locations visited. At these locations, grazing levels and the application of fertilisers are the most important management issues. At Derrynagease Point, good quality calcareous grassland was seen to occur in a mosaic with low-lying wet grassland habitat. This peninsula is believed to be managed as a commonage and current stocking levels appear to be appropriate for the maintenance of the grassland. Further assessment of grazing levels may suggest how the habitat quality could be further improved.

At Cashel, 6210 habitat is deemed to occur in small, scattered patches and strips throughout the western section of the *Cynosurus*-dominated pasture. Reduction of fertiliser input in this area, coupled with a sensitive grazing regime, could also improve the grassland quality and extent in this area.

At Kilmore Hill, the division of the hill into 2 management units by landowners has resulted in a very obvious visual difference to the grassland habitat. Control of scrub and Bracken on the north eastern unit is urgently required if calcareous grassland habitat is to be re-established there. Calcareous indicator species still occur but these are only found around outcropping limestone rocks and boulders. In the south western part of the hill, the unit is grazed by sheep and surface disturbance is widespread. Sheep stocking levels need to be assessed and any revised grazing patterns need to be monitored.

As these 3 areas were the only representative areas of 6210 grassland detected in the subsample of 9 target survey areas, it is imperative that management issues in these locations are dealt with as soon as possible.

## CONSERVATION STATUS

### ***Extent:***

As noted in the NATURA 2000 Explanatory Notes, the extent of habitat type 6210 is not easily mapped at Lough Ree. However, during the current project a crude estimate of the extent was approximated using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and an analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

According to the NATURA 2000 Explanatory Notes, “dry calcareous grassland occurs in patches on calcareous boulder clay along the limestone shoreline of Lough Ree.” Thus, a number of areas, scattered around the perimeter of the Lough and considered most likely (from an analysis of the aerial photographs, NHA notes and MPSU notes) to support the habitat type were chosen for ground survey.

Only three of the survey areas were considered to support any significant areas of dry calcareous grassland. Two of these, Derrynagease Point on the mid-east shore of the lough and Kilmore on the mid-west shore, were the only two areas described during the NHA survey as lowland dry grassland (not improved). The third area, at Cashel, on the mid to north of the east shore has a more neutral to calcareous element to the vegetation and is seriously encroached by *Pteridium aquilinum*. Thus, while this survey was not in anyway absolute, it is now postulated that dry calcareous grassland is much less common around the shores of Lough Ree than previously thought.

In fact, in the areas surveyed, it is estimated that habitat 6210 extends to less than 10ha. This includes 3ha on Derrynagease Point, where the habitat is confined to elevated rocky areas and occurs in a mosaic with a damp to wet grassland. The dry grassland here is estimated to occur over ca. 10% of an area of the peninsula that extends to 25-30ha. A further 3ha is estimated to occur in Kilmore, where dry calcareous grassland occurs in a mosaic with (and is becoming encroached by) dense bracken. An additional 2-3ha is estimated to occur in Cashel, where the dry calcareous grassland appears to have a more neutral element and is also becoming encroached by bracken.

In addition to the two areas described as lowland dry grassland (unimproved) by the NHA notes, the NATURA 2000 Explanatory Notes also refer to three areas mentioned in the AFF reports: Meehan Wood, Coosan Lough and Hare Island. All of these areas are located towards the south-east of the Lough. An analysis of the aerial photographs (AP's) in the area around Coosan Lough would suggest that any of the unimproved areas are wet and not dry grassland. Neither are there any likely areas of dry calcareous grassland obvious from the AP's in the area around Meehan. Hare Island, however, supports approximately 10ha of dry grassland, which appears (from the AP's) relatively unimproved and may well be calcareous in nature. The NATURA notes also indicate that *Ophrys apifera* occurs at five known different location at the site and that this species is diagnostic of dry grassland. The locations, however, are not listed.

Thus, the extent of dry calcareous grassland in Lough Ree SAC is considered to extend to a



minimum of 20ha. It is also believed that the area is unlikely to be much more than this. Additional small patches may occur however, particularly on some of the islands. Therefore the maximum area of dry calcareous grassland within the SAC is estimated to be 30ha, with the true extent estimated to be in the region of 20-30ha. This is lower than the NATURA 2000 estimate of “several tens of hectares”. However, it is believed that NATURA 2000 over-estimated the extent.

Nevertheless, a loss in extent of the habitat is likely to have occurred in recent years e.g. due to bracken encroachment in the area around Kilmore and Cashel. This loss is estimated to be in the region of 3-5ha, which is equal to a loss of ca. 10-20% of the original extent of the habitat. The Conservation Assessment of Extent of habitat 6210 at Lough Ree is thus considered to be Unfavourable – bad.

### ***Structure and Functions:***

The Structures and Functions of 4 Monitoring Stops were assessed. Of these 4, 2 Stops failed the assessment process. Stop 3, at Cashel, failed due to an insufficient number of indicator species (only 5 species were recorded). Bracken was also seen to occur and while cover was not excessive within the Stop, it was higher in the surrounding area. The locality was seen to be well-grazed in general, although small, more inaccessible areas were showing signs of encroachment and insufficient grazing.

At Kilmore Hill, Stop 4 failed on two accounts. Only 6 indicator species were recorded and Bracken cover reached to 15% within the Stop. The hill in the vicinity of the Stop is showing the results of slight overgrazing. A degree of reseeding has occurred and fertilisers have also been applied. *Lolium perenne* accounted for up to 30% of the cover within the Stop.

The 2 Stops which passed the assessment procedure are located on Derrynagease Point. At both Stops, 7 indicator species were recorded and no negative indicators or scrub/Bracken occurred. This peninsula is managed by sheep and cattle grazing. The orchid *Spiranthes spiralis* was scattered across the rockier mounds that support the 6210 habitat at this location. In general, the calcareous grassland recorded at all 4 locations was distinctly heath-like in nature, with the regular occurrence of species such as *Danthonia decumbens*, *Succisa pratensis*, *Potentilla erecta*, and *Agrostis capillaris*. Others like *Pedicularis sylvatica* and *Polygala serpyllifolia* were rare.

Due to the fact that there was a failure rate of 50% in the assessment, the Structures and Functions of the 6210 habitat at this site are described as being Unfavourable - bad.

### ***Future Prospects:***

During the 2006, the Extent of the 6210 habitat at Lough Ree was seen to be very limited. Only 3 of the 9 target areas which were surveyed showed representative examples of the habitat. Some loss of habitat is also assumed to have occurred as a result of reseeding with agriculturally aggressive grass species, coupled with the application of fertiliser.

Current management practices at only 1 of the 3 areas with 6210 habitat are currently suitable for the maintenance of quality grassland. At the other 2 locations, a combination

of overgrazing by sheep, fertiliser application, and insufficient management practices are affecting the Structures and Functions of the habitat.

Under these circumstance, given the limited Extent and the significant failure of the Structures and Functions (50% failure rate), the Future Prospects for the habitat at this site are described as being Unfavourable - bad. If the grassland at Cashel and at Kilmore Hill are managed in a more suitable manner, the Future Prospects would be seen to improve.

### ***Conservation Assessment:***

There was very little previously recorded information available on the 6210 habitat at Lough Ree. Notes from the NHA Survey in 1994, highlighted 2 areas which potentially held species-rich grassland. These were Derrynagease on the south eastern shore and Kilmore Hill on the south western shore. Following an assessment of the habitat maps presented in the MPSU Conservation Plan for Lough Ree, and an examination of the OSI 2000 aerial photographs of the site, 9 target areas were visited. Although previously produced habitat maps for the site indicate 6210 habitat occur on some of the islands on the lake, none of these could be visited during the current project.

6210 habitat was seen to occur at only 3 of the 9 target areas. Only 1 location, Derrynagease Point, presented with good quality 6210 grassland, where it occurs on elevated mounds in a mosaic with lower-lying wet grassland habitat. Good calcareous grassland has the potential to occur at Kilmore Hill where 6 indicator species were recorded. However, excess cover of Bracken, the application of fertilisers, part reseeding with *Lolium perenne*, and incorrect grazing pressures are badly impacting on the habitat at that location. The third area where 6210 habitat was seen to occur, Cashel, also presents problems of tight grazing patterns and some reseeding.

Difficulties were encountered in attempting to estimate whether loss in habitat Extent had occurred or not. 1994 NHA notes referred to species-rich grassland at only 2 locations, Derrynagease and Kilmore. In addition, although previous habitat maps for the site indicate the presence of minor areas of 6210 habitat at numerous locations around the lake shore, a survey of some of these locations during the current project revealed possible errors in mapping e.g. species-rich wet grassland occurs at a number of locations where 6210 habitat had been mapped.

In another example, at Leveran Point, in the absence of previous information, most of the peninsula had previously been mapped as 6210 habitat. As agriculturally improved grassland is now seen to occur at that location, it would have been reasonable to deduce that loss in habitat Extent had occurred. However, an examination of digital 1995 aerial photographs which became available during the survey, indicated that the peninsula had been dominated by scrub in 1995. It was clear that the agriculturally improved fields which are visible on 2000 and 2005 aerial photographs have been reclaimed from that habitat. Therefore, as 6210 habitat had not occurred at this location at the time the site was first designated in 1999, a loss in habitat had not occurred.

In the absence of reliable baseline data, 'best expert judgement' was used to estimate the current Extent in the 6210 habitat. The Extent was seen to be very limited and the condition

of the habitat surveyed was also seen to badly fail the assessment of its Structures and Functions. The overall Conservation Assessment of the 6210 habitat at this site is therefore described as being Unfavourable - bad.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
		Extent	
		Future Prospects	
		Structure and Function	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This area is located just within the SAC boundary and extends from the hedgerow of the last farm down to the water's edge. It is a wide, grassy margin of gently undulating ground with some rocky outcrops. Cattle and sheep graze the area and both were on site on the day of survey.

The vegetation is composed of a mixture of grass and herb species. Grasses include *Briza media*, *Danthonia decumbens*, *Festuca rubra*, *Cynosurus cristatus*, *Holcus lanatus*, *Agrostis capillaris*, and *Anthoxanthum odoratum*. Herbs include *Lotus corniculatus*, *Prunella vulgaris*, *Hydrocotyle vulgare*, *Bellis perennis*, *Cirsium arvense*, *Potentilla erecta*, *Potentilla anserina*, *Leontodon hispidus*, *Molinia caerulea*, *Plantago lanceolata*, *Succisa pratensis*, and *Hypochoeris radicata* (see relevé 1 for full details).

More low-lying areas show a damper influence with species such as *Hydrocotyle vulgare*, *Potentilla anserina*, *Mentha aquatica*, *Juncus acutiflorus*, *Filipendula ulmaria*, and *Achillea ptarmica*.

**Note 2:**

Wetter grassland with a heath-like element occurs closer to the lake edge. Grasses such as *Holcus lanatus*, *Festuca rubra*, *Molinia caerulea*, *Poa pratensis*, *Agrostis stolonifera*, and *Danthonia decumbens* dominate this area. Herbs include *Mentha aquatica*, *Hydrocotyle vulgare*, *Potentilla anserina*, *Potentilla erecta*, *Achillea ptarmica*, *Juncus acutiflorus*, *Hypochoeris radicata*, and *Prunella vulgaris*. Small scattered stems of *Calluna vulgaris* also occur.

**Note 3:**

This area is located close to the tip of the peninsula at Derrynagease. Protruding rocks are well vegetated and mossy. Species occurring include the grasses *Briza media*, *Molinia caerulea*, *Danthonia decumbens*, and *Cynosurus cristatus*. Herbs include *Lotus corniculatus*, *Prunella vulgaris*, *Hypochoeris radicata*, *Galium verum*, *Plantago lanceolata*, *Potentilla erecta*, *Succisa pratensis*, *Pedicularis sylvatica*, *Trifolium repens*, *Cirsium arvense*, *Bellis perennis*, and *Carex flacca*. In damper areas, *Parnassia palustris* and *Achillea ptarmica* also occur.

## Note 4:

This peninsula is described in the MPSU Conservation Plan as being 6210 habitat and the area was thus listed for surveying. Subsequent to the field survey, however, digital 1995 aerial photographs of this peninsula became available. An examination of these revealed that the peninsula had been dominated by scrub in 1995 and that the agriculturally improved fields currently visible on 2000 and 2005 aerial photographs have been reclaimed from that habitat. This suggests that 6210 habitat had not occurred at this location at the time the site was first designated in 1999.

On visiting the site, this area showed signs of serious disturbance. Soil was bare with ruderals dominating such as *Polygonum aviculare* and *Plantago lanceolata*. Stock-feeding sites are scattered through out with plastic litter from the silage bales remaining in situ.

## Note 5:

This peninsula is described in the MPSU Conservation Plan as being 6210 habitat and the area was thus listed for surveying. Subsequent to the field survey, however, digital 1995 aerial photographs of this peninsula became available. An examination of these revealed that the peninsula had been dominated by scrub in 1995 and that the agriculturally improved fields currently visible on 2000 and 2005 aerial photographs have been reclaimed from that habitat. This suggests that 6210 habitat had not occurred at his location at the time the site was first designated in 1999.

On surveying this area, it was seen that the area has been improved. Rocks have been cleared and piled into small piles. The field has been reseeded and any remaining bare soil has begun to re-vegetate with ruderal species and scattered *Crataegus monogyna*, *Cirsium arvense*, and *Rubus fruticosus* agg.

Where vegetation is more settled, *Lolium perenne* dominates with some *Agrostis stolonifera*, *Poa annua*, *Plantago lanceolata*, *Trifolium repens*, *Potentilla anserina*, *Cirsium arvense*, and *Polygonum aviculare*.

Patches of scrub still remain which include *Ulex europaeus*, *Crataegus monogyna*, *Ilex aquifolium*, and some *Rubus fruticosus* agg. Additional herbs include *Bellis perennis*, *Prunella vulgaris*, and *Ranunculus repens*.

## Note 6:

This peninsula is described in the MPSU Conservation Plan as being 6210 habitat and the area was thus listed for surveying. Subsequent to the field survey, however, digital 1995 aerial photographs of this peninsula became available. An examination of these revealed that the peninsula had been dominated by scrub in 1995 and that the agriculturally improved fields currently visible on 2000 and 2005 aerial photographs have been reclaimed from that habitat. This suggests that 6210 habitat had not occurred at this location at the time the site was first designated in 1999.

On surveying the site, this area was seen to be a reseeded and improved field. It is dominated by *Lolium perenne* with some *Plantago media*, *Trifolium repens*, *Rumex obtusifolius*, *Cerastium fontanum*, *Bellis perennis*, *Taraxacum officinale* agg., and *Prunella vulgaris*.

In the adjacent field, *Ulex* scrub has been cleared and collected into large piles. Others have been cut and left to die off in situ. One large outcropping limestone boulder has a few well-grazed remnant calcareous species such as *Campanula rotundifolia*, *Fragaria vesca*, *Centaurea erythraea*, and *Daucus carota*.

This landowner appears to be actively improving his holding. Sections of hedgerow have been burned out and cut back. Rocks have also been cleared out and piled in small heaps.

## Note 7:

This area was listed as 6210 habitat in the MPSU Conservation Plan. On the day of surveying, it was seen to be a grazed sheep pasture. The soil is light and sandy and Bracken encroachment is a problem with up to 50% cover where Dense Bracken habitat occurs (habitat code HD1, Fossitt 2000). *Cirsium palustre* is scattered throughout and scrub is also spreading from the unmanaged hedgerows. A mown path cuts through the Bracken dominated area.

Also occurring are *Agrostis capillaris*, *Cynosurus cristatus*, *Holcus lanatus*, *Anthoxanthum odoratum*, *Ranunculus repens*, *Cirsium arvense*, *Trifolium repens*, *Hypochoeris radicata*, *Galium verum* and *Trifolium pratense*.

## Note 8:

This area was listed as 6210 habitat in the MPSU Conservation Plan. On the day of surveying, it was seen to be a grazed sheep pasture. This part of the grassland was an open area with a very short sward, no more than 3cm high. The grass component of the vegetation is dominated by *Cynosurus cristatus* with some *Lolium perenne*, *Briza media*, and *Agrostis capillaris*. Herbs include *Hypochoeris radicata*, *Achillea millefolium*, *Taraxacum officinale* agg., *Prunella vulgaris*, *Plantago lanceolata*, *Plantago media*, *Cerastium fontanum*, *Bellis perennis*, and *Cirsium arvense*.

## Note 9:

This area was previously listed in the MPSU Conservation Plan as being 6210 habitat. During the 2006 survey, the area is seen to be agriculturally improved and the hedgerow has been partly removed. The grassland is a silage meadow and has been reseeded with *Lolium perenne*. Other species such as *Trifolium repens*, *Ranunculus repens*, *Cerastium fontanum*, and *Cirsium vulgare* also occur.

## Note 10:

This area is located close to the lakeshore. Some small patches of limestone are exposed as ledges or small areas of pavement. The grassland in the areas between the exposed rocks shows signs of agricultural improvement.

Species occurring include *Lolium perenne*, *Agrostis stolonifera*, *Senecio jacobea*, *Potentilla anserina*, *Rumex obtusifolius*, *Polygonum aviculare*, *Plantago media*, *Capsella bursapastoris*, *Stellaria media*, and *Chamomilla suaveolens*.

## Note 11:

Along the shoreline in this area, the grassland has been reseeded with *Lolium perenne*. Around exposed rocks and flat limestone ledges, *Achillea millefolium* and *Galium verum* occur with very small occurrences of *Lotus corniculatus*.

## Note 12:

This area is species-rich wet grassland. Species occurring include *Agrostis stolonifera*, *Juncus effusus*, *Juncus articulatus*, *Achillea ptarmica*, *Filipendula ulmaria*, *Odontites verna*, *Hypochoeris radicata*, *Plantago lanceolata*, *Lotus corniculatus*, *Potentilla anserina*, *Ranunculus repens*, *Mentha aquatica*, *Vicia cracca*, and *Myosotis scorpioides*.

## Note 13:

This area of wet grasses is dominated by tall grasses, *Juncus effusus*, *Iris pseudacorus*, and *Mentha aquatica*. *Potentilla anserina*, *Achillea ptarmica*, *Hydrocotyle vulgare*, *Hypochoeris radicata*, *Ranunculus repens*, *Filipendula ulmaria*, *Myosotis scorpioides*, and *Juncus acutiflorus*.

## Note 14:

This area around the lakeshore was previously described as being 6210 habitat in the MPSU Conservation Plan. During the 2006 survey, it is described as species-rich wet grassland with *Briza media* (O), *Hydrocotyle vulgare* (F), *Parnassia palustris* (R), *Juncus acutiflorus*, *Juncus effusus*, *Filipendula ulmaria*, *Ranunculus flammula*, *Lathyrus pratensis*, *Succisa pratensis*, *Mentha aquatica*, *Trifolium repens*, *Carex flacca*, *Holcus lanatus*, *Iris pseudacorus*, *Achillea millefolium*, *Trifolium pratense*, *Prunella vulgaris*, and *Pinguicula vulgaris*. Tussocks of *Schoenus nigricans* were scattered throughout. There was no evidence of current grazing pressures.

## Note 15:

The upper slopes of this field are drier and are dominated by *Cynosurus cristatus* and *Trifolium repens*. Other species such as *Agrostis stolonifera* and *Prunella vulgaris* also occur. On the lower slopes, the damper conditions support *Juncus effusus*, *Juncus acutiflorus*, *Ranunculus repens*, and *Succisa pratensis*. *Cirsium palustre* is scattered throughout the field. Cattle graze the site at moderate grazing pressures.

## Note 16:

This note describes a strip of land which slopes gently down to the lakeshore. It occurs in an area previously described in the MPSU Conservation Plan as being 6210 habitat.

During the current survey, it was seen to be agriculturally improved. *Lolium perenne* and *Cynosurus cristatus* co-dominated with other species also occurring such as *Poa annua*, *Holcus lanatus*, *Agrostis stolonifera*, *Juncus effusus*, *Trifolium repens*, *Potentilla anserina*, *Ranunculus repens*, and *Juncus acutiflorus*.

## Note 17:

This area around the lakeshore was previously described as being 6210 habitat in the MPSU Conservation Plan. During the 2006 survey, it is described as wet grassland dominated by *Juncus effusus* tussocks. *Cynosurus cristatus* grassland occurs between the tussocks with other species also occurring such as *Holcus lanatus*, *Festuca rubra*, *Cerastium fontanum*, *Trifolium repens*, *Cirsium palustre*, *Potentilla anserina*, *Lathyrus pratensis*, and *Ranunculus repens*.

## Note 18:

This note also occurs in an area previously described in the MPSU Conservation Plan as being 6210 habitat. On the day of survey, 4 horses were grazing this field. The grassland was seen to be dominated by the grasses *Cynosurus cristatus*, *Dactylis glomerata*, *Arrhenatherum elatius*, *Holcus lanatus*, and *Agrostis stolonifera*. Herbs noted include *Cirsium arvense*, *Potentilla anserina*, *Trifolium repens*, with some *Juncus effusus*.

## Note 19:

This is wet pasture grazed by cattle. The grasses *Dactylis glomerata*, *Cynosurus cristatus*, *Agrostis stolonifera*, and *Arrhenatherum elatius*, are frequent with herbs such as *Trifolium repens*, *Achillea millefolium*, *Plantago lanceolata*, *Centaurea nigra*, and *Odontites verna*. Around exposed, protruding rocks, *Galium verum*, *Lotus corniculatus*, *Hieracium pilosella*, *Pimpinella saxifraga*, *Trifolium pratense*, and *Achillea millefolium* occur. *Cirsium arvense* is scattered and shrubs of *Prunus spinosa* are distributed throughout. Wetter areas are dominated by *Filipendula ulmaria* and *Lathyrus pratensis*.



## Note 20:

This peninsula was previously described as being 6210 habitat in the MPSU Conservation Plan. This whole area has been mostly agriculturally improved. Cattle were grazing on the day of survey. *Lolium perenne* dominates with some *Agrostis stolonifera*, *Cynosurus cristatus*, and *Agrostis capillaris*. *Trifolium repens*, *Achillea millefolium*, *Cirsium arvense*, *Succisa pratensis*, *Taraxacum officinale* agg., *Cerastium fontanum*, *Rumex acetosella*, *Rumex obtusifolius*, and *Ranunculus acris*. Scattered mature shrubs of *Crataegus monogyna* also occur.

## Note 21:

This peninsula was previously described as being 6210 habitat in the MPSU Conservation Plan. This note described an area closer to the lake edge than Note 20. *Prunella vulgaris* occurs with some *Lolium perenne*, *Festuca rubra*, *Achillea millefolium*, *Rumex crispus*, *Galium verum*, *Lotus corniculatus*, *Juncus acutiflorus*, *Hypochoeris radicata*, and *Myosotis scorpioides*.

## Note 22:

This hill was previously described as being 6210 habitat in the MPSU Conservation Plan and was identified as species-rich grassland in the NHA survey. A strong wire fence divides the Kilmore Hill into two management units. This note describes the higher ground, which is more improved than the lower half where Stop 4 is located. Bracken is also more dense and *Ulex* scrub and *Crataegus monogyna* is more widespread.

The grassland is *Cynosurus*-dominated with some *Lolium perenne*, *Agrostis* spp., and *Festuca rubra*. Herbs include *Trifolium repens*, *Ranunculus repens*, *Cirsium palustre*, *Ranunculus repens*, *Cirsium palustre*, *Cerastium fontanum*, and *Rumex acetosella*. Mossy hummocks contain some *Galium verum*. The area is grazed by sheep. The NHA note for this area indicates a degree of overgrazing by sheep at that time, although *Carex caryophylla* was seen to be frequent.

## Note 23:

This narrow strip along the lakeshore was previously described as being 6210 habitat in the MPSU Conservation Plan. This field is a tightly grazed sheep pasture. The vegetation is dominated by *Lolium perenne* with some *Cirsium arvense*, *Rumex acetosella*, *Urtica dioica*, *Stellaria media*, and *Trifolium repens*.

## Note 24:

This area at Ballykeeran just north east of Athlone was previously described as being 6210 habitat in the MPSU Conservation Plan. This area is seen to be a wet grassland dominated by *Filipendula ulmaria*, and *Potentilla anserina*, with some *Valeriana officinalis*, *Potentilla reptans*, *Iris pseudacorus*, *Plantago lanceolata*, *Holcus lanatus*, *Ranunculus acris*, *Galium palustre*, *Mentha aquatica*, *Menyanthes trifoliata*, and *Scutellaria galericulata*.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Stop is located in the wide undulating lakeshore area described in Note 1. Scattered across the damp meadow, occasional raised wide mounds with exposed limestone rocks occur. The calcareous influence is highest in these elevated rocky areas while the lower lying ground on either side of the mounds support damp grassland species. The Stop is located on one of these mounds. Grazing levels across the peninsula are moderate, with the sward ranging between 5-15cm.

Within the Stop, herb content was high (50%) and 7 indicator species occurred. No negative indicator species or no scrub/Bracken occurred. 4 spikes of the orchid *Spiranthes spiralis* occurred within the Stop. The presence of this species both within the Stop and in a wide area in the vicinity of the Stop was notable. Up to 15 flowering spikes were counted in the area.

In addition to the indicator species, other species occurring within the Stop include the grasses *Holcus lanatus*, *Cynosurus cristatus*, *Agrostis capillaris*, *Danthonia decumbens*, *Festuca rubra*, and *Festuca ovina*. Herbs include *Plantago lanceolata*, *Viola* spp., *Achillea millefolium*, *Potentilla erecta*, *Hypochoeris radicata*, *Bellis perennis*, *Rhytidadelphus triquetrus*, *Prunella vulgaris*, *Succisa pratensis*, and *Cirsium arvense* (see releve 2 for full details). A 'heath-like' element to the vegetation was noted.

This Stop reached the targets set for the Structures and Functions attribute and are therefore deemed to have passed.

**Monitoring Stop 2:**

This area is located on higher rocky ground close to the lake edge. Most of the protruding limestone boulders are fully vegetated but some bare rock also remains. Grazing levels in this area are moderate to tight.

Within the Stop, herb content is good (50%) and 7 indicator species occur, the same suite as recorded at Stop 1. No negative indicators or scrub/Bracken occurs. The orchid *Spiranthes spiralis* also occurred in this Stop.

Additional species within the Stop are similar to those recorded in Stop 1 and include *Agrostis capillaris*, *Danthonia decumbens*, *Cynosurus cristatus*, *Potentilla erecta*, *Achillea millefolium*, *Plantago lanceolata*, *Hypochoeris radicata*, *Bellis perennis*, *Succisa pratensis*, *Viola* spp., and *Prunella vulgaris* (see releve 3 for full details).

Outside the Stop, a large patch of *Ulex europaeus* occurs with occasional isolated shrubs of mature *Crataegus monogyna*. Additional species include *Antennaria dioica*, *Ranunculus repens*, *Taraxacum officinale* agg., *Anthoxanthum odoratum*, and *Cirsium palustre*.

This Stop reached the targets set for the Structures and Functions attribute and are therefore deemed to have passed.

**Monitoring Stop 3:**

This is an area of calcareous grassland which occurs along the edge of a trackway. Light to medium grazing pressures occur. The Stop is located in a clear area along a mown path, between mature *Ulex europaeus* and *Rubus fruticosus* agg.

Within the Stop, herb content is high (60%) but only 5 indicator species were recorded. No negative indicator species occurred and while Bracken was seen to be present, it did not occur in excessive quantities within the Stop. Outside the Stop, however, Bracken cover rose to 15%, reflecting the degree to which this species is an encroachment issue in this area.

Also occurring within the Stop are *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Agrostis capillaris*, *Plantago lanceolata*, *Potentilla erecta*, *Polygala serpyllifolia*, *Pedicularis sylvatica*, and *Alchemilla xanthochlora* (see releve 4 for full details). Mushrooms are abundant in the locality and include Field mushrooms and Puff Balls.

Due to the insufficient number of indicator species recorded, this Stop is deemed to have failed the assessment of its Structures and Functions.

**Monitoring Stop 4:**

This hill at Kilmore supports a rocky grassland which shows evidence of agricultural improvement. The hill has been divided into two halves by a strong fence which rises from the lakeshore and runs upslope in a south westerly direction to the top of the hill. The north eastern half of the hill is also agriculturally improved and is very much encroached by Bracken and scrub.

Stop 4 is located in the south western half of the hill, in an area close to the dividing fence. This half is managed by grazing and while sheep grazing levels currently appear high, Bracken is also seen to be encroaching. The calcareous indicator species recorded in the Stop occur mostly only around outcropping rock.

Within the Stop, herb cover is high (50%) but only 6 indicator species were recorded. In addition, the negative indicator species, *Lolium perenne*, occurred at 40% cover. Bracken was also noted at 15% cover within the Stop and at 20 % cover outside the Stop.

Additional species within the Stop included *Cynosurus cristatus*, *Festuca rubra*, *Agrostis capillaris*, *Holcus lanatus*, and *Arrhenatherum elatius*. Also occurring are *Cirsium palustre*, *Potentilla erecta*, *Trifolium repens*, *Hypochoeris radicata*, and *Bellis perennis* (see relevé 5 for full details). Outside the Stop, *Danthonia decumbens* also occurs.

Due to the insufficient number of indicator species recorded, as well as the excessive cover of *Lolium perenne* and Bracken, this Stop is deemed to have failed its assessment of Structures and Functions.

## **All Saints Bog and Esker**

### **SITE DETAILS**

**Surveyed By:**                      **Survey Dates:**

**Total Site Area (Ha):** 386.91

**Area of Priority Grassland (N2000) (Ha):** 3.3.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**

Offaly

**6" Sheets:**

**Digital Aerial Photos (Tile Nos.):**

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

000000

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis describes the grassland as follows - To the south of the bog are the fragmented remains of an esker ridge, which may have an influence on the hydrology of the flush. It is included in the site partly for this reason, but also for its own intrinsic value. The area south-east of Coneycarn pit is steeply sloping and unfertilised, and supports species-rich calcareous esker grassland. A large population of Green-winged Orchid (*Orchis morio*), a species listed in the Irish Red Data Book of vascular plants, occurs here. Coneycarn pit itself supports populations of one legally protected and one threatened plant species: Red Hemp-nettle (*Galeopsis angustifolia*) and Blue Fleabane (*Erigeron acer*), both annual species of ruderal habitats, listed in the Irish Red Data Book of vascular plants.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - a small example of dry calcareous grassland (3.3 ha and 0.05% of national total). What is left of this habitat on All Saints Esker is relatively undisturbed. Good diversity of vegetation communities and a species-rich flora. Presence of substantial population of the rare and protected *Orchis morio* (some 500 spikes seen in 1991). The orchids *Anacamptis pyramidalis* and *Dactylorhiza fuchsii* are also found. The unimproved grassland on the site represents a fine, typical, but small example of orchid-rich "semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)".

#### *Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

**Previous surveys of relevance to the priority grassland habitats within the site:**

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.



## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

## **Clara Bog**

### **SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Rosaleen Dwyer            24/05/2006  
Faith Wilson  
Willie Crowley

**Total Site Area (Ha):** 852.44

**Area of Priority Grassland (N2000) (Ha):** 9.9.

**Area of Priority Grassland 2006 (Ha)\*:** 1.4

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                      **Discovery Sheet No:**        **6" Sheets:**  
Offaly                          48                                OF008.

**Digital Aerial Photos (Tile Nos.):**

O3305-a, O3305-b, O3305-c, O3305-d, O3306-a, O3306-b, O3306-c, O3306-d.

**Other Aerial Photographs:**

Number 531, 532 (1992).

### **SITE DESIGNATIONS**

**SAC Site Code:**

000572

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Clara Bog is situated some 2 km south of Clara village. Much of it is state-owned and designated a statutory Nature Reserve. To the east the transition into calcareous woodland, and to the north the transition to the esker ridge have been retained and some excellent examples of esker grassland occur in the site. Some peripheral reclaimed farmland is also included in the site, because management undertaken in these areas can have a profound effect upon the rest of the bog.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

No description of the grassland habitats on the esker were given in the site synopsis.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describes the grassland as follows: The vegetation of the esker ridge north of the disused railway line on the northern side of the site comprises a mixture of dry calcareous grassland (35%), deciduous woodland (18.6%), Bracken (29%), improved grassland (8.8%), sand and gravel quarries (7.3%) and several other poorly represented habitats (based on 1993 aerial photograph). Some 26.2 ha is dry grassland, comprising 2.65% of the area of the total site. Examination of the aerial photograph suggested that not all of the dry grassland was suitable to support either a diverse orchid flora or a population of a rare orchid species (such as *Orchis morio* or *Neotinea intacta*). It was estimated that 1% of the total area of the site or 9.9 ha could be classified as orchid-rich grassland.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the extent of the 6210 habitat on this site was seen to be very limited. It occurs mainly in two locations, as small patches amongst encroaching scrub and Bracken on the north-facing slopes of the esker immediately west of the Clara/Rahan road, and on small hillocks approximately 0.5km further west along that esker.

Typical indicator species found during the 2006 survey include *Avenula pubescens*, *Blackstonia perfoliata*, *Briza media*, *Carex caryophyllea*, *Carex flacca*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Primula veris* and *Origanum vulgare*. *Orchis mascula* was the only orchid species recorded.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the rare plant survey in 1991, and at various stages by NPWS staff over the years. There are no specific NHA survey notes that relate to lowland dry grassland or calcareous grassland, except for a reference in a memo by Jim Moore in 1995 regarding the potential inclusion of Ashfield Esker within the SAC boundary.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

4 Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1a that 2 of the 4 Stops failed in their assessment for Structures and Functions. This results in an overall 'Fail' for this attribute at this site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	2
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Map 2
Stop 02	1	Pass	Structures and Functions	Map 2
Stop 03	2	Fail	Structures and Functions	Map 2



Stop 04	2	Pass	Structures and Functions	Map 2
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Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 2 separate management units.

Stops 1 and 2 comprise Management Unit 1. This Unit is characterised by an area of north-facing esker slopes where encroachment of the grassland by Bracken and scrub species is severe. There is very little evidence of current or recent grazing or mowing in this Unit.

Management Unit 2 contains Stops 3 and 4. This is an area of hillocky ground at the end of the esker. It appears to be grazed lightly by cattle who are concentrated on the more improved pasture at the base of the hillocks.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

The principal activities affecting the conservation value of the 6210 habitat on this site is the spread of scrub and Bracken (954) and agricultural improvement (103). It is evident that the encroachment of scrub, namely *Crataegus monogyna* and *Prunus spinosa* with *Rubus fruticosus* agg, is a particularly serious issue, mainly in the area where Stops 1 and 2 are located. A comparison of 2006 aerial photographs with those from 1995 and 2000 clearly show the degree to which the area of open esker has been lost to scrub encroachment. This encroachment has more than likely occurred as a result of insufficient grazing pressures (149). No evidence of grazing, apart from rabbit grazing, was noticeable on the day of surveying.

Agricultural improvement has also occurred on the hilly landscape where Stops 3 and 4 are located. Reseeding and fertilising of the pasture south of the base of the hillocks has affected the calcareous nature of the vegetation on the hillocks. Cattle also track across the hillocks to access ring-feeder sites (171) amongst the slopes.

As there are no available notes for the grassland habitat previously occurring on the esker, it is difficult to assess the full extent of the impact from agricultural improvement (103). Further east, at Note 4, an area of grassland was visited during the survey as it appeared on the 2000 aerial photograph to be unimproved, rough grassland with some scattered scrub. Information from local NPWS staff indicated that the slopes originally had a semi-improved nature with reasonable species-richness, until the landowner cleared and reseeded the slopes early in 2006. This improvement is now clearly visible on 2006 aerial photographs. It is to be assumed that calcareous grassland habitat was lost at this location.

Another, potential, threat to the esker site comes from outside the SAC boundary. It is possible that pressure to quarry the esker for sand and gravel (301) will increase, as other quarries in the locality of the SAC come to the end of their productive life. The impact is currently assessed as 'Neutral' (O) but any extraction activities would obviously be regarded as an 'Irreparable, negative influence' (-2).

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	C
954	Biocœnotic evolution: invasion by a species	-1	A
103	Cultivation: agricultural improvement	-1	B
149	Grazing: undergrazing	-1	B
301	Sand & gravel extraction: quarries	0	D

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**

The most immediate management issue of concern for the 6210 habitat at this site is the control and management of the encroaching scrub and Bracken on the slopes around Stops 1 and 2. With shallow, sloping, calcareous soils, this is the most likely area on this part of the Clara Bog site to produce good grassland of the 6210 category. However, when a comparison is made between aerial photographs from 1995, 2000, and 2006, it is clear that there has been a significant loss of open grassland on these slopes.

The current, uncontrolled spread of scrub and Bracken will result in further loss of this habitat if management protocols are not put in place as soon as possible. As Stops 1 and 2 were seen to contain good calcareous indicator species, it is expected that good grassland habitat could be re-established in time, if scrub and Bracken were to be removed and further encroachment prevented. A suitable grazing regime could assist in maintaining an open grassland on these slopes.

The second area requiring management attention is the hillocky ground where Stops 3 and 4 are located. The shallow soils and sloping ground in this area also carry reasonably good, but limited, calcareous indicator species. However, the reseedling and the application of fertiliser which is evident in the field at the base of the hillocks has impacted on the quality of the 6210 habitat on the slopes. Damage and disturbance levels by cattle accessing ring-feeders located on the hillocks is also a cause for concern. If the area of the hillocks were to be fenced off, and if a wide margin existed around the hillocks during the application of fertiliser on the pasture, the 6210 habitat on the hillocks would most likely improve. A suitable grazing regime for the hillocks would also be required. In addition, the management of the hedgerow at the back of the hillocks is essential to prevent encroachment of *Prunus spinosa* and *Crataegus monogyna* onto the hillocks.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

3ha of the habitat was mapped within the SAC. This is substantially lower than the 9.9ha estimated in the Natura 2000 form and would indicate a 70% loss in extent of the habitat in the last ten years. Although the extent of the habitat may have been over-estimated in the Natura 2000 form, there has, undoubtedly, been a considerable loss in the extent of the habitat due to scrub/bracken encroachment and agricultural improvements.

A comparison of the 1995 and 2005 aerial photos indicates the extent of the scrub/bracken encroachment in the area of Monitoring Stops 1 and 2, while Note 4 describes the loss due to agricultural improvement of another area that was formerly 6210 habitat. Although the extent of habitat 6210 may have been over-estimated in the Natura 2000 form, there has undoubtedly been a significant loss in extent of species-rich calcareous grassland at Clara Bog resulting in a Conservation Assessment of Unfavourable - bad for Extent.

### ***Structure and Functions:***

Of the 4 Monitoring Stops assessed, 2 Stops (50%) failed. Stop 1 failed as a result of excessive cover of scrub and Bracken, in addition to a corresponding low herb content. At Stop 3, while herb content was good (45%) and only minor quantities of Bracken occurred, the Stop failed as a result of an insufficient number of indicator species. 6 indicator species occurred, 1 short of the target number of 7.

The failure to reach the target number of indicator species may sometimes be overlooked if there are other significant features of local distinctiveness present which would reflect the good quality or value of the habitat e.g. the presence of orchids. Unfortunately, there were no orchids present at Stop 3 and significantly, *Lolium perenne* was recorded within the Stop and in the vicinity of the Stop. This reflects the agricultural improvement which was evident in the area of the Stop, and hence reflects the threat to the remaining calcareous grassland habitat. As a result, the failure to reach the target number of 7 indicator species cannot be overlooked in this instance.

Of the 2 Stops which passed, scrub species and Bracken were present in both (5% each). These species were present at all Stops, reflecting the threat to the Structures and Functions that exist from encroachment.

As 2 of the 4 Stops assessed failed this assessment, resulting in a 50% failure rate, the Structures and Functions of the 6210 habitat at this site are described as being Unfavourable - bad.

### ***Future Prospects:***

There has been a loss in extent of the 6210 habitat at Clara Bog SAC. This is seen to be

very significant as the original area of the habitat does not seem to have been very extensive. The remaining habitat has been impacted by scrub encroachment and agricultural improvement. The lack of management regarding the encroachment issue is particularly worrying, as the esker slopes where Stops 1 and 2 are located have the potential to develop good calcareous grassland if managed correctly. Good calcareous indicator species still occur here.

The removal of scrub and the prevention of future scrub encroachment would significantly improve the quality and even add to the extent of the grassland habitat. The reduction in damaging agricultural activities would also benefit the calcareous grasslands.

However, when aerial photographs from 1995, 2000, and 2006 are examined, it is evident that there has been very little management of scrub and Bracken in recent years. As the land is in private ownership, it is also unlikely that very much remedial action will be taken in the near future. In addition, over the esker site as a whole, agricultural improvements have impacted on the grasslands at three locations (the area of Stops 3 and 4, at Note 3, and at Note 4). A reduction in this pressure is unlikely in the future.

In general, the Future Prospects for the 6210 habitat at this site are described as being Unfavourable - inadequate. There has been a loss in habitat extent in the past due to scrub encroachment and agricultural improvement. These two management issues continue to affect the remaining areas of 6210 habitat. While there is little likelihood that current management practices will change without the offer of some form of incentive to the landowner, the reasonably good presence of calcareous indicator species suggests that grassland rehabilitation would be relatively easy if changes were to occur. In addition, as there are only small areas of 6210 habitat remaining, adjusted management practices could have an immediate and positive result to the overall Extent. As a result, the Future Prospects are deemed to be Unfavourable - inadequate rather than Unfavourable - bad.

#### ***Conservation Assessment:***

There are no previous details of the location of the calcareous grassland on the esker at this site. A relevé recorded by R. Fitzgerald in 1991 refers merely to 'Erry Ridge, south of Clara'. In addition, the 4-figure grid reference recorded is not precise enough to identify the specific location of the relevé. Nonetheless, the relevé describes an unimproved esker slope, facing south, with a reasonably good species diversity. Using the current assessment criteria, 8 indicator species were recorded. The only south-facing esker slope with grassland remaining today, is that described in Note 3 and these slopes have been agriculturally improved. It is not certain if this is the location of the relevé recorded in 1991.

In the absence of any previous information on either the Extent or the Structures and Functions of the 6210 habitat at the site, the current assessment was made based on the field visit and on the examination of aerial photographs from 1995, 2000, and 2006.

The results of the assessment indicate that the previous Extent of the 6210 habitat on this site could not have been very widespread. The current Extent of the habitat is even more limited as it is evident from aerial photographs that loss of habitat to dense scrub has

occurred. Assessing 1995 and 2000 aerial photographs, it appears that loss of unimproved grassland to agricultural improvement may also have occurred at Note 4, although there are no details available on the original habitat type for that area to confirm such a loss.

The Structures and Functions of the habitat were also seen to fail in their assessment. The condition of the grassland was seen to be affected by scrub encroachment and by agricultural activities. The removal of scrub, in particular, and the prevention of future scrub encroachment would significantly improve the quality and even add to the extent of the grassland habitat on the site. However, as there has been very little management of this area in recent years, and as the land is in private ownership, it is unlikely that very much remedial action will be taken in the near future unless incentives are put in place.

Given the loss of habitat over the last 10 years, due mainly to the continuing encroachment by scrub and Bracken and the impact from agricultural improvement, the Future Prospects for the 6210 habitat at Clara Bog SAC are not good. As a result, the overall Conservation Assessment for the site are described as being Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
		Extent	
	Future Prospects		
		Structure and Function	
			<i>Unfavourable - bad</i>

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

In this area of scrub encroachment, small narrow strips of calcareous grassland of various quality remain between the scrub. The area at Note 1 is dominated by grasses (60% cover), including *Anthoxanthum odoratum* and *Dactylis glomerata* with *Festuca rubra* also occurring. Herbs present include *Lotus corniculatus*, *Origanum vulgare*, *Carex flacca*, *Plantago lanceolata*, *Plantago major*, *Centaurea nigra*, *Trifolium repens*, *Luzula campestris*, *Brachypodium sylvaticum* and *Rubus fruticosus* agg..

**Note 2:**

This note area is located at the end of the trackway which leads down slope from the site access point to the deeper soil at the base of the esker. Grasses occupy 80% cover (*Anthoxanthum odoratum*, *Dactylis glomerata*, and *Holcus lanatus*). Herbs include *Plantago lanceolata*, *Primula veris*, *Lotus corniculatus*, *Galium verum*, *Cerastium fontanum*, *Veronica chamaedrys* and *Lathyrus pratensis*. The grassy patch is enclosed on three sides by encroaching scrub.

**Note 3:**

The esker slopes described in Stops 1 and 2 drop away to the north, down to an hollow where deeper soil predominates. The deeper soils and previous enrichment across this hollow have resulted in a grass dominated flora (80% grasses).

The slopes of the esker which overlook the hollow to the north, also show signs of agricultural improvement. The vegetation consists primarily of a mixture of *Anthoxanthum odoratum*, *Dactylis glomerata*, *Holcus lanatus*, *Poa pratensis* and *Festuca rubra* with some *Lolium perenne*. Herbs present include *Plantago lanceolata*, *Ranunculus bulbosus*, *Lathyrus pratensis*, *Potentilla reptans*, *Achillea millefolium*, *Luzula campestris* and *Hypochoeris radicata*. Closer to the more mature scrub of *Crataegus monogyna*, which appears to be encroaching down the slopes, *Glechoma hederacea* also occurs.

**Note 4:**

This area of grassland was visited as it appeared on the 2000 aerial photograph to be unimproved, rough grassland with some scattered scrub. There were no previous habitat notes for this area.

Information from local NPWS staff indicated that the slopes had been semi-improved, but relatively species-rich, until the landowner cleared and reseeded the slopes early in 2006. This improvement is now clearly visible on 2006 aerial photographs.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop is located on the gradual northwest-facing slopes of the esker. The Stop is situated adjacent to the edge of dense scrub, close to the summit of the esker.

Within the Monitoring Stop, herb content was low at 30%. 7 calcareous indicator species were recorded and while no listed negative indicators species occurred, there was an excessive presence of *Senecio jacobea* (O) and *Rubus fruticosus* agg. (F). In addition to these species, *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Dactylis glomerata*, *Veronica chamaedrys*, *Lathyrus pratensis*, *Centaurea nigra*, and *Luzula campestris* also occurred.

Scrub is represented within the Stop by young, scattered stems of *Prunus spinosa*, reaching between 60-150cm. Young seedlings of *Rubus fruticosus* also occur. The scrub outside the Monitoring Stop is dense and is impenetrable in places. It is dominated by *Crataegus monogyna* and *Prunus spinosa* with some *Rubus fruticosus*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Veronica chamaedrys*, *Centaurea nigra*, and *Conopodium majus*..

Grazing is light with rabbit droppings offering the only indications to the type of grazers on the site.

Due to the low herb content and the excessive cover of scrub species, this Stop is deemed to 'Fail' its assessment of Structures and Functions.



**Monitoring Stop 2:**

This Monitoring Stop is located beside the track that leads from the entrance gate down the steep slopes of the esker to the improved pasture at the base. Apart from occasional rabbit droppings, there are no other signs of current management activities.

*Plantago media* is abundant in patches and is taken to be a local negative indicator. Local NPWS staff indicate that some of the surface soil was stripped away in recent years and recolonisation of the disturbed soil has occurred.

Within the Stop, herb cover was reasonably good (45%) and species diversity is relatively high with 10 indicator species occurring. In addition to the indicator species, *Anthoxanthum odoratum*, *Festuca rubra*, *Cynosurus cristatus*, *Achillea millefolium*, *Luzula campestris*, *Cerastium fontanum*, *Centaurea nigra*, *Hypochoeris radicata*, and *Lathyrus pratensis* also occur.

Outside the Stop, additional species along the disturbed soil of the adjacent trackway include *Carlina vulgaris*, *Plantago media*, and seedlings of *Aquilegia vulgaris*. Young seedlings and saplings of *Crataegus monogyna* are also well scattered throughout.

While scrub covers 5% of the area within the Stop, outside the Stop scrub encroachment is a serious problem, reaching to 50% across this side of the esker slopes. Older mature scrub has spread into open grassland areas and frequent young seedlings and saplings of *Prunus spinosa* and *Crataegus monogyna* occur throughout.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 3:**

This Monitoring Stop is located in an area of low esker-type hillocks at the northern end of an improved pasture field. The slopes and summits of most of these hillocks contain thin calcareous soil with unimproved grassland. The north western slopes have a more natural appearance.

Areas of disturbance occur between the hillocks, however, which indicate past and recent use as ring-feeder sites. Enrichment and surface disturbance has occurred in these areas as a result. Scrub encroachment from the hedge line directly north of the hillocks is also an issue for the hillocks close to the hedge.

Within the Stop, herb content reached to 45%. However, only 6 indicator species were recorded. The negative indicator species, *Lolium perenne*, was also present, although in minor quantities. Bracken occurred, also at low percentage cover (5%).

Also occurring within the Stop are *Plantago lanceolata*, *Trifolium repens*, *Cynosurus cristatus*, *Rumex acetosella*, *Hypochoeris radicata*, *Luzula campestris*, *Veronica chamaedrys*, and *Cerastium glomeratum*.

Outside the Stop, *Urtica dioica* predominates towards the ring-feeder site with *Rumex acetosa*, *Cirsium arvense*, *Senecio jacobaea*, *Medicago sativa*, and *Bellis perennis*. Young saplings of *Prunus spinosa* are also present.

While scrub encroachment may become a factor at the hedge side of these hillocks, disturbance by cattle accessing the ring-feeder which is placed between the hillocks is more likely to be a more immediate management issue.

Due to the insufficient number of calcareous indicator species, in addition to the presence of *Lolium perenne*, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

Monitoring Stop 4:

This Monitoring Stop is located on a steep side of one of the hillocks adjacent to that described in Stop 3. Soil is shallow and patches of bare soil occur across the slope.

Within the Stop, 50% herb cover was recorded and 7 indicator species were noted. No negative indicator species occurred and scrub saplings (*Prunus spinosa*) occupied <5% cover.

Additional species present within the Stop include *Dactylis glomerata*, *Anthoxanthum odoratum*, *Leucanthemum vulgare*, *Hypochoeris radicata*, *Plantago media*, and *Plantago lanceolata*.

Outside the Stop, *Orchis mascula*, *Potentilla erecta*, *Hieracium pilosella*, *Ranunculus bulbosus*, and *Brachypodium sylvaticum* also occur.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

## **Cuilcagh - Anierin Uplands**

### **SITE DETAILS**

**Surveyed By:**              **Survey Dates:**

**Total Site Area (Ha):** 9743.2

**Area of Priority Grassland (N2000) (Ha):** Area not given - unknown if habitat is present.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**

Cavan

Leitrim

**6" Sheets:**

CV004, CV005, CV006, CV007,  
CV008, LE018, LE019, LE020, LE021,  
LE022.

**Digital Aerial Photos (Tile Nos.):**

O1080-d, O1081-c, O1141-b, O1141-d, O1142-a, O1142-c, O1142-d, O1143-c, O1143-d, O1144-c, O1201-a, O1201-b, O1201-c, O1201-d, O1202-c, O1203-a, O1203-b, O1203-d, O1204-a, O1204-b, O1204-c, O1204-d, O1205-a, O1205-c, O1267-a, O1267-b, O1268-a, O1268-b, O1268-c, O1268-d, O1269-a, O1269-b, O1269-c, O1269-d, O1270-a, O1270-b, O1270-c, O1336-a, O1336-b, O1336-c, O1336-d, O1337-a, O1337-b, O1337-c, O1337-d, O1338-a, O1338-b, O1338-c, O1338-d, O1339-a, O1339-c, O1404-b, O1404-d, O1405-a, O1405-b, O1405-c, O1405-d, O1406-a, O1406-b, O1406-c, O1407-a, O1407-b, O1471-a, O1471-b, O1471-c, O1472-a.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

000584

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

This site follows a series of shale uplands in the counties of Cavan and Leitrim, including to the north Cuilcagh Mountain on the border with Northern Ireland, Benbrack, Bencroy and to the south Slieve Anierin, rising above Lough Allen. It links the following pre-existing Areas of Scientific Interest: Bellavally Mountain, Cuilcagh Mountain and Lough Cratty Bog, Moneenterriff Cliffs and Levenakilla Bog. The site is of special interest because of its geology, physiography and upland flora and fauna.

Geological interest is comprised of the complete representation of the Carboniferous Leitrim Group, including richly fossiliferous sequences of sandstones, shales and mudstones, while physiographical interest relates to various active processes, notably slope weathering, as well as the presence of peat and pseudo-karst features. The total sequence on the Upper Cuilcagh area provides an excellent section through approximately 560 m of the Leitrim Group of Carboniferous rocks. On the lower ground, particularly on east Cuilcagh, a series of potholes or shakeholes (dry vertical shafts) and sinks (shafts and surface water plunges) have developed on limestone. Pollnagallun is one of these. Landforms due to past and present processes are also noticeable and include periglacial rock shattering throughout the area, associated blockfields at the edges (Moneenterriff), rock slides throughout and bog flows.

The biological interest of the site is associated with the presence of one of the largest expanses of intact mountain blanket bog in Ireland (seen at Cratty's Lough at the north-east of the site), and also with upland grasslands on the steepest slopes of the peaks, fine examples of dry heath on the less steep slopes of these peaks and a gradation from these to wet heaths and wet rush (*Juncus* spp.) grasslands.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland within the site as follows - upland grassland frequently merges with the heath community and is dominated by Mat-grass (*Nardus stricta*) and Bent Grasses (*Agrostis* spp.) and in places is considered to be species rich.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form contain no description of species rich *Nardus* grasslands as it is not known whether the site contains the habitat or not but it is thought that it is likely to occur.

#### *Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1995 NHA survey.

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.

## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**



## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

## **Lough Fingall Complex**

### **SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Rosaleen Dwyer            01/06/2006  
Faith Wilson  
Willie Crowley

**Total Site Area (Ha):** 579.53

**Area of Priority Grassland (N2000) (Ha):** 28 ha crude estimate.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                      **Discovery Sheet No:**        **6" Sheets:**  
Galway                        52                                GA103.

**Digital Aerial Photos (Tile Nos.):**

O3570-b, O3570-d, O3571-a, O3571-b, O3571-c, O3571-d, O3626-b, O3627-a, 3627-b.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

000606

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This site is situated immediately south-east of Ballindereen and within 2-3 km of Galway Bay. It is within the stretch of flat low-lying bare limestones known as the Ardahan limestones, which extend from the foot of the Burren hills northwards towards Craughwell. The site comprises a complex of habitats, the dominant being turloughs and limestone pavement, both of which are priority Annex I habitats on the EU Habitats Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis describes the grassland as follows: Limestone pavement occurs throughout the site. It varies from the classic bare open pavement, with little vegetation, to pavement and shattered limestone blocks interspersed with calcareous grassland, heath, turlough and scrub. A rich and diverse flora occurs, with many of the typical Burren species represented - Bloody Crane's-bill (*Geranium sanguineum*), Herb-Robert (*G. robertianum*), Rustyback (*Ceterach officinarum*), Burnet Rose (*Rosa pimpinellifolia*), Wood Sage (*Teucrium scorodonia*) and the rarer species Spring Gentian (*Gentiana verna*) and Mountain Avens (*Dryas octopetala*). Four further habitats listed on Annex I of the EU Habitats Directive occur on the site - orchid-rich calcareous grassland, Cladium fen, two priority habitats, juniper scrub and lowland alpine heath. Orchid species present include Fly Orchid (*Ophrys insectifera*), Lesser Butterfly-orchid (*Platanthera bifolia*), Early-purple Orchid (*Orchis mascula*) and several *Dactylorhiza* species. In the past, the scarce Dense-flowered Orchid (*Neotinea maculata*) has been recorded from the site.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Patches of dry calcareous grassland occur scattered throughout the site in association with limestone paving and areas of heath. It is usually species-rich, even in areas, which have been fertilised in the past. Orchids are fairly widespread, with *Dactylorhiza fuchsii*, *Dactylorhiza maculata*, *Orchis mascula*, *Ophrys insectifera* and *Platanthera bifolia* recorded in recent surveys. In the past the scarce *Neotinea maculata* has been recorded.

#### *Description based on the 2006 Survey :*

During the 2006 survey, good quality calcareous grassland was seen to occur. Areas noted were small in size and were scattered amongst areas of limestone pavement, scrub, and semi-improved fields. A good range of calcareous indicator species were noted which include *Antennaria dioica*, *Anthyllis vulneraria*, *Avenula pubescens*, *Blackstonia perfoliata*, *Briza media*, *Carex caryophyllea*, *Carex flacca*, *Carlina vulgaris*, *Daucus carota*, *Galium verum*, *Hieracium pilosella*, *Leontodon hispidus*, *Linum catharticum*, *Lotus corniculatus*, *Primula veris*, *Ranunculus bulbosus* and *Sanguisorba minor*. The western indicator *Geranium sanguineum* was also noted. Orchids recorded were *Listera ovata*, *Orchis mascula*, and several unidentified budding orchid spp.

In the north eastern corner, the grassland occurs as small calcareous fields of pasture containing varying quantities of exposed rock. This area is showing early signs of

encroachment by *Pteridium aquilinum* and scrub species. The shrub *Rosa pimpinellifolia* is also spreading in some of these small fields.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was first surveyed during the 1994 NHA survey. It was revisited in 1995 and 1996 by NPWS staff and again in 1999.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Structures and Functions were assessed at 8 Monitoring Stops. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. Of the 8 Stops, 5 passed the assessment of Structures and Functions. 3 Stops failed, Stops 3, 4, and 5. The primary cause was seen to be encroachment by Bracken.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	4
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	5
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 2
Stop 02	2	Pass	Structures and Functions	Map 2
Stop 03	2	Fail	Structures and Functions	Map 2
Stop 04	2	Fail	Structures and Functions	Map 2
Stop 05	2	Fail	Structures and Functions	Map 2
Stop 06	3	Pass	Structures and Functions	Map 2



Stop 07	3	Pass	Structures and Functions	Map 2
Stop 08	4	Pass	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 4 separate management units.

Management Unit 1 contains Stop 1. This is a medium sized meadow which is managed by mowing. The sward had not yet been cut on the day of survey and height averaged at 35cm. While grasses were frequent, calcareous indicators were present and *Orchis mascula* spikes were scattered.

Management Unit 2 contains Stops 2, 3, 4, and 5. This Management Unit is characterised by small open fields scattered throughout areas of scrub and limestone pavement. Access from the fields to the open grassland is unhindered but vehicular access is generally limited.

Management Unit 3 contains Stops 6 and 7. Although Stop 6 is a sloping field generally free of rocks and Stop 7 is a rocky hillock, both areas are grazed and well managed. Stop 6 lies just outside the SAC boundary.

Management Unit 4 contains Stop 8. This is located in an open landscape of limestone pavement and calcareous grassland mosaic. Grazing patterns are medium to heavy although overgrazing is not an issue.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

Evidence of significant agricultural improvement was not noted as occurring on this site. The main threats to the grassland habitat centre on levels of grazing/mowing, coupled with the spread of Bracken. This was noted to be an issue mainly in the north eastern section of the site where encroachment by Bracken (954) was seen to result in the failure of the habitat's Structures and Functions for that location.

Grazing (140) occurs across the site. Except for the north eastern section where a lack of sufficient grazing (149) may be the cause of Bracken encroachment, pressures appear to be maintaining good quality grassland at other locations. Cattle were seen to be the primary grazers. Mowing (102) was also seen to be a management tool at Stop 1, where one field was seen to be managed by this activity.

Removal of scrub (102) was also noted in a corner of the site along the north eastern boundary close to Lough Nahaaly. While not directly affecting the grassland habitat at the moment, further advancements into the SAC would begin to cause an effect and should be closely monitored.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
102	Cultivation: mowing/cutting	1	C
140	Grazing	1	B
149	Grazing: undergrazing	-1	B
152	Restructuring agricultural land holding: removal of scrub	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The primary management objective would be to ensure that current level of management on most of the site is maintained. The specific area requiring immediate management input is in the north eastern corner. The spread of Bracken, and potentially scrub, needs to be controlled and monitored to ensure that grassland habitat in this corner of the site is not lost. If Bracken continues to spread, loss of grassland habitat will occur in this location. Scrub removal activities also need to be monitored along the SAC boundary to prevent further encroachment into the grassland area.

Across the remainder of those areas of the site which could be visited during the 2006

survey, current management activities should be maintained and monitored to ensure the continued existence of the good quality grassland noted.

## **CONSERVATION STATUS**

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and is not accurately mapped from aerial photographs. This is because of its patchy distribution as it forms a mosaic with, and is not easily distinguishable from, calcareous heath and limestone pavement.

Thus, the area of the habitat is crudely estimated to be 5% of the SAC (606ha), which is equal to approximately 30ha. The NATURA 2000 explanatory notes crudely estimate that 28ha of the habitat occurs within the SAC, which is similar to the current estimate. No areas of substantially improved grassland on areas formerly described as habitat 6210 were noted during the survey and a comparison of the aerial photographs from the 1995, 2000 and 2005 series does not show up any significant loss in the habitat either. However, as can be seen from the results of the Structure and Functions assessment, some of the calcareous grassland is under threat from scrub encroachment. A loss in Extent can be expected in the future therefore, if management measures are not put in place immediately.

As there would not appear to be any loss of habitat within the site since it was first designated in 1999, the Extent of calcareous grassland in Lough Fingall cSAC is thus described as being Favourable.

### ***Structure and Functions:***

Structures and Functions were assessed at all 8 Monitoring Stops. 5 of these were seen to pass the assessment process. 3 Stops failed the assessment, Stops 3, 4, and 5. These are located in the north eastern corner of the site, in an area of scrub, limestone pavement, and small patches of open grassland.

In the Stops which passed, herb content was good, ranging from 40% in Stop 1 to 70% in Stop 8. A good range of indicator species were also noted, with the highest number being recorded in Stop 6 where 16 calcareous species occurred. While no negative indicator species or scrub/Bracken were recorded, Stop 7 recorded a percentage cover of 5% for *Rosa pimpinellifolia*.

In the 3 Stops which failed the assessment, Bracken was seen to be present in all cases. Excessive percentages occurred within Stop 3 (20%) and Stop 4 (10%), with only 5% cover occurring in Stop 5. Cover of Bracken outside the Stops, however, was higher, rising to 50% in the vicinity of Stop 3.

While sufficient numbers of indicator species occurred in all 3 failed Stops, herb content was low in Stop 3 (30%) and Stop 5 (20%). Stop 4 had 10 indicator species, 60% herb cover, but had excessive cover of Bracken (10%) and also *Rosa pimpinellifolia* (15%).

Due to a failure rate of almost 40% in the assessment process, Structures and Functions at this site are described as being Unfavourable - bad.

### ***Future Prospects:***

The assessment of the Extent of 6210 habitat within this site was seen to be Favourable, in

that there has been little or no significant loss of habitat since the site was first designated in 1999. This was borne out in the fieldwork, where little evidence of extensive reseeding or fertiliser application was noted.

Unfortunately, the current condition of the grassland habitat was seen to be under threat from the encroachment of Bracken. This is true particularly in the north eastern section of the site where the spread of scrub and Bracken is noticeable. The small fields in this areas are also showing signs of encroachment by *Rosa pimpinellifolia* (see description of Stop 4).

Given that few changes appear to have occurred to the Extent of the grassland on the site, it is reasonable to assume, under the current economic climate, that pressures for agricultural improvement in this area will not significantly increase in the near future. The Future Prospects could therefore be expected to be good, or Favourable. However, the condition of the habitat was seen to fail the Structures and Functions assessment.

The Future Prospects must therefore be described as being Unfavourable - inadequate. Immediate management of the encroachment issue in the north eastern part of the site would significantly improve this result while also preventing a loss in habitat occurring in the near future.

#### ***Conservation Assessment:***

The previous distribution of the 6210 habitat on this site was unknown and a crude estimate of its Extent was made at the time of designation. In addition, previously recorded NHA notes mostly describe areas of limestone pavement and semi-improved or rank grassland habitat. There are few notes referring directly to 6210 habitat.

During the current survey, an accurate determination of the habitat's Extent was difficult, as the habitat occurs in a mosaic with limestone pavement, scrub, and semi-improved fields. An estimate of 5% of the total area was determined using aerial photographs and the results of the current field survey.

An assessment of aerial photographs from 1995, 2000, and 2005, suggest that very little grassland habitat has been lost since the site was designated in 1999. The field survey also suggested that very few instances of agricultural improvement have impacted on the grassland habitat. However, 3 of the 8 Monitoring Stops were seen to fail the assessment of Structures and Functions, highlighting the issue of Bracken encroachment which is affecting the condition of the grassland. This is a problem in the north eastern corner of the site in particular.

Due mainly to the poor results of the Structures and Functions assessment, the overall Conservation Assessment of the site is described as being Unfavourable - bad. As the Stops which failed are concentrated in the north eastern section of the site, immediate management input to this area could significantly improve this overall assessment in a relatively short space of time. Lack of management will result in loss of habitat in the near future.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
Extent			
	Future Prospects		
		Structure and Function	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is a semi-improved pasture/meadow with comparatively deep soil. Vegetation is dense and is mostly grass-dominated with the following grasses occupying up to 70%: *Anthoxanthum odoratum*, *Briza media*, *Dactylis glomerata*, *Festuca rubra*, *Poa trivialis*, *Holcus lanatus*, *Avenula pubescens*, *Cynosurus cristatus*, and very small percentages of *Lolium perenne*.

Herbs include *Conopodium majus*, *Primula veris*, *Ranunculus bulbosus*, *Luzula campestris*, *Potentilla anserina*, *Plantago lanceolata*, *Ranunculus repens*, *Veronica chamaedrys*, *Centaurea nigra*, *Rumex acetosella*, *Cirsium arvense*, and *Trifolium repens*. The hedges are, for the most part, unmanaged and scattered mature shrubs of *Crataegus monogyna* and *Ulex* spp. are scattered. Cattle currently graze the meadow and frequent cowpats were noted.

**Note 2:**

Some clearing of scrub and dumping of plastic litter has occurred at the edge of the site, just within the SAC boundary.

**Note 3:**

Small limestone boulders are exposed in this area. The vegetation is more of a calcareous heath type with *Calluna vulgaris*, occurring on the soil between the boulders.

**Note 4:**

This is an area of improved grassland. Herb cover is low at 10% and species occurring include *Lolium perenne*, *Ranunculus bulbosus*, *Bellis perennis*, *Plantago lanceolata*, *Taraxacum officinale* agg., *Trifolium repens*, and *Cirsium vulgare*. Unlike other fields, this field had vehicular access, perhaps as a result of the overhead power lines.

**Note 5:**

Agricultural improvements were noted in this area. However, subsequent examination of digital 1995 aerial photographs indicate that these improvements were more than likely in place when the site was designated in 1999.

Species noted as occurring include *Poa pratensis*, *Cynosurus cristatus*, *Dactylis glomerata*, *Lolium perenne*, *Plantago lanceolata*, *Cirsium arvense*, *Ranunculus repens*, *Rumex obtusifolius*, *Urtica dioica*, *Trifolium pratense*, *Centaurea nigra*, *Potentilla erecta*, *Cerastium fontanum*, *Stellaria media*, *Daucus carota*, *Potentilla anserina*, *Plantago media*, and *Bellis perennis*.

## Note 6:

This grassland displayed a noticeable heath-like element. Limestone occupied 40% of the area and the area is grazed by sheep. Grasses included *Anthoxanthum odoratum*, *Festuca rubra*, *Briza media*, and *Cynosurus cristatus*. Herbs included *Galium saxatile*, *Antennaria dioica*, *Polygala serpyllifolia*, *Lotus corniculatus*, *Hypericum pulchrum*, *Potentilla erecta*, *Trifolium repens*, *Geranium sanguineum*, *Achillea millefolium*, *Succisa pratensis*, *Hieracium pilosella*, *Thymus praecox*, *Ranunculus bulbosus*, *Cerastium fontanum*, *Anthyllis vulneraria*, *Carlina vulgaris*, and *Carex flacca*.

Short-cropped shrubs of *Calluna vulgaris* also occurred, as did scattered seedlings of *Prunus spinosa*. *Rosa pimpinellifolia* was also frequent in the area. No orchids were noted.

## Note 7:

This is an area of grassland occurring above the wet grassland and grazed fen. It is seriously encroached, with up to 40% cover of *Prunus spinosa*. Limestone rock is estimated at 20% cover. Species noted as occurring include *Antennaria dioica*, *Lotus corniculatus*, *Anthoxanthum odoratum*, *Briza media*, *Polygala serpyllifolia*, *Geranium sanguineum*, *Rosa pimpinellifolia*, *Succisa pratensis*, and *Potentilla reptans*.

## Note 8:

This is a heavily grazed area of improved grassland which has a heath-like element to the vegetation. Grasses include *Festuca rubra*, *Lolium perenne*, *Galium saxatile*, *Cirsium arvense*, *Achillea millefolium*, *Bellis perennis*, *Trifolium repens*, and *Ranunculus repens*. The vegetation has a high moss content.



## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Stop is located in a meadow which occurs at the edge of the road. The meadow is managed by mowing and had not yet been cut at the time of surveying. The sward stood at 35cm high.

Within the Stop, herb cover was good (40%) and 6 indicator species were recorded. There were no negative indicators and scrub/Bracken did not occur. Additional species within the Stop are typical of semi-natural meadows which have not been reseeded with aggressively competitive grass species. Species recorded include *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Dactylis glomerata*, *Holcus lanatus*, *Carex flacca*, *Centaurea nigra*, *Lathyrus pratensis*, *Plantago lanceolata*, *Potentilla anserina*, *Ranunculus repens*, *Taraxacum officinale* agg., and *Trifolium pratense*. A single spoke of *Orchis mascula* also occurred (see relevé 1 for full details).

Due to the insufficient number of indicator species, this Stop would normally be seen to have failed the assessment for Structures and Functions. However, the failure to reach the target number of indicator species may sometimes be overlooked if there are other significant features of local distinctiveness present which would reflect the good quality or value of the habitat e.g. the presence of orchids. *Orchis mascula* occurred both within the Stops and at scattered locations in the rest of the field. When the general good quality of the habitat in this location is also taken into account, the Monitoring Stop is deemed to pass the assessment of Structures and Functions.

### Monitoring Stop 2:

This Stop is located in an area of limestone pavement and grassland. While exposed limestone rock occupies up to 30% of the area of the Stop, soil volumes and depth between the rocks is sufficient to support reasonably good calcareous grassland. Grazing pressures are at a medium level.

Within the Stop, herb content is high (60%) and 13 indicator species were recorded. 1 negative indicator also occurred, *Cirsium dissectum* (R), but cover was not excessive. No scrub/Bracken occurred.

Additional species occurring within the Stop are *Orchis mascula*, *Achillea millefolium*, *Euphrasia* spp., *Hypericum pulchrum*, *Hypochoeris radicata*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Teucrium scorodonia*, *Thymus praecox*, and *Trifolium pratense*. Shrubby species include *Juniperus communis*, *Rosa pimpinellifolia*, and *Calluna vulgaris* (see relevé 2 for full details).

This Stop is deemed to have passed the assessment for Structures and Functions.

**Monitoring Stop 3:**

This Stop is located in a part of the site where Bracken is spreading in the grassland. Scrub (*Corylus avellana*, *Ulex* spp., and *Crataegus monogyna*) is also spreading from the field margins. *Avenula pubescens* is visibly dominant in the area. Grazing pressures appear to be light.

Within the Stop, herb content is low at 30% but 8 indicator species were recorded nonetheless. No negative indicator species were noted but Bracken occupies 20% cover within the Stop. Outside the Stop, Bracken cover rises to 50%, becoming Dense Bracken (Habitat Code HD1, Fossitt 2000).

Also occurring within the Stop are *Anthoxanthum odoratum*, *Dactylis glomerata*, *Lathyrus pratensis*, *Luzula sylvatica*, and *Euphrasia* spp. Outside the Stop, *Plantago lanceolata*, *Cynosurus cristatus*, and *Daucus carota* also occur.

Due to the low herb content and the excessive cover of Bracken, this Stop is deemed to have failed the assessment of Structures and Functions.

**Monitoring Stop 4:**

This Stop is located close to the north eastern boundary of the site. Scrub and Bracken is spreading in the small fields that characterise this area. Apart from the encroachment issue, the grassland here is species-rich and is comparatively good condition. A slight heath-like element exists. A local feature is the frequency of *Rosa pimpinellifolia* in these small fields, almost becoming an encroachment issue in the otherwise intact, herb-rich, grassland. Current grazing pressures appear to be light.

Within the Stop, herb cover is high (60%) and 10 indicator species are recorded. No negative indicator species occur but cover of Bracken is seen to be excessive at 10% within the Stop and up to 25% in a larger area of 5m<sup>2</sup>. Also occurring within the Stop are *Anthoxanthum odoratum* (F), *Dactylis glomerata* (R), *Achillea millefolium* (R), *Succisa pratensis* (O), *Luzula campestris* (O), *Geranium molle* (R), *Plantago lanceolata* (R), and *Hypochoeris radicata* (O) (see relevé 3 for full details)..

Outside the Stop, additional species include *Primula veris*, *Geranium sanguineum*, *Potentilla erecta*, short *Calluna vulgaris*, *Polygala serpyllifolia*, *Hypericum pulchrum*, and *Orchis mascula*.

Due to the excessive cover of Bracken, this Stop is deemed to have failed the assessment of Structures and Functions.

**Monitoring Stop 5:**

This part of the site has areas of sloping rocky grassland showing signs of medium grazing pressures. Old poach holes are evident, from last year's winter grazing.

Within the Stop, herb cover is low (20%) but 8 indicator species were recorded. No negative indicator species were recorded and while only 5% scrub or Bracken occurred within the Stop, cover of Bracken rises to 10% outside the Stop.

Also occurring within the Stop are *Achillea millefolium*, *Hypochoeris radicata*, *Taraxacum officinale* agg., *Plantago lanceolata*, *Veronica chamaedrys*, *Potentilla erecta*, *Viola* spp., *Trifolium repens*, *Cirsium arvense*, *Holcus lanatus*, and *Anthoxanthum odoratum* (see relevé 4 for full details).

Due to the low herb content, this Stop is deemed to have failed the assessment of Structures and Functions.

**Monitoring Stop 6:**

This Stop is located in a gently sloping field outside the boundary of the cSAC. It is an excellent example of species-rich calcareous grassland and its inclusion into the site is recommended. Exposed limestone rock occupies <10% of the area of the Stop. Grazing pressures are moderate but no disturbance to the soil or vegetation was noted.

Within the Stop, herb content was high at 50% and 16 indicator species were recorded. No negative indicator species or scrub/Bracken occurs either in the Stop or in the field itself. 19 additional species occur (see relevé 5 for details) and *Orchis mascula* is scattered frequently across the field.

This Stop is deemed to have passed the assessment for Structures and Functions.

**Monitoring Stop 7:**

This is a good example of rocky limestone grassland. Recent cowpats were evident and grazing pressures, though currently light, appear sufficient to maintain the good quality of the grassland. A degree of disturbance was noted at the base of the slope, where rocks and stones have been piled up. Adjacent to the base of the slopes, grassland occurring on deeper soils has been improved (see Note 5).

Within the Stop, herb content is high (50%) and 11 indicator species are recorded. No negative indicator species or scrub/Bracken were noted. *Rosa pimpinellifolia* occupies 5% cover. 14 additional species also occurred within the Stop (see relevé 6 for details).

Outside the Stop, mature *Crataegus monogyna* are scattered and the occasional *Juniperus communis* was noted. Additional herbs recorded in the vicinity include *Carlina vulgaris*, *Geranium sanguineum*, *Potentilla erecta*, and occasional *Orchis mascula*.

This Stop is deemed to have passed the assessment for Structures and Functions.

**Monitoring Stop 8:**

Stop 8 is located in a large open field with good calcareous grassland, exposed limestone pavement, and scattered limestone rock. The Stop occurs on an elevated, dry, grassland area, overlooking limestone pavement which is intersected with patches of low-lying wet grassland. The 6210 grassland is in good condition and *Orchis mascula* is scattered throughout. Medium grazing pressures occur and dried cowpats and rabbit droppings are distributed throughout.

Within the Stop, rock occupies <10% cover. Herb content is high (70%) and 13 indicator species were recorded. No negative indicator species or scrub/Bracken was noted. In addition to the 13 indicator species, also occurring were *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Succisa pratensis*, *Hypericum pulchrum*, *Polygala serpyllifolia*, and *Luzula campestris* (see relevé 7 for details).

Outside the Stop, short-cropped *Calluna vulgaris* occurred with *Linum catharticum*, *Cerastium glomerata*, *Trifolium pratense*, *Bellis perennis*, *Juniperus communis*, and flowering *Gentiana verna*. Lapwing were resting on the lower, wetter grassland and cuckoo were also heard in the vicinity.

This Stop is deemed to have passed the assessment for Structures and Functions.

## **Bunduff Lough and Machair/Trawalua/Mullaghmore**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	15/08/2006
Willie Crowley	16/08/2006

**Total Site Area (Ha):** 4352

**Area of Priority Grassland (N2000) (Ha):** 2ha probably less.

**Area of Priority Grassland 2006 (Ha)\*:** 0.9

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Sligo	16	SL002, SL003, SL005.

#### **Digital Aerial Photos (Tile Nos.):**

O0689-c, O0689-d, O0711-a, O0711-b, O0711-c, O0711-d, O0712-a, O0712-b, O0712-c, O0735-b, O0735-d, O0736-a, O0736-b, O0736-c.

#### **Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

#### **SAC Site Code:**

000625

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This site is situated on the south side of Donegal Bay, 5 km south-west of Bundoran. The part of the site west of Mullaghmore Head is very exposed to the prevailing wind and swells from the Atlantic, whereas the Head itself affords moderate shelter to the eastern part of the site. The underlying geology is of sedimentary rocks including limestone, shale and sandstone. Windblown sand is common in places, covering much of the underlying rocks and shingle.

The site is a candidate SAC selected for fixed dune, machair and orchid-rich grassland, all priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for other habitats listed on Annex I of the directive - alkaline fen, reefs, Marram dunes, large shallow inlets and bays and tidal mudflats. In addition, the site is also selected as a candidate SAC for the liverwort, Petalwort, a plant listed on Annex II of the E.U. Habitats Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

No description of the calcareous grassland within the site was given in the site synopsis.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This habitat is found in fragmentary form in a small area to the north of Bunduff Lough, where it forms a mosaic with heath and dune grassland. The area in which the habitat occurs is a sloping area in which the substrate consists of well drained calcareous sand. The associated species-rich flora contains elements of dry grassland and dune vegetation. Characteristic species of the habitat present in this area include *Anthyllis vulneraria*, *Blackstonia perfoliata*, *Carex pulicaris*, *Galium verum*, *Briza media*, *Bellis perennis*, *Thymus praecox*, *Antennaria dioica*, *Avenula pubescens*, *Danthonia decumbens*, *Pilosella officinarum*, *Centaurea nigra*, *Leucanthemum vulgare*, *Linum catharticum*, *Polygala vulgaris* and *Lotus corniculatus*. *Cuscuta epithymum*, a rare species that is parasitic on *Thymus praecox* also occurs in this vegetation type. Mosses such as *Ctenidium molluscum*, *Ditrichum flexicaule*, *Pseudoscleropodium purum* and *Rhytidiadelphus squarrosus* are also a common component of the vegetation. A number of orchids have been recorded growing in the habitat recently. These include *Coeloglossum viride*, *Gymnadenia conopsea* and *Listera ovata* (Crawford et. al. 1996). The bee orchid *Ophrys apifera* has been recorded from the site recently and may well occur in the habitat at this site.

#### *Description based on the 2006 Survey :*

The 2006 survey found that the area of calcareous grassland within the site is very small and is restricted to the immediate vicinity of outcropping limestone bedrock adjacent to Bunduff Lough. The following indicator species were recorded - *Campanula rotundifolia*, *Hieracium pilosella*, *Linum catharticum*, *Lotus corniculatus*, and less frequently *Anthyllis vulneraria*, *Briza media*, *Carex flacca*, *Galium verum*, *Gentianella campestris*, *Koeleria macrantha*, *Leontodon hispidus* and an unidentified seeding/fruitletting orchid species.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

The complete NHA file for this site is currently missing from Ely Place. Information on the location and extent of orchid-rich calcareous grassland within this site was gleaned solely from the MPSU habitat map. No site notes or site maps were available.

## SITE MONITORING AND MANAGEMENT UNITS

Given that there were no NHA notes or baseline data available for this site, the MPSU habitat map was used to identify the area of calcareous grassland within the site. This map indicated that there was calcareous grassland present along the coastline of the Mullaghmore peninsula and in an area adjacent to Bunduff Lough. As a result, two target areas were chosen for survey. The Monitoring Stops and Notes recorded by the Coastal Monitoring Project (2006) were also used to determine the extent of windblown sand and fixed dune in the site near Bunduff Lough as these habitats are contiguous with the area of calcareous grassland. The areas identified as calcareous grassland around Mullaghmore Head were surveyed and found to be either coastal grassland or coastal heath so no monitoring stops were conducted there (see Grassland Monitoring Project 2006 site notes and note locations on Map 2).

Four Monitoring Stops were conducted within the site in the other survey area which had been identified as calcareous grassland (see Table 1a). This is adjacent to Bunduff Lough and the locations of the Monitoring Stops are depicted on Map 2 (sheets 1 - 2). This area was divided into four management units. Two of the Monitoring Stops were used to determine the Extent of calcareous grassland within the site and two were used to determine the Structures and Functions of the calcareous grassland. One of the two Monitoring Stops used to assess Structures and Functions failed resulting in an overall Fail for the Structures and Functions of the site. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	4
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	1
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 2 of 2
Stop 02	2	Fail	Structures and Functions	Sheet 2 of 2
Stop 03	3	Fail	Extent	Sheet 2 of 2
Stop 04	4	Fail	Extent	Sheet 2 of 2

The site was divided into four management units based on existing field boundaries.



## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Two of the areas examined (Monitoring Stops 3 and 4) showed signs of agricultural improvement and had either been fertilised (120) or reseeded. One of the fields appeared to be in good condition (Monitoring Stop 2) but there was an abundance of *Senecio jacobaea* present. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
120	Fertilisation	-2	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The majority of the calcareous grassland within the site has been subject to some improvement and fertilisation resulting in a loss of species diversity within the site and the spread of agricultural weeds such as *Senecio jacobaea*. The only areas of calcareous grassland remaining with any indicator species were on shallow soils above outcropping limestone rocks.

## **CONSERVATION STATUS**

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

Less than 1ha of the habitat was mapped within the SAC with an additional 0.1ha mapped immediately adjacent to the SAC.

The Natura 2000 explanatory notes state that habitat 6210 is limited to a small area north of Bunduff Lough, occurring over an area of 2ha in the SAC. However, the Natura notes also highlight that 2ha is likely to be an over-estimation and that the true area of the habitat is probably substantially less since the habitat occurs as a mosaic with other related habitats such as heath and dune grassland. Habitat 6210 is still found in this area of the site and it is restricted in its distribution here to the shallow soils overlying outcropping limestone bedrock. The coastal areas of the Mullaghmore Peninsula that were surveyed in 2006 are unlikely to have ever been orchid-rich calcareous grassland and are not included in this assessment.

It is thus likely that there has been little or no decrease in the extent of the habitat since the site was designated as an SAC. However, evidence of agricultural improvement was observed during the 2006 survey, most notably at Monitoring Stops 03 and 04. It is unclear (especially in the area of Stop 03) whether or not the grassland at these Stops was ever habitat 6210.

Due to the possibility of small losses in extent of habitat 6210 at the site, the Extent of species-rich calcareous grassland is described as Unfavourable - inadequate.

### ***Structure and Functions:***

One of the two Monitoring Stops used to assess Structures and Functions within the site (Monitoring Stop 2) failed due to a lack of indicator species, resulting in a 'Fail' for the Structures and Functions of the site. The Structures and Functions of the calcareous grassland within the site are thus described as Unfavourable - bad.

### ***Future Prospects:***

Two of the areas examined had been fertilised and improved to such an extent (Monitoring Stops 3 and 4) that the calcareous grassland is unlikely to recover without significant management. The other remaining areas of calcareous grassland within the site are restricted to the shallow soils above outcropping limestone. For this reason the Future Prospects are described as Unfavourable - bad.

### ***Conservation Assessment:***

Whilst the original Extent of calcareous grassland within the site is unknown, it appears that the Extent of calcareous grassland has decreased considerably and is now restricted to the shallow soils above outcropping rocks.

Even in these remaining areas, a lack of indicator species resulted in a fail for the Structures and Functions of one of the two Monitoring Stops conducted.

To restore the calcareous grassland within the site would require significant management and hence the overall Conservation Status Assessment for the site is described as Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
		Future Prospects	
		Structure and Function	
	Extent		

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

### Note 1:

This is an area of coastal grassland adjacent to the road. See photo 1. The sward is dominated by *Plantago maritima* (A), *Potentilla anserina* (O), *Potentilla erecta* (F), *Trifolium pratense* (F), *Ranunculus repens* (R), *Festuca rubra* (A), *Juncus articulatus* (R), *Holcus lanatus* (O), *Plantago lanceolata* (O), an unidentified orchid (R) and *Lotus corniculatus* (O). This data is presented in Quadrat 1.

The sward here is ungrazed and forms a dense mat. Below this area there is a trampled pathway with *Plantago major*, *Bellis perennis*, *Crepis capillaris*, *Prunella vulgaris* and *Hieracium* sp.

### Note 2:

This is an area of coastal grassland/heath. See photo 2. The sward is composed of *Festuca rubra* (D), *Succisa pratensis* (F), *Plantago maritima* (F), *Plantago lanceolata* (O), *Potentilla erecta* (F), *Lotus corniculatus* (O), *Holcus lanatus* (A), *Carex flacca* (R), *Cirsium dissectum* (R) and *Erica cinerea* (F). This relevé data is presented in Quadrat 2.

There is a strong heathy element to this field with frequent *Potentilla erecta* and *Erica cinerea*. *Trifolium repens* is occasional and *Armeria maritima* is present near field margins. *Potentilla anserina* is rare. This field is currently ungrazed and the sward has formed a dense mat.

### Note 3:

This is an area of closely grazed coastal heath dominated by *Calluna vulgaris* with frequent *Potentilla erecta*, *Carex flacca* (O), *Succisa pratensis* (R), *Salix repens* (O), *Lotus corniculatus* (O), *Festuca rubra* (F) and *Trifolium repens* (O). This relevé data is presented in Quadrat 3. See photo 3.

Several species of butterfly were recorded within this field - Peacock, Meadow Brown and Large White and Skylarks were also present.

### Note 4:

This is an area of coastal grassland/heath. See photo 4. At times the sward is dominated by *Cirsium dissectum* (D) with abundant *Plantago lanceolata*, *Salix repens* (F), *Potentilla erecta* (F), *Trifolium pratense* (O), *Succisa pratensis* (R), *Lotus corniculatus* (O), *Festuca rubra* (F) and *Holcus lanatus* (O). This relevé data is presented in Quadrat 4.

This grassland grades into a heathier sward of *Calluna vulgaris*, *Potentilla erecta*, *Erica cinerea*, *Carex flacca* and occasional *Juncus* sp.

Note 5:

The sward at this location is dominated by *Potentilla anserina* and *Holcus lanatus* with occasional *Cerastium fontanum*, *Juncus* sp. and *Trifolium pratense*.

Elsewhere the sward has *Potentilla erecta*, *Cerastium fontanum*, *Festuca rubra*, *Salix repens*, *Rumex acetosa*, *Vicia cracca*, *Centaurea nigra* and *Taraxacum* agg.

Note 6:

This is an area of heathy coastal grassland with *Calluna vulgaris* (F), *Erica cinerea* (O), *Potentilla erecta* (A), *Succisa pratensis* (F), *Carex flacca* (O), *Cirsium dissectum* (F), *Salix repens* (O), *Juncus* sp. (O), *Trifolium repens* (F) and *Lathyrus pratensis* (R). This relevé data is presented in Quadrat 5. This field becomes heath dominated closer to the cliffs.

Note 7:

Sward is dominated by *Potentilla anserina* at the margins. See photo 6. Elsewhere *Carex* sp., *Filipendula ulmaria*, *Holcus lanatus*, *Lathyrus pratensis*, *Cerastium fontanum*, *Centaurea nigra*, *Trifolium pratense*, *Plantago lanceolata* and *Juncus acutiflorus/articulatus* were present. This area was currently ungrazed. Closer to the cliff edge the sward becomes dominated by *Juncus* spp. with frequent *Salix repens*. *Lythrum salicaria* was present in wetter areas.

Note 8:

Most of this field is dominated by coastal heath with *Potentilla erecta* (D), *Cirsium dissectum* (A), *Plantago lanceolata* (O), *Succisa pratensis* (R), *Festuca rubra* (F), *Holcus lanatus* (O), Orchid species (R and *Carex* sp. A dense matted sward of *Carex* and *Festuca* has formed here which is springy underfoot. Small heathier clumps have *Calluna vulgaris*, *Erica cinerea*, *Lotus corniculatus*, *Succisa pratensis* and *Potentilla erecta*. *Rumex acetosa* was occasional within the sward.

Note 9:

This is an area of grassland which is tightly grazed by cattle with frequent *Senecio jacobaea*. Dominated by *Cynosurus cristatus* and *Holcus lanatus*. The closely grazed areas around rocky outcrops have *Lotus corniculatus* (F), *Plantago lanceolata* (F), *Achillea millefolium* (O), *Bellis perennis* (O), *Hieracium pilosella* (R), *Carex flacca* (R), *Euphrasia* sp. (R) and *Thymus praecox* (R). This and the next two adjoining fields to the south are all similarly vegetated and cattle roam freely between them all.

Note 10:

This is a small promontory of coastal grassland dominated by *Festuca rubra* with *Holcus lanatus*, *Plantago lanceolata* (O), *Potentilla erecta* (O), *Trifolium pratense* (O) and *Plantago maritima* (O). See photo 10. There are patches of *Urtica dioica*, *Potentilla anserina* and *Tripleurospermum maritimum* are found between hummocks on this promontory which is ungrazed. There was occasional *Armeria maritima*. There is some damage in this area by campers - remnants of a campfire are present which has burnt an area of the sward.

Note 11:

This is an area of deeper soil (off the escarpment) with a poorer species diversity than where Monitoring Stop 1 was conducted. See photo 16. The sward here is closely grazed by cattle with frequent *Senecio jacobaea* and occasional *Cirsium palustre*. The sward is composed of *Festuca rubra* (F), *Hieracium pilosella* (O), *Plantago lanceolata* (O), *Carex flacca* (O), *Potentilla erecta* (F), *Lotus corniculatus* (O), *Cynosurus cristatus* (F), *Euphrasia* sp. (R), *Prunella vulgaris* (O), *Agrostis* sp. (O), *Holcus lanatus* (R), *Trifolium pratense* (O) and *Senecio jacobaea* (O). This relevé data is presented in Quadrat 7.

Other species present in the sward outside the Quadrat include *Leucanthemum vulgare*, *Centaurea nigra*, *Cirsium palustre* and rarely *Campanula rotundifolia*. The soils here have a high proportion of sand and the fields here grade into an area of fixed dune.

Note 12:

Grassland on shallower soils on the ridged area also have more frequent *Rosa pimpinellifolia*, *Campanula rotundifolia*, *Linum catharticum*, *Succisa pratensis* and *Carex flacca*. See photo 17.

Note 13:

This is an area of semi-improved grassland. The area near the road is wetter with *Juncus acutiflorus/articulatus*, *Angelica sylvestris* and *Iris pseudacorus*. See photo 28.

Closer to the boundary with the dunes the sward is dominated by *Holcus lanatus*, *Festuca rubra* and *Plantago lanceolata* with *Cerastium fontanum* (O), *Equisetum arvense* (O), *Ranunculus repens* (O), *Trifolium pratense* (O), *Potentilla anserina* (R), *Leucanthemum vulgare* (R), *Taraxacum* agg. (F) and *Vicia cracca* (R). This relevé data is presented in Quadrat 10. This area had been recently mown.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was conducted on an area of thin soils above an escarpment/outcrop of limestone. Between this and the main body of the lagoon is a small field boundary ridge with frequent *Senecio jacobaea*. Between the escarpment and the ridge is a flooded area which may be brackish - this was previously mapped as orchid-rich calcareous grassland. This area was herb rich (40%) with ten indicator species and an unidentified orchid species present. The lack of negative indicators and scrub resulted in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Centaureum erythraea* (O), *Euphrasia* sp. (F), *Carex pulicaris* (O), *Thymus praecox* (F), *Prunella vulgaris* (O), *Danthonia decumbens* (O), *Cynosurus cristatus* (O), *Polygala serpyllifolia* (R), *Festuca rubra* (F) and *Gentianella* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 6.

The sward here is closely grazed by cattle. Other species recorded in the sward outside the Monitoring Stop include *Anagallis tenella*, *Potentilla erecta*, *Primula veris*, *Succisa pratensis*, *Centaurea nigra*, *Leucanthemum vulgare*, *Cerastium fontanum*, *Agrostis* sp., *Achillea millefolium*, *Trifolium pratense*, and more rarely *Senecio jacobaea*.

### Monitoring Stop 2:

This Monitoring Stop was located in an area with outcropping limestone rocks on the summit of a small hill. The species diversity on these thin soils is higher than in the valley between this small hill and the hedgerow to the south - east. However although the sward was herb rich (40%), there was insufficient indicator species (5) present. This results in a failure for the Structures and Functions at this location. While no listed negative indicator species were recorded, frequent *Senecio jacobaea* was noted, indicating a potential encroachment issue at this Stop by this species.

Additional species recorded within the Monitoring Stop include *Cynosurus cristatus* (F), *Euphrasia* sp. (O), *Potentilla erecta* (O), *Plantago lanceolata* (F), *Trifolium pratense* (F), *Bellis perennis* (O), *Senecio jacobaea* (O), *Rumex acetosa* (O), *Thymus praecox* (F on rocky outcrops), *Achillea millefolium* (R), *Succisa pratensis* (O) and *Prunella vulgaris* (O). The relevé data for this Monitoring Stop is presented in Quadrat 8.

Outside the Monitoring Stop there is *Galium verum* (O) and *Centaurea nigra* (F).

#### Monitoring Stop 3:

This Monitoring Stop was located in a semi-improved field. There was a planning application for a dwelling in this field. There were no indicator species recorded within this Monitoring Stop resulting in an overall 'Fail' for the Stop. Herb cover was 50% and no scrub or negative indicators were recorded.

The sward was dominated by *Festuca rubra* and *Holcus lanatus* with abundant *Plantago lanceolata*, *Trifolium pratense*, *Trifolium repens* (O), *Vicia cracca* (F), *Equisetum arvense* (O), *Leucanthemum vulgare* (O), *Veronica chamaedrys* (R), *Heracleum sphondylium* (F) and *Taraxacum* agg. (F). The relevé data for this Monitoring Stop is presented in Quadrat 9. The soil beneath this was quite sandy.

The margins of this field showed more indications of former calcareous grassland with *Galium verum*, *Campanula rotundifolia* and *Lotus corniculatus* present.

#### Monitoring Stop 4:

This Monitoring Stop was conducted in a field adjoining Note 12 which is semi-improved and less species rich. The sward is composed of *Holcus lanatus* (O), *Cynosurus cristatus* (A), *Trifolium pratense* (A), *Senecio jacobaea* (F), *Senecio vulgaris* (O), *Prunella vulgaris* (O) and *Trifolium repens* (A). The herb:grass ratio of 40% is based on the abundance of *Trifolium repens* - otherwise it would be c. 5 - 10%. Given the abundance of *Senecio jacobaea* in this field and the lack of indicator species this Stop 'Failed'. The relevé data for this Monitoring Stop is presented in Quadrat 11.

There are remnants of calcareous grassland surrounding the outcropping rocks where *Campanula rotundifolia*, *Lotus corniculatus*, *Danthonia decumbens*, *Potentilla erecta*, *Agrostis* sp., *Festuca rubra*, *Hieracium pilosella*, *Achillea millefolium* and *Gentianella* sp. are found.



## **Bray Head**

### **SITE DETAILS**

**Surveyed By:**            **Survey Dates:**

**Total Site Area (Ha):** 265.51

**Area of Priority Grassland (N2000) (Ha):**

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**6" Sheets:**

**Digital Aerial Photos (Tile Nos.):**

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

000000

**Priority Grassland Habitat Type:**        6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

### **Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

*Description given in the NATURA 2000 explanatory forms:*

*Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

**Previous surveys of relevance to the priority grassland habitats within the site:**

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.

## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*



**Cullahill Mountain****SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley  
**Survey Dates:** 06/07/2006

**Total Site Area (Ha):** 54.61

**Area of Priority Grassland (N2000) (Ha):** None given.

**Area of Priority Grassland 2006 (Ha)\*:** 21

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:** Kilkenny  
**Discovery Sheet No:** 60  
**6" Sheets:** KK003, KK004, KK008, KK009.

**Digital Aerial Photos (Tile Nos.):**

O4463-a, O4463-b.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

000831

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This site lies on a western outlier of the Castlecomer plateau, 6 km north-east of Johnstown, where the underlying limestone has been exposed relatively recently by erosion of the higher shales. The rock is in the form of an escarpment with a steep side facing the central plain (and the Cork-Dublin road) and more gradual slopes to the south-east where the shale soon appears.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: The vegetation of most of the site comprises a herb-rich grassland over limestone, in which no one species predominates. The coexistence of about 5 grass species, 2 sedges and 20 broad-leaved herbs is one of the most interesting features of the vegetation and it allows a rich insect fauna to maintain itself. Grasses found include Quaking-grass (*Briza media*), Crested Dog's-tail (*Cynosurus cristatus*), Sheep's-fescue (*Festuca ovina*), Downy Oat-grass (*Avenula pubescens*) and Yellow Oat-grass (*Trisetum flavescens*). Amongst these grasses Mouse-ear Hawkweed (*Hieracium pilosella*), Wild Thyme (*Thymus praecox*), Bird's-foot-trefoil (*Lotus corniculatus*), Lady's Bedstraw (*Galium verum*), Carlina Thistle (*Carlina vulgaris*), Mountain Everlasting (*Antennaria dioica*), Purging Flax (*Linum catharticum*) and Eyebright (*Euphrasia* sp.) grow, while a number of smaller annual species are associated with rock outcrops. The orchid flora of the grassland is notably rich, with Twayblade (*Listera ovata*), Frog Orchid (*Coeloglossum viride*), Bee Orchid (*Ophrys apifera*), Early-purple Orchid (*Orchis mascula*) and Green-winged Orchid (*Orchis morio*) occurring. Green-winged Orchid is a rare species that is legally protected under the Flora Protection Order (1987) and the site is particularly notable for the abundance of this species (some 350 individuals were recently recorded from the site).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This is a relatively small (in the national context) example of dry calcareous grassland which supports typical grass species and a rich and diverse herb flora, including a large population of the scarce and currently protected *Orchis morio*, as well as four other orchid species. *Orchis morio* is not as rare in Ireland as was previously thought, as reflected by the fact that it will no longer be protected under the forthcoming Flora (Protection) Order.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the grassland encountered echoes the description recorded during the 1991 Rare Plant Survey (Note 1) i.e. "an extensive area of unimproved calcareous grassland, occurring over soil of varying depths. Most interesting plant species are found on thin soils on exposed slopes and on outcrops".

Typical indicator species recorded during the 2006 survey include *Avenula pubescens*, *Briza media*, *Carex flacca*, *Galium verum*, *Lotus corniculatus*, *Anthyllis vulneraria*, *Carex caryophylla*, *Centaurea scabiosa*, *Conopodium majus*, *Daucus carota*, *Carlina vulgaris*, *Ranunculus bulbosus*, *Trisetum flavescens*, *Hieracium pilosella*, *Leontodon*

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hispidus, *Primula veris* and *Sanguisorba minor*. A good variety of orchid species were encountered during the 2006 site visit, including *Platanthera chlorantha*, *Listera ovata* and *Dactylorhiza fuchsii*.

It should be noted that another rare grassland type also occurs on this site. Areas of deeper soil in the eastern part of the site support old, species-rich, hay meadow communities. Grasses dominate but a good range of herb species and frequent orchids also occur. Grasses are dominated by *Cynosurus cristatus*, *Anthoxanthum odoratum*, and *Holcus lanatus*. Calcareous indicator species occurring include *Leontodon hispidus*, *Galium verum*, *Primula veris*, and *Conopodium majus*. Other meadow species include *Centaurea nigra*, *Ranunculus acris*, *Plantago lanceolata*, *Leontodon taraxacoides*, *Achillea millefolium*, *Cerastium fontanum*, *Rhinanthus minor*, *Stellaria graminea*, *Trifolium pratense*, and *Leucanthemum vulgare*. *Trifolium repens* and *Potentilla anserina* are rare. Scattered throughout the sward are the orchids *Dactylorhiza fuchsii* and *Platanthera chlorantha*. These are managed by mowing and grazing although management appears to have lapsed in recent years in the small fields along the south eastern boundary.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

Orchis morio was first recorded from this site by Freshford and Madden (1898). Refound by NPWS staff in May 1991 and surveyed in June 1991 by R. Fitzgerald. A preliminary boundary for the site was drawn up based on that survey. The site was then surveyed by R. Goodwillie during the 1994 NHA Survey when the boundaries to the site were finalised.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Eight Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that Structures and Functions were assessed at all of the Monitoring Stops. Of the 8 Stops assessed, 5 of the Stops failed their assessment. This results in an overall failure of the condition assessment for the 6210 habitat at Culahill Mountain. This failure was seen primarily to be a consequence of encroachment by scrub and Bracken.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	1
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
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Stop 01	1	Fail	Structures and Functions	Map 2
Stop 02	1	Fail	Structures and Functions	Map 2.
Stop 03	1	Pass	Structures and Functions	Map 2
Stop 04	1	Fail	Structures and Functions	Map 2.
Stop 05	1	Pass	Structures and Functions	Map 2
Stop 06	1	Pass	Structures and Functions	Map 2
Stop 07	1	Fail	Structures and Functions	Map 2
Stop 08	1	Fail	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 1 Management Unit. Apart from the species-rich hay meadow which is not included in the Extent of 6210 habitat, management of the remaining grassland areas is mainly by grazing. There is open access for animals throughout the site.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

A combination of mowing (102) and grazing (140) by cattle, horses, and rabbits are the main management activities on this site. Apart from the large species-rich hay meadow in the centre of the site, other gentle slopes on the east and northern parts of the site also appear to be mown and grazed. The intensity of these activities has resulted in reasonably good quality grassland across most of this site, with a good range of indicator species and good herb cover. Unfortunately, undergrazing (149) may be an issue in some locations (e.g. Stop 4) where encroachment by Bracken is more than likely a consequence of insufficient pressures.

The spread of Bracken (954) is the primary threat to the grassland habitat. This is implicated in the failure of Structures and Functions at 5 of the 8 Monitoring Stops and it was also noted to occur at other locations such as at the very northern tip of the site where Stop 4 is located (see also Notes 1, 4, and 10). Encroachment by scrub was seen to be a potential problem at one location, Stop 3. Current cover values are low (5%) but the density of young seedlings and saplings of *Prunus spinosa* in the vicinity highlight the early stages of a rapid spread.

The application of fertilisers (120) does not appear to be a significant issue on this site. Only one area showed any real evidence of recent disturbance or improvement. In the south eastern corner of the site, close to the access gate, an area of disturbance is visible on 2000 aerial photographs which currently presents as a semi-improved area with light fertiliser applications. Apart from this, no other area shows any noticeable impact from this activity.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
102	Cultivation: mowing/cutting	2	C
120	Fertilisation	-1	C
140	Grazing	1	B
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The primary issue requiring immediate management attention at this site is the spread of Bracken. It was seen to be involved in the high failure rate of the Structures and Functions, occurring at 10% cover in Stops 1, 2, 4, 7, and 8. Values outside these Stops

rose to between 20 and 30%. As good herb content and reasonably good (though currently insufficient) numbers of indicator species still occur in these Stops, it can be assumed that immediate management action here would produce good results.

Bracken is also seen to be an issue on the northern tip of the site, where the north-facing slopes have become significantly covered in Bracken. Spread into the remaining open areas of grass on these slopes is imminent unless management controls are put in place. The early stages of scrub encroachment was seen to be a problem at Stop 3. Mature shrubs of *Crataegus monogyna* and *Prunus spinosa* follow the line of an unmanaged hedge and an old, ruined wall. Numerous saplings of *Prunus spinosa* measure less than 1m high and appear to be spreading out from the old hedge line. In the Stop area (2m<sup>2</sup>), *Prunus* occupies 5% cover but in a larger area of 5m<sup>2</sup>, it occupies up to 30% cover. Unless this spread is controlled, dense scrub with result in the near future.

The application of fertilisers does not appear to be a major management issue over most of the site and it is hoped that this situation will not change. Mowing and grazing pressures should also be monitored on an on-going basis to maintain good grassland. Although the deeper soils in the small fields along the road at the eastern corner of the site produce fewer calcareous species and are not described as 6210 habitat, the species-rich meadow aspect of these fields are an important feature to the diversity of the site (see Note 1). Orchids are still frequent in these fields but Bracken encroachment is a serious issue in the area. Mowing and grazing pressures should be reassessed here in order to manage the fields for good hay meadows.



## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

21ha of the habitat was mapped within the SAC, with the best examples of the habitat found along the western slopes of the site (Notes 05 and 06 and Stop 05). This is substantially greater than that estimated in the Natura 2000 Explanatory Notes where no area was given, but it was stated that the site contained a "relatively small example of habitat 6210 including a large population of *Orchis morio*". The increased estimate in the extent of the habitat can be attributed to either or both of two factors:

- (1) A more extensive ground survey of the site was carried out during the current survey or
- (2) It is possible that the vegetation of the site was interpreted slightly differently on this occasion to the last. The soils on Cullahill are deeper than is usual for habitat 6210 and it may be that during the last survey, the eastern part of the site (and perhaps the south-western part) was not considered to be the habitat.

Thus although the figures would indicate an increase in extent of the habitat at the site, this is most unlikely. It is possible, in fact, that there may have been some loss in extent due to bracken encroachment in the north of the site. However, because the extent of habitat 6210 is likely to have been relatively stable in recent years, the Conservation Assessment is considered to be Favourable for Extent at the site.

### ***Structure and Functions:***

Of the 8 Monitoring Stops assessed, 5 Stops failed the assessment of Structures and Functions. These were Stops 1, 2, 4, 7, and 8. The primary cause of the failure in each case was the excessive cover of Bracken, with 10% cover being recorded at each Stop. At Stops 1, 2, and 4, a corresponding failure to achieve the target number of indicator species was also noted, with only 5 species occurring at each of those locations. No other negative indicator species were recorded at any Stop.

For all Stops, the target for herb content was met and this was seen to range from 40% to a high of 80% at Stop 6. Numbers of indicator species ranged from the insufficient records of 5 to a high of 10 at Stops 6 and 7.

In relation to the secondary attributes that assess sward structure, height of the sward was seen to be moderate to high. Mowing appears to be a management tool for some area of the site and it was evident that cutting had not yet taken place. However, a high percentage of plant litter at some Stops suggest that either mowing patterns or grazing patterns are not sufficient to remove dead biomass. This was seen at Stops 1 and 4, where plant litter values were 20% and 40% respectively. Both of these Stops failed the Structures and Functions as a consequence of low herb content, insufficient numbers of indicators, and

excessive cover of Bracken. At all other Stops, plant litter percentages were <5%.

Due to the high failure rate (>60%) of the Structures and Functions assessment, the condition of the 6210 habitat at this site is described as being Unfavourable - bad.

***Future Prospects:***

The Extent of 6210 habitat at this site is described as being Favourable. A value for the prior Extent was not available and 'best scientific judgement' was employed to determine the current situation. Excessive use of fertiliser and other agricultural improvement methods do not appear to have been used to any significant extent in the recent past. In addition, only one area of disturbance and semi-improvement is noticeable, in the area close to the access gate at the south eastern corner. The remainder of the site is very much in a semi-natural state and management mechanisms appear to include both mowing and grazing. Loss in habitat Extent was deemed not to be a major issue.

While it is reasonable to accept a positive future for the Extent of the 6210 habitat, the Structures and Functions, however, are a cause for concern and any further deterioration in this attribute will result in loss in Extent. Structures and Functions were seen to significantly fail the assessment process, with 5 of the 8 Monitoring Stops failing. The spread of Bracken was seen to be a factor at all failed Stops. When this feature is examined, it is evident that encroachment is at an early stage. Relatively low percentage covers (10%) were recorded in the Stops but this rose to 30% in a wider area around the monitoring locations. Other areas of the site also show encroachment issues. Immediate management of this problem should prevent a serious encroachment problem developing.

Despite the encroachments, herb content within the Stops has not yet been affected and 2 of the 5 failed Stops still had good numbers of indicator species. For the 3 Stops with slightly low numbers of indicator species, this may also be a reflection of varying soil depths across the site. Deeper soils offer more neutral conditions and thus calcareous indicator species will be naturally less abundant in such circumstances.

Given the relative Extent of the habitat on the site and the fact that fertiliser application or other detrimental agricultural practices appear to be generally absent, the Future Prospects could be described as being Favourable. However, the failure rate for the current condition of the grassland highlights developing management issues that need urgent attention if future loss of habitat is to be avoided.

Therefore, because of the current high failure rate of the Structures and Functions, the Future Prospects for the 6210 habitat at this site must be described as being Unfavourable - inadequate. This could significantly improve if control of Bracken (and *Prunus spinosa* scrub at Stop 3) were achieved before further encroachment problems occur.

***Conservation Assessment:***

Original descriptions of the habitat on this site, recorded during the Rare Plant Survey in 1991, describe "Extensive area of unimproved calcareous grassland. Soil depths vary. Most interesting plant species found on thin soils on exposed slopes and on outcrops". The quality of the grassland was described as being "Excellent. Very rich flora on land

undamaged by fertiliser and currently with beneficial grazing regime. Unusually large area of unimproved herb-rich calcareous grassland to be still found in SE Ireland". Up to 300 spikes of the orchid *Orchis morio* were also recorded from the site at that time.

During the 2006 survey, these descriptions were seen to still generally apply to most of this site. Agricultural improvements such as fertiliser application or reseeded of grasslands were not seen to be a problem. In addition, the previously described grassland management patterns of mowing and grazing still appear to operate. On the day of survey, the species-rich hay meadow described in Note 3 was particularly impressive and such a site is rarely seen today, particularly in this region of Ireland. Small fields containing species-rich meadows also occur along the eastern boundary but management of these appears to have lapsed in recent years. Orchids are still frequent there however, and renewed impetus in management practices could restore this habitat type easily. Across the site in general, orchids were seen to be frequent, mainly represented by *Dactylorhiza fuchsii*, *Listera ovata*, and *Platanthera chlorantha*. Occasional unidentified fruiting orchids were also recorded.

The Extent of the 6210 grassland on the site was seen to be Favourable but the Structures and Functions are described as being Unfavourable - bad. This was seen to be primarily a consequence of the spread of Bracken. While Dense Bracken habitat (HD1, Fossitt 2000) exists at the northern tip of the site where Stop 1 is located, patches of encroaching Bracken also occur at scattered locations.

This encroachment issue appears to be at an early stage so immediate intervention would prevent Dense Bracken habitat developing with a concurrent loss in 6210 habitat. For this reason mainly, including the fact that fertiliser application or reseeded is not a major issue on the site, the Future Prospects for the site are described as being Unfavourable - inadequate and not Unfavourable - bad.

However, as the Structures and Functions failed so significantly and are described as being Unfavourable - bad, the overall Conservation Assessment must be described as Unfavourable - bad (see Table 3). It should be noted, however, that many aspects of this site are positive, such as the lack of fertiliser application or major reseeded. Immediate management of the encroachment issue could significantly improve the overall status of the site.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
Extent			
	Future Prospects		
		Structure and Function	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

The semi-natural fields in this area are characterised by deep, neutral-to-calcareous soil. While bracken is occasional to frequent, the vegetation between the bracken is mostly grass dominated with a good mix of herb species (see Photo 01).

Grasses include frequent *Dactylis glomerata*, *Holcus lanatus*, *Anthoxanthum odoratum* with occasional *Cynosurus cristatus* and *Alopecurus pratensis*. While *Lolium perenne* is present, the presence of a good range of herb species suggests that large scale reseedling or intensive application of fertiliser has not occurred.

Herbs include occasional *Rumex acetosa*, *Trifolium repens*, *Ranunculus acris*, *Ranunculus repens*, *Rhinanthus minor*, *Carex nigra*, *Plantago lanceolata*, *Potentilla anserina* and frequent scattered spikes of *Dactylorhiza fuchsii*. Individual plants of *Agrimonia eupatoria*, *Vicia cracca* and *Heracleum sphondylium* also occur in some areas where soil is deeper.

Bracken is encroaching into all of these fields which are located along the eastern boundary of the SAC and will become a serious issue if not checked. Currently, bracken occupies approximately 40-50% of the vegetation cover in these small fields. In the areas where bracken dominates, species richness has declined.

As the ground rises gently to the northwest, the soil becomes thinner and *Briza media*, *Galium verum*, and *Hypochoeris radicata* appear in the vegetation wherever limestone rock outcrops.

**Note 2:**

This grass-dominated field has deep, damp, neutral-to-calcareous soil. Bracken and *Rubus fruticosus* agg. is spreading. *Heracleum sphondylium* is more abundant than in N1 and grasses are rank. Scattered spikes of *Dactylorhiza fuchsii* occur amongst the bracken.

## Note 3:

This is a species-rich hay meadow on sloping neutral-to-calcareous soils (see Photos 03-10). It stretches across these slopes which form much of the central portion of the SAC. It is managed by mowing but it had not yet been cut when visited during the 2006 survey.

*Centaurea nigra* is abundant in the vegetation composition along with *Holcus lanatus*. Other species such as *Ranunculus acris*, *Leontodon hispidus*, *Galium verum*, and *Anthoxanthum odoratum* are frequent while *Primula veris*, *Plantago lanceolata*, *Leontodon taraxacoides*, *Achillea millefolium*, *Cerastium fontanum*, *Rhinanthus minor*, *Conopodium majus*, *Stellaria graminea*, *Trifolium pratense*, *Leucanthemum vulgare* are occasional. *Cynosurus cristatus*, *Trifolium repens* and *Potentilla anserina* are rare. Scattered throughout the sward are the orchids *Dactylorhiza fuchsii* and *Platanthera chlorantha*.

On the higher slopes towards Note 4, thinner soils occur and additional calcareous grassland species occur. These include *Avenula pubescens*, *Briza media*, *Thymus praecox* and *Lotus corniculatus* (for full details on the vegetation in this area see relevé 3). On the lower slopes, towards the southwest, soils are deeper. In these areas, *Potentilla anserina*, *Leontodon taraxacoides*, and *Heracleum sphondylium* are more frequent. Bracken is less common where the soils are deep.

Some sloping areas have a degree of bare ground under the vegetation, suggesting some poaching by animals or some other form of surface disturbance has occurred in the past. However, this is of minor overall impact and vegetation is still reasonably dense. The entire area appears to be managed by mowing with subsequent grazing.

Relevé (Q03) is located where deep, neutral-to-calcareous soil occurs on a low-lying flat area. Outside the relevé, *Carex flacca*, *Listera ovata*, and *Platanthera chlorantha* occur. Horse droppings and hare droppings were noted in this area.

## Note 4:

The EPA funded study on the 'Insects of Calcareous Grasslands' has a malaise trap and pitfall traps located on the calcareous soil east of this track on the upper slopes. East of this plot, bracken is encroaching and grasses dominate the vegetation.

## Note 5:

These slopes face west-northwest and contain calcareous grassland grazed by horses. The calcareous species *Avenula pubescens*, *Briza media*, *Lotus corniculatus*, *Galium verum*, *Carex flacca* and *Polygala vulgaris* are present in association with *Plantago lanceolata*, *Succisa pratensis*, *Rhinanthus minor*, *Carex pulicaris*, *Trifolium pratense* and *Hypochoeris radicata*.

Where small limestone rocks come to the surface, these are vegetated with *Antennaria dioica* and *Thymus praecox*. Occasional patches of *Anthyllis vulneraria* also occur. The orchids *Platanthera chlorantha* and *Dactylorhiza fuchsii* are scattered across these slopes. Occasional mature shrubs of *Crataegus monogyna* also occur while towards the lower south-western end of the slopes, Bracken appears to be encroaching.

The NHA Note 10 (NHA Survey 1994) refers to a 'more heathy vegetation' on these slopes, including species such as *Centaurea nigra*, *Carex flacca*, *Cynosurus cristatus*, and *Succisa pratensis* as well as *Hypericum pulchrum* and *Lathyrus montanus*. This heathy element was also noted during the 2006 survey.

## Note 6:

This is one location on the slopes described in N5 where orchids are particularly abundant. The vegetation is similar to that described in Stop 2 but *Dactylorhiza fuchsii*, *Platanthera chlorantha* and *Listera ovata* are frequent to abundant in their distribution. There is also less Bracken in this area but some patches are tending towards more of a tussocky vegetation, with litter rising to 30% in places.

## Note 7:

The vegetation here is similar to that described in Stop 6.

## Note 8:

The vegetation here is similar to that described in Stop 1, where small outcrops of limestone occur.

## Note 9:

The soils in this field appear to be deeper and more neutral-to-calcareous in nature. Very little agricultural improvement appears to have occurred, at least in the recent past. Grasses dominate, with *Holcus lanatus* and *Arrhenatherum elatius* being the most frequent. *Heracleum sphondylium* is more abundant in this field than at any other location on the site, occurring with *Ranunculus acris*, *Rhinanthus minor*, *Centaurea nigra*, *Galium verum*, *Plantago lanceolata* and occasional scattered *Cirsium palustre* and *Dactylorhiza fuchsii*.

Bracken is scattered but does not appear to pose an encroachment problem.

Note 10:

This area is located at the beginning of a line of limestone cliffs which curve in an east/west direction. The vegetation cover is good with the usual calcareous indicator species occurring on the thinner soils which characterise this location. Rabbit droppings are abundant in this area.

Bracken and scrub is evident on the aerial photographs for this general area and this encroachment is noticeable on the ground.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Stop is located in an area which rises via a series of exposed limestone ledges. The gentle southwest-facing slopes overlook the lower-lying ground with deeper soils as described in Note 1. Amongst the rocky ledges, 6210 grassland occurs. However, bracken encroachment is occurring and species diversity is not as high as would be expected. There is very little evidence of grazing apart from some bare ground which may suggest disturbance by tracking animals.

Only 5 indicator species were recorded and herb cover just reached the target of 40%. Of the 5 indicator species, 2 were the calcareous indicator grass species *Briza media* (F) and *Trisetum flavescens* (O). The remaining indicator species were *Galium verum*, *Lotus corniculatus*, and *Hieracium pilosella*. There were no negative indicator species but *Pteridium aquilinum* occurred at 10% cover within the Stop. Outside the Stop, in an area of 5m<sup>2</sup>, this cover rose to 20%.

Other species occurring within the Stop include *Anthoxanthum odoratum*, *Leucanthemum vulgare*, *Thymus praecox*, *Veronica chamaedrys*, *Leontodon taraxacoides*, *Centaurea nigra*, *Achillea millefolium*, and *Prunella vulgaris*. Encroachment by *Pteridium aquilinum* is a problem along the eastern boundary to the SAC.

As the Stop failed to reach the required number of indicator species and as percentage cover of *Pteridium aquilinum* was seen to be too high, this Structures and Functions of this top are seen to Fail.



**Monitoring Stop 2:**

This Stop is located on an east-facing slope with a gentle gradient (see Photo 2). Soil is thin where limestone boulders outcrop but is deeper between the rocks. Herb content is good (60%) but only 5 calcareous indicator species were recorded, 2 short of the target number of 7. No negative indicator species occurred but bracken reaches to 10% cover within the Stop and up to 20% outside the Stop.

Also occurring within the Stop were *Trifolium pratense*, *Centaurea nigra*, *Anthoxanthum odoratum*, *Holcus lanatus*, *Plantago lanceolata*, *Leontodon taraxacoides*, *Achillea millefolium*, and *Cerastium fontanum*. Outside the Stop, additional species include *Leucanthemum vulgare* and *Thymus praecox*, the latter occurring mainly around outcropping, rocks. *Dactylorhiza fuchsii* is scattered throughout this area.

This area appears to be managed by mowing but it had not been cut yet at the time of surveying. Hare droppings were frequent throughout. Bracken, however, was seen to occur, especially on the drier slopes where the soil is thin. This will become a problem if unchecked.

Due to the insufficient number of indicator species and the excessive cover of *Pteridium aquilinum*, the Structures and Functions of the grassland within this Stop are deemed to have Failed.

**Monitoring Stop 3:**

Stop 3 is located on a gently sloping, south-facing area of grassland on scrub (see Photo 15). The scrub consists of young *Prunus spinosa* under mature *Crataegus monogyna*. In general, the *Prunus* shrubs are less than 1m high and appears to be spreading out from an old hedge line. In the Stop area of 2m<sup>2</sup>, *Prunus* occupies 5% cover but in a larger area of 5m<sup>2</sup>, it occupies up to 30% cover.

Herb cover reached the targets for herb cover (40%) and indicator species (7). The calcareous indicator species were *Briza media*, *Leontodon hispidus*, *Galium verum*, *Trisetum flavescens*, *Conopodium majus*, *Lotus corniculatus* and *Avenula pubescens*. In addition, species such as *Plantago lanceolata*, *Centaurea nigra*, *Holcus lanatus*, *Anthoxanthum odoratum*, *Agrostis canina*, *Ranunculus acris*, *Rhinanthus minor*, *Potentilla erecta* and *Dactylis glomerata* also occurred.

There are no obvious signs of current management practices but it is assumed the wide, open, grassy area around the scrub encroachment is mown and/or grazed. The spread of scrub would need to be managed before the *Prunus spinosa* saplings mature any further.

This Stop passed its assessment of Structures and Functions.

**Monitoring Stop 4:**

This Stop is located on a gentle north-facing slope (see Photo 18-19). These slopes are characterised by dense patches of bracken which are separated by more open, grass-dominated, areas. While herb content reached the target of 40% cover, only 5 calcareous indicator species were recorded. Bracken is also present, exceeding the target level of 10% over. There is very little current evidence of grazing or mowing in this area. The height of the vegetation was high (40cm) and more specifically, a high percentage cover of plant litter was recorded (40%), suggesting that current grazing or mowing patterns are not sufficient to remove biomass.

In addition to the 5 indicator species, also occurring within the Stop are *Holcus lanatus*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Succisa pratensis*, *Carex pulicaris*, and *Centaurea nigra* occur. Orchids are a feature, both within the Stop and across the slopes in general, growing tall amongst the bracken. Orchid species noted include *Dactylorhiza fuchsii*, *Listera ovata*, and *Platanthera chlorantha*.

Outside the Monitoring Stop, additional species occurring amongst the encroaching bracken include *Leucanthemum vulgare*, *Conopodium majus* and *Hypericum pulchrum*. Occasional low hummocks of *Hylocomnium splendens* also occur which hold *Briza media*, *Galium verum*, and *Antennaria dioica*.

This Stop occurs in the same area as the NHA Note 11 which describes a grassy vegetation with only scattered *Pteridium aquilinum*. During the 2006 survey however, the bracken encroachment across these north-facing slopes was seen to be a serious problem. Large areas of slope are dominated by dense bracken while a few smaller areas are characterised by encroaching bracken with small, more open areas in between. These open areas are generally tending towards a more grass-dominated vegetation, with varying amounts of *Succisa pratensis* and *Carex pulicaris*. These latter two species would suggest a more heath-like element to these north-facing slopes.

Due to the insufficient number of indicator species and the excessive cover of *Pteridium aquilinum*, the Structures and Functions of the grassland within this Stop are deemed to have Failed.

**Monitoring Stop 5:**

This Stop is located on gentle slopes which face west northwest (see Photo 20). Vegetation height is low (15cm) and more consistent compared to previous Stops. Occasional mature shrubs of *Crataegus monogyna* occur while towards the lower south-western end of the slopes, bracken appears to be encroaching. Horses appear to graze these slopes.

Herb content reached the target of 40% and 8 indicator species were recorded. No bracken was recorded in the Stop or in its vicinity although, as noted previously, some does occur further down on these slopes. Scattered spikes of *Platanthera chlorantha* and *Dactylorhiza fuchsii* are scattered across the area.

Also occurring within the Stop are *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Dactylis glomerata*, *Achillea millefolium*, *Hypochoeris radicata*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Prunella vulgaris*, *Senecio jacobea*, *Thymus praecox*, *Trifolium pratense*, *Succisa pratensis*, and *Hypericum pulchrum* (see relevé 4 for full details).

This Stop passed its assessment of Structures and Functions.

**Monitoring Stop 6:**

Stop 6 is located on a westerly facing slope. No evidence of current grazing or mowing was noted but it is assumed that grazing is the primary form of management on these slopes.

Within the Stop, herb content is very high (80% cover) and 8 indicator species were recorded. No negative indicator species or no bracken/scrub encroachment was recorded.

In addition to the 8 indicator species, also occurring were *Hypericum pulchrum*, *Plantago lanceolata*, *Achillea millefolium*, *Thymus praecox*, *Anthoxanthum odoratum*, *Leucanthemum vulgare*, and *Leontodon taraxacoides* (see relevé 5 for full details).

Outside the Stop, mature shrubs of *Crataegus monogyna* and *Prunus spinosa* were scattered across the slopes. A minor percentage of young saplings was noted. Other species occurring were *Rhinanthus minor*, *Trifolium pratense*, *Centaurea nigra*, and *Agrostis* spp. Orchids were not frequent but *Dactylorhiza fuchsii* and *Platanthera chlorantha* were noted.

This Stop passed its assessment of Structures and Functions.

### Monitoring Stop 7

The gradual slopes in this area are facing west (see Photo 21). Bracken is encroaching across these slopes but large, open areas still occur. This Monitoring Stop is characterised by short vegetation with species representative of good calcareous grassland. Grazing appears to be the main form of management. Herb content is good (60%) and 10 indicator species were recorded, the highest number at any Stop on this site. However, the percentage cover of bracken at 10% exceeds the target value, causing this Stop to fail its assessment of Structures and Functions.

In addition to the 10 indicator species recorded, also occurring are *Thymus praecox*, *Hypericum pulchrum*, *Senecio jacobaea*, *Rhinanthus minor*, and *Agrostis canina*. In a few areas, minor limestone outcrops occur in the form of low escarpments or cliffs <2m high. *Antennaria dioica* occurs as an additional species on these rocky outcrops.

This Stop is located close to the area described in the NHA survey as Note 3. This note refers to a grassy vegetation with some scattered *Pteridium aquilinum* and a small number of calcareous indicators. The current survey recorded a better range of species more typical of calcareous situations (6210 habitat).

:

### Monitoring Stop 8:

This is located on a gentle, south-facing slope. It occurs above the limestone cliffs mentioned in N10. In general, the vegetation cover is good but bracken is seen to be encroaching. Grazing levels are light to medium and rabbit droppings are abundant in the area.

Within the Stop, herb cover reached the 40% target and 8 indicator species recorded. No negative indicator species were recorded but Bracken cover was seen to exceed the 5% target by reaching to 10% cover.

In addition to the indicator species, other species occurring include *Succisa pratensis* (F), *Anthoxanthum odoratum* (F), *Holcus lanatus* (F), *Hypochoeris radicata* (F), *Plantago lanceolata* (F), *Rhinanthus minor* (O), and *Achillea millefolium* (O) (see relevé 6 for full details) *Dactylorhiza fuchsii* (O) is scattered both within and without the Monitoring Stop. Outside the Monitoring Stop, *Daucus carota* also occurs.

Due to the excessive cover of *Pteridium aquilinum*, the Structures and Functions of the grassland within this Stop are deemed to have Failed.

**Spahill and Clomantagh Hill****SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 05/07/2006

**Total Site Area (Ha):** 130.65

**Area of Priority Grassland (N2000) (Ha):** 4.9 ha of the 123 ha of dry grassland is estimated to be orchid rich.

**Area of Priority Grassland 2006 (Ha)\*:** 20

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:** Kilkenny

**Discovery Sheet No:** 60

**6" Sheets:** KK008.

**Digital Aerial Photos (Tile Nos.):**

O4522-a, O4522-b, O4522-c, O4522-d, O4582-a.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS****SAC Site Code:**

000849

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Spahill and the adjacent hills form part of an escarpment which links the Slieve Ardagh Hills with the Castlecomer Plateau. The hills are of limestone overlain by shales and/or sandstones so the surface geology is variable, with each rock type maintaining a very different type of vegetation. This particular site is mostly limestone, exposed as small ledges or as flat sheets when it is weathered into the pavement pattern so well known from the Burren. The hills are low and rounded. They rise relatively steeply from the Central Plain and drop south-eastwards more gently. Their surface is grassy in appearance but the soil is shallow especially on the upper parts and the rock breaks through frequently.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: The vegetation is dominated by Crested Dog's-tail (*Cynosurus cristatus*), Perennial Rye-grass (*Lolium perenne*) and Creeping Bent (*Agrostis stolonifera*), with Smooth Meadow-grass (*Poa pratensis*) and Yellow Oat-grass (*Trisetum flavescens*) occurring near outcrops. The community is species-rich with such plants as Wild Thyme (*Thymus praecox*), Mouse-ear Hawkweed (*Hieracium pilosella*), Quaking Grass (*Briza media*), Burnet Saxifrage (*Pimpinella minor*) and sedges (*Carex caryophyllea* and *C. flacca*) scattered through it. Locally there is much Eyebright (*Euphrasia* sp.), Purging Flax (*Linum catharticum*) and Oxeye Daisy (*Leucanthemum vulgare*).

The Rare and legally protected (Flora Protection Order, 1987), Green-winged Orchid (*Orchis morio*) grows sparingly through this community. Two other orchid species, Frog Orchid (*Coeloglossum viride*) and Common Spotted-orchid (*Dactylorhiza* cf. *fuchsii*) are also recorded from the site. A few larger cliffs occur on the south side of Clomantagh where Polypody (*Polypodium australe*) is common, along with Hairy Rock-cress (*Arabis hirsuta*).

A rather different heathy grassland is found on particularly thin soils on the eastern slope of Spahill. Here Devil's-bit Scabious (*Succisa pratensis*) turns the ground purple in summer, growing with Slender St. John's-wort (*Hypericum pulchrum*), Bitter-vetch (*Lathyrus montanus*), Yellow-rattle (*Rhinanthus minor*) and a little Heather (*Calluna vulgaris*).

The ground in Clomantagh is largely similar to Spahill except that near the top there are outliers of the overlying sandstone which appear as low, lumpy rocks quite different in shape to the limestone. The difference is accentuated by the vegetation which includes more Heather as well as Heath Bedstraw (*Galium saxatile*), Bilberry (*Vaccinium myrtillus*), Purple Moor-grass (*Molinia caerulea*), Wavy Hair-grass (*Deschampsia flexuosa*), Tufted Hair-grass (*D. cespitosa*) and the mosses *Polytrichum juniperinum*, *Plagiothecium undulatum* and *Dicranum scoparium*.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland

as follows: Although this site supports quite an extensive area of dry calcareous grassland (c. 123 ha) only a small portion appears to be orchid-rich, i.e. that indicated by R. Fitzgerald in her 1991 report on the site. This portion comprises only 4.9 ha or 0.08% of the estimated national area of orchid-rich grassland. The area of orchid-rich grassland is however, moderately diverse and a variety of vegetation communities occur, i.e. limestone grassland with outcropping limestone, heathy grassland, old meadow and *Euphrasia* and *Linum catharticum*-rich calcareous grassland. A small area of limestone pavement also occurs within the area of orchid-rich grassland on Spa Hill.

On Clomantagh Hill the occurrence of both sandstone and limestone gives rise to a mosaic vegetation of calcicole and calcifuge species. The variation in topography and rock type also give rise to a good diversity of plant species. The only orchids recorded from the site are *Orchis morio*, *Dactylorhiza* cf. *fuchsii* and *Coeloglossum viride*. While only a few flowering spikes of the latter were recorded, a population of over 46 spikes of *O. morio* was recorded in 1991. This population (it is, in fact, two populations of > 40 and > 6, separated by some 1.5 km) is not, however, of very great significance when compared with that found at Cullahill Mountain to the north (350 spikes recorded here in 1991). No other rare plant species were recorded from this habitat at the site. The grassland is grazed, but relatively undisturbed.

*Description based on the 2006 Survey :*

During the 2006 survey, the grasslands occurring within the two polygons that comprise Spa Hill and Clomantagh Hill SAC were seen to differ. This is due mainly to the differing underlying soils and base rock. Management practices in the two polygons were also seen to differ.

In the northern polygon at Spa Hill, the underlying geology is characterised by limestone rock which is exposed in places, showing as small boulders or low ledges. Soils are generally shallow and the steeper slopes west of the T.V. mast and on the east side of the ridge running north from the mast, are the areas which are most likely to retain the better examples of 6210 habitat. Typical calcareous indicator species occur on these slopes (see Stop 2) but diversity is generally low throughout, particularly where grazing pressures are heavy such as in the vicinity of Stops 4 and 5. In general, orchids were not frequent, with *Dactylorhiza fuchsii*, *Platanthera chlorantha*, and *Coeloglossum viride* being recorded in minor quantities. The more accessible, gentle slopes (see Note 5) or flat ridge summits (see Notes 1, 3, and 4) show varying degrees of agricultural improvement and are generally well grazed. An area of very tight grazing by sheep occurs at the foot of the T.V. mast at Note 4. Grasslands on deeper soil, such as those which occur on the more low-lying areas along the western boundary, are generally well fertilised and are managed as hay meadows and pastures.

The southern polygon at Clomantagh Hill has a more varied geology. The limestone is overlain by shales and/or sandstones so the surface geology is variable, with each rock type maintaining a very different type of vegetation. Calcareous grassland occurs mainly on the shallow soils of rocky limestone hillocks (see Stop 6). No orchids were

recorded in this polygon. The deeper soils between the hillocks carry grass-dominated communities more typical of neutral-to-calcareous situations. The steeper slopes along the south western boundary (see Stops 7 and 8) also carry calcareous grassland communities. Leaching of the limestone soil has also resulted in a heathy element across much of the grassland in this southern polygon. Clomantagh Hill differs in that management practices are less intensive than at Spa Hill. Grazing pressures are lower and fertiliser application is not as heavy. Access is open across much of the area (except at Note 11). These factors together have formed a landscape which is characterised by extensive views of a more grassy, upland appearance than at Spa Hill.



**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

*Orchis morio* was previously recorded from this site by Freshford and Madden (1898). This species was refound by NPWS staff in May 1991 and surveyed in June 1991 by R. Fitzgerald during the Rare Plant Survey. The site was surveyed by R. Goodwillie during the 1993 NHA Survey.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Eight Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that Structures and Functions were assessed at 7 Stops. Stop 5, was not included in the assessment of Structures and Functions as a loss in habitat was deemed to have occurred at that location. Stop 5 is included in the estimate of loss in Extent instead.

Of the remaining 7 Stops assessed for Structures and Functions, only 3 Stops passed, resulting in an overall Fail for this attribute at this site. Agricultural improvement was seen to be the primary cause for the poor condition of the habitat.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	5
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Sheet 1 of 2
Stop 02	2	Pass	Structures and Functions	Sheet 1 of 2
Stop 03	3	Fail	Structures and Functions	Sheet 1 of 2
Stop 04	4	Fail	Structures and Functions	Sheet 1 of 2
Stop 05	4	Fail	Extent	Sheet 1 of 2
Stop 06	5	Pass	Structures and Functions	Sheet 2 of 2
Stop 07	5	Fail	Structures and Functions	Sheet 2 of 2
Stop 08	5	Pass	Structures and Functions	Sheet 2 of 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 5 separate management units. Units 1-4 are located in the site's northern polygon. Unit 5 is located in the southern polygon.

Stop 1 is situated in a Management Unit located on the eastern slopes of the ridge that runs north from the TV mast. The vegetation is lightly grazed and is not as semi-improved as the flatter, upper levels. Mature gorse is scattered and a degree of species diversity (including orchids) still exists. However, Bracken is seen to be spreading across these slopes and management of this species is urgently required. Access by grazing animals is open across the slopes and upper levels.

Management Unit 2 contains Stop 2 and is located on west-facing slopes along the western section of the northern polygon. Horses and cattle appear to graze the slopes to a moderate level.

Management Unit 3 is located adjacent to Unit 2. Unit 3 differs in that grazing is more intense and a greater degree of agricultural improvement has occurred. Stop 3 is located in this Unit.

Management Unit 4 contains Stops 4 and 5. Sheep tightly graze this enclosed area of sloping ground.

The southern polygon of the site is seen mostly as a single management unit (Unit 5). Stops 6, 7, and 8 occur in Unit 5. Apart from a small hay field in the northern part of the polygon (see Note 8, current survey), access across most of this polygon is open and it appears to be managed by a combination of grazing and some cutting where circumstances allow. One area of enclosed land occurs (see Note 11) which is intensively grazed. On the day of survey, over 80 cattle were noted in this field.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

When assessing potential threats and activities impacting on this site, the two polygons which comprise this site are seen to differ from one another. The southern polygon at Clomantagh Hill is generally seen to be in a more natural state. A reasonable management combination of mowing (102) and grazing (140) appears to be in place. Both activities are required at the right intensities in order to maintain good grassland diversity.

Only in one fenced area on Clomantagh Hill (see survey Note 11) does grazing pressure appear to be excessive. While the application of fertiliser (120) in this field was also evident, in general the southern polygon does not appear to be currently under significant threat from agricultural improvement. Indeed, undergrazing (149) may be seen to be an issue in some parts, resulting in the predominance of grasses over herbs. The spread of Bracken (954) is also a potential threat along the eastern boundary, due perhaps to insufficient grazing pressures. In the northern polygon, the eastern slopes around Stop 1 are also threatened as a result of undergrazing. Bracken is consequently also spreading in this area.

A potential threat from outside the Clomantagh Hill portion of the site is the expansion of forestry (161). Forestry occurs at the north-eastern corner and along the southern boundary, posing potential threats in those areas. Current impacts, however, are negligible.

The northern polygon at Spa Hill is under greater pressure from agricultural improvement (103). While grazing (140) occurs over most of the polygon, it is particularly intense in the area around the TV mast where sheep are kept (148). Species diversity here is very low. Sheep also tightly graze the slopes to the south west of the mast, where Stops 4 and 5 are located. This area had previously been recorded as holding populations of *Orchis morio*. However, species diversity in this area appears to be much lower when compared to the 1993 NHA descriptions for this part of the site. Cattle also intensively graze (148) the area west of the mast, where Stop 3 is located. Here, also, species diversity is low. In the field directly east of the TV mast (see Note 3), a significant area of disturbance occurs. Attempts have been made to improve the more level areas of this field (103). A degree of reseeding and considerable soil disturbance has occurred which extends for some distance along the summit of the ridge. The slopes to the east are less disturbed, perhaps due to their less accessible nature.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-1	C
102	Cultivation: mowing/cutting	1	C

120	Fertilisation	-1	B
161	General Forestry management: forestry planting	0	C
140	Grazing	1	B
148	Grazing: overgrazing, general	-1	B
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The primary management issues of concern at Spa Hill and Clomantagh Hill SAC relate to fertiliser application levels and grazing patterns. Large scale reseeded of grassland has not been an issue, suggesting that current Structures and Functions could be improved comparatively easily.

Loss and deterioration of 6210 habitat has been seen to occur as a result of heavy grazing pressures from sheep and cattle, particularly on the western and south western slopes of Spa Hill. A species-rich vegetation (including the orchid *Orchis morio*) had previously been described from this area. Calcareous species in this area are now mostly confined to areas of sloping ground at Stop 2 or around scattered exposed limestone rocks and ledges. With lighter grazing pressures and a reduction in fertiliser application, there is good potential to re-establish quality limestone grassland.

In contrast, on the eastern slopes of the ridge running north from the TV mast, grazing pressures appear to be inadequate. While species-diversity is still reasonably good and orchids are still present, the spread of Bracken across these slopes is seen to be a real threat to the grassland habitat. Bracken is also seen to be spreading along the eastern boundary of the southern polygon at Clomantagh Hill. Urgent management of this issue is required.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

6.8ha of the habitat was mapped in Spahill while 76ha of dry heathy calcareous-to -neutral grassland was mapped in Clomantagh Hill. The 6.8ha mapped in Spahill is likely to be an over-estimation as much of this area is in poor condition and has semi-improved characteristics. Indeed parts particularly close to where Monitoring Stop 05 was located (where there has been scrub removal and fertilisation) as well as the northern-most section (north of Note 02) may be better classified as semi-improved grassland so that a more accurate estimate of the extent is likely to be closer to 5ha. Most of the 76ha of dry grassland mapped in Clomantagh, is unimproved with heathy characteristics but it occurs on deeper soil and is a more neutral-type grassland. The calcareous grassland here is limited to areas of shallow soil close to limestone outcrops and is estimated to be less than 20% (15ha) of the area. Thus the overall extent of habitat 6210 on Spahill and Clomantagh Hill is estimated to be approximately 20ha (or 15% of the SAC).

The Natura 2000 Explanatory Notes describe the SAC as "an extensive area of dry grassland (ca. 123ha) with only a small portion that appears to be orchid-rich". The orchid-rich portion was estimated to be only 4.9ha and limited in its occurrence to the Spahill portion of the site. This figure is similar to the current area of habitat 6210 estimated on Spahill in the above paragraph. However, it was evident during the ground survey that former areas of the habitat had been lost due to agricultural improvements so that it can be postulated that the original area of the habitat was under-estimated.

The Natura 2000 form did not indicate that any orchid-rich grassland was present in Clomantagh, but did indicate that because of the occurrence of both sandstone and limestone, there is a mosaic of calcicole and calcifuge species. The calcareous grassland here was considered to be a form of habitat 6210 during the current survey. The northern tip (ca. 1ha) of Clomantagh has been improved since the NHA survey so that a minor loss in extent can be described from this section of the SAC as well.

Thus the overall loss in extent since designation can be estimated to be low at ca. 1-2ha, which corresponds to 5-10% of the original extent. This results in a Conservation Assessment of Unfavourable - inadequate for the Extent of the habitat at Spahill and Clomantagh Hill SAC.

### ***Structure and Functions:***

Structures and Functions were assessed at 7 of the 8 Monitoring Stops. Of these 7, 4 Stops failed the assessment. The primary cause for this failure was either insufficient herb content and/or an insufficient number of indicator species (Stop 3 contained only 20% herb cover). Agricultural improvement via fertilising was the seen to be the reason.

At one Stop, Stop 1, Bracken encroachment seen to be an issue. At this Stop, a high percentage of herb cover (70%) and a sufficient number of indicator species occurred. However, Bracken cover reached to an unacceptable level at 15% within the Stop and up to 20% in a larger area of 5m<sup>2</sup>. Bracken also occurred in Stops 4 but in low percentages (5%).

Of the three Stops located in the southern polygon, 2 Stops passed: Stops 6 and 8. Stop 7 had an insufficient number of indicator species.

With more than a 50% failure rate recorded for the assessment process, the Structures and Functions of the 6210 habitat at this site are in poor condition, mainly due to incorrect grazing pressures and/or fertiliser application. The Structures and Functions are therefore described as being Unfavourable - bad.

### ***Future Prospects:***

When compared to descriptions recorded during the 1993 NHA survey, it is evident that there has been some loss of 6210 habitat at this site, particularly in the northern polygon at Spa Hill. This loss has resulted mainly from agricultural improvement in the form of fertiliser application and as a result of heavy grazing pressures. In contrast, a degree of insufficient grazing pressure is evident on the eastern slopes of the ridge running north from the TV mast. This is manifested in the current threat from Bracken encroachment in areas which retain some species diversity (including orchids).

Both issues of agricultural improvement and insufficient grazing would suggest that the Future Prospects for the grassland in this area are poor. However, as very little reseeded was noted, it would be expected that areas of calcareous grassland would recover if grazing patterns and fertiliser application levels were to be adjusted and monitored. In addition, it was seen that while Stop 4 failed due to insufficient indicator species, the presence of a species-rich field margin below this Stop and Stop 5 (see Note 7) suggests that limestone grassland could become re-established in this area if the heavy pressures from sheep grazing were removed.

In the southern polygon, at Clomantagh Hill, the nature of the grassland habitats is more complex due to the variable soil depth and underlying geology. Fertiliser application and grazing pressures on the grassland habitat are less intense. This would suggest that the Future Prospects for this polygon are better than at Spa Hill. However, it is also likely that grazing in some areas of Clomantagh Hill is not sufficient and that species diversity has suffered as a result. Bracken is also seen to be encroaching along the eastern slopes of the Hill. Both issues of undergrazing and Bracken encroachment would need to be further assessed and monitored in order to determine a more suitable grazing regime for the varied nature of the grassland community at Clomantagh Hill.

In general, taken as a whole, the Future Prospects for the 6210 habitat over the entire site are described as being Unfavourable - inadequate. This is a direct consequence of the observed loss of habitat and the unfavourable assessment of the habitat's Structures and Functions, particularly in the northern polygon. If current grazing pressures and fertiliser application levels were to be adjusted, and if Bracken encroachment along the eastern boundary is managed, these prospects could improve.

**Conservation Assessment:**

The two polygons that comprise Spahill and Clomantagh Hill SAC differ in their underlying soils and geology and in their current management practices. As a result, the grassland type and the overall conservation assessment for each polygon will also differ.

Spa Hill has the correct geology and soil types to sustain good limestone grassland. However, it has experienced a loss of 6210 habitat when compared with the 1993 NHA descriptions. This loss is due mainly to heavy grazing pressures and fertiliser application. The condition of the remaining habitat is also described as being poor, with only 1 of 5 Monitoring Stops located on Spa Hill passing an assessment of its Structures and Functions. Under current management practices, the Future Prospects for this polygon are not very good. This could be improved relatively easily with adjusted levels of fertiliser application and grazing pressures.

Clomantagh Hill has a more complex geology, with shales and sandstones overlying limestone. Deeper soils support a more neutral-to-calcareous grassland type, characterised by a grass-dominated vegetation. Leaching of limestone soils has also resulted in a heathy element to the grasslands across much of the southern polygon. 6210 habitat is limited in its distribution, occurring mainly on hillocks of rocky limestone or on the steeper slopes along the western boundary.

The condition of the habitat, however, is better at Clomantagh Hill than at Spa Hill. Of the 3 Stops located on Clomantagh Hill, 2 pass the assessment of Structures and Functions. Grazing pressures and fertiliser application levels are also more moderate on Clomantagh Hill, resulting in a more natural appearance to the landscape. The Future Prospects and overall Conservation Assessment for this polygon are better than at Spa Hill, and could be further improved with a more specific grazing and mowing regime.

Taking into account the loss of 6210 habitat at Spa Hill, the significant failure of the Structures and Functions assessment, and the perceived uncertain future of the habitat, the overall Conservation Assessment for the site is described as being Unfavourable - bad. If fertiliser application and grazing levels were to be adjusted and monitored, this assessment could be improved.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
		Structure and Function	
			<i>Unfavourable - bad</i>
	Future Prospects		
	Extent		



**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

The grassland in this area is typical of much of the grassland on the flat summit across this northern part of the site. The grassland is semi-improved (not reseeded with *Lolium perenne*) and appears to be managed by light to moderate grazing. Some scattered bracken occurs but unlike the situation on the eastern slopes, no dense patches occur. While occasional old ring feeder sites occur, no serious disturbance has resulted.

Species typical in this area include *Cynosurus cristatus*, *Holcus lanatus*, *Dactylis glomerata*, *Trifolium repens*, *Trifolium pratense*, *Plantago lanceolata*, *Conopodium majus*, *Hypochoeris radicata*, *Senecio jacobaea*, *Veronica chamaedrys*, *Ranunculus acris*, *Luzula campestris*, *Lotus corniculatus*, *Achillea millefolium*, *Prunella vulgaris*, *Cirsium arvense*, and *Potentilla erecta* (see relevé 8).

**Note 2:**

The vegetation in this area is similar to that described at Stop 1. Reasonably good calcareous grassland occurs between mature Gorse. However, the spread of bracken is seen to be a management issue (see Photos 01-02).

**Note 3:**

This is an improved field dominated by *Lolium perenne* and *Cirsium arvense*, with *Ranunculus acris*, *Poa pratensis*, *Poa annua* and *Senecio jacobaea* also occurring (see Photos 05-06). There is considerable tractor disturbance in the area, extending from the entrance gate to the top of the slope. The area is characterised by deep ruts and loose soil while straw and other animal feed is scattered throughout.

Other species occurring in this area include *Stellaria media*, *Ranunculus repens*, *Polygala serpyllifolia*, *Matricaria discoidea*, *Capsella bursa-pastoris*, *Rumex obtusifolius* and *Plantago major*.

Closer to the walls that form the field boundaries, limestone rocks extrude and these are vegetated with *Galium verum*, *Achillea millefolium*, *Cynosurus cristatus*, *Cerastium fontanum*, *Plantago lanceolata* and *Trifolium repens*.

**Note 4:**

This is a closely-grazed sheep pasture as described in the NHA notes for this area. Sheep were grazing on the day of survey. *Lolium perenne*, *Trifolium repens*, and *Rumex acetosa* dominate with some *Cirsium palustre* and *Cirsium vulgare* also occurring.

## Note 5:

This area (like that of Note 7) is characterised by small extrusions of limestone, occurring as low exposed ledges or as small boulders (see Photo 11). The area appears to be managed by a combination of mowing and grazing. Ponies were grazing at the time of survey and cowpats were also scattered throughout.

Vegetation height was low, <5cm, and typical species occurring were *Cynosurus cristatus*, *Holcus lanatus*, *Lolium perenne*, *Plantago lanceolata*, *Trifolium repens*, *Ranunculus acris*, *Bellis perennis*, *Prunella vulgaris*, *Hypochoeris radicata*, *Conopodium majus*, *Cerastium fontanum*, *Euphrasia* spp. and *Senecio jacobaea*.

Around the occasional outcrop of limestone rock, additional, more calcareous indicators such as *Hieracium pilosella*, *Trisetum flavescens*, *Galium verum*, *Briza media*, *Ranunculus bulbosus* and *Thymus praecox* occur. These rocky areas were also tightly grazed.

## Note 6:

The vegetation composition in this area is similar to that at Stop 2 except that at N6, the vegetation is not as tightly grazed as that within Stop 2 (see Photo 07). The area is characterised by wide, open patches that remain between the clumps of mature Gorse. Bracken is absent from these slopes. These slopes face west and are gradual to steep in nature.

This area was noted in the 1993 NHA notes (NHA N2) as being species-rich and having *Orchis morio*.

**Note 7:**

This is a species-rich, unimproved, field margin included within the edges of the SAC (see Photo 15-17). It slopes from the edge of the field in which Stops 4 and 5 are located, down to an improved and re-seeded hay meadow outside the SAC boundary.

The unimproved strip is approximately 10m wide. The 1993 NHA notes for this area (NHA N6) indicate the presence of a limestone grassland with an abundance of *Euphrasia* spp. and some *Linum catharticum*.

Species diversity is high on this shallow, sloping calcareous soil. Good indicator species occur such as *Trisetum flavescens*, *Hieracium pilosella*, *Briza media*, *Linum catharticum*, *Galium verum*, *Carex flacca*, *Polygala vulgaris*, *Lotus corniculatus*, *Primula veris*, *Conopodium majus*, *Thymus praecox* and *Ranunculus bulbosus*. Grasses present include *Anthoxanthum odoratum* and *Holcus lanatus*.

Other typical species occur such as *Achillea millefolium*, *Luzula campestris*, *Dactylorhiza fuchsii*, *Alchemilla filicaulis*, *Ajuga reptans*, *Leucanthemum vulgare*, *Potentilla sterilis*, *Veronica chamaedrys*, *Bellis perennis*, *Plantago lanceolata*, *Succisa pratensis*, *Hypochoeris radicata*, *Potentilla erecta* and *Trifolium pratense*.

Species more typical of semi-improved conditions also occur such as *Trifolium repens*, *Ranunculus acris*, *Rumex acetosa* and *Prunella vulgaris*.

At the bottom of the narrow field margin, the edges of the hay field outside the SAC boundary are dominated by *Holcus lanatus*, *Arrhenatherum elatius*, *Dactylis glomerata*, *Ranunculus acris*, *Rumex acetosa* and some *Heracleum sphondylium*. Gorse also appears to be spreading.

As this field margin is the most species-rich area on the site, efforts should be made to maintain and improve its condition.

**Note 8:**

This field was highlighted by R.Fitzgerald in 1991 as being one of the areas east of Urlingford where *Orchis morio* was known to occur. It was referred to as the field 'above forestry at Killoshulan'.

The western side of this field is managed as a hay meadow, uncut at the time of surveying (see Photo 22). Hay in the adjacent field to the west was being cut at the time. The vegetation is dominated by grasses such as *Holcus lanatus*, *Dactylis glomerata*, *Lolium perenne*, *Agrostis capillaris*, and *Anthoxanthum odoratum*. Herbs include *Rumex acetosa*, *Cirsium arvense*, and *Ranunculus acris*.

Towards the middle of the field, outcropping rock forms hummocky ground with limited calcareous species remaining around rocks. These outcropping rocks are more prominent along the eastern edge of the field but the consequences of fertiliser application is evident throughout. Species diversity is low and grasses dominate the vegetation.

## Note 9:

The landscape in this vicinity is characterised by raised, rocky mounds of limestone grassland between which is a neutral/calcareous grassland on deeper soils (see Photo 23-24).

On the deeper soils, grasses such as *Cynosurus cristatus*, *Dactylis glomerata*, *Holcus lanatus*, some *Lolium perenne*, and *Agrostis capillaris* dominate. Herbs include *Lotus corniculatus*, *Potentilla erecta*, *Ranunculus acris*, *Rumex acetosa*, *Cirsium palustre*, and *Prunella vulgaris*.

Where limestone extrudes, *Avenula pubescens*, *Thymus praecox*, *Galium verum*, *Achillea millefolium*, *Lotus corniculatus*, *Luzula campestris*, and *Conopodium majus* also occur. Mature *Crataegus monogyna* shrubs are scattered throughout this area. No young seedlings were noted. Cattle were grazing on the day of survey.

## Note 10:

Rocky outcrops of limestone with shallow soils are frequent in this area (see Photo 25). This habitat is similar to that described during the 1993 NHA survey for this area (NHA Note 21).

The outcrops support a limestone heath vegetation consisting of *Calluna vulgaris*, *Erica cinerea*, *Vaccinium myrtillus*, *Galium saxatile*, *Deschampsia flexuosa*, and *Potentilla erecta*.

## Note 11:

This is an area of enclosed land which is currently very heavily grazed. On the day of survey, up to 80 cattle were grazing. The vegetation was similar in composition to that over much of this polygon (see Note 9) but a minor degree of fertiliation was evident within this field. *Cirsium arvense* was widespread.

## Note 12:

This southern portion of the site is characterised by a mosaic of heathy grassland with small areas of calcareous communities occurring wherever limestone rock is exposed (see Photo 30).

## Note 13:

The land slopes away steeply in this location. On the slopes, a grassy heath community has developed. *Lathyrus montanus* was recorded in this vicinity with *Conopodium majus*, *Potentilla erecta*, *Agrostis capillaris*, and *Galium saxatile* (see Photo 30-32).

## Note 14:

A semi-improved situation occurs here on deeper, neutral/calcareous soils (see Photo 35). Bracken is encroaching in this area, currently occupying 20% of vegetation cover. Wherever limestone is exposed, *Lotus corniculatus*, *Achillea millefolium*, *Trisetum flavescens*, *Briza media*, and *Anthoxanthum odoratum*, occur.

Where soils are deeper, *Cynosurus cristatus*, *Dactylis glomerata*, *Rumex acetosa*, *Lolium perenne*, *Ranunculus acris*, and *Trifolium repens* are frequent.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

Stop 1 is the most northerly located Stop on the site. It is located in an area of scattered mature Gorse on a steep slope which faces east (see Photo 03). The sward across these slopes show indications of some semi-improvement in the past, although orchids still occur in many places and species diversity is good. Bracken is also spreading to varying degrees. Grazing pressures are moderate, with low vegetation occurring (10cm) and no Gorse seedlings noted. Cattle tracks trails through the Gorse.

Within the Stop, a high percentage of herbs was noted (70%) and 8 indicator species were recorded. No negative indicators occurred but Bracken cover reached to 15% within the Stop and to 20% in a larger area of 5m<sup>2</sup>. The excessive cover of bracken resulted in a 'Fail' for the Structures and Functions at this Stop.

Also occurring within the Stop are *Holcus lanatus*, *Cynosurus cristatus*, *Ranunculus acris*, *Hypochoeris radicata*, *Bellis perennis*, *Prunella vulgaris*, *Achillea millefolium*, *Trifolium repens* and *Senecio jacobea*.

Outside the Stop, *Dactylorhiza fuchsii*, *Sanguisorba minor* and *Thymus praecox* occur on some small ledges of outcropping limestone. Bracken is encroaching across these slopes, estimated as occurring over 60% of the lower and middle slopes.

### Monitoring Stop 2:

This Stop is located on gradual-to-steep slopes which face west northwest. The slopes are rocky in places and brown earth is exposed where a minor degree of poaching by cattle and horses has occurred (see Photos 07-08). Grazing levels are light to moderate. Mature Gorse is scattered across the slopes, forming dense patches in places. Species diversity is highest on the slopes, between the Gorse. On the flatter areas at the top of the slopes, the vegetation is grass-dominated and semi-improved.

Within the Stop, a good percentage of herbs occur (60%) and 8 calcareous indicator species were noted. No negative indicator species or no Bracken/scrub species occur. These factors together result in a 'Pass' for the Structures and Functions at this Stop.

Additional species occurring within Stop 1 are *Hypochoeris radicata*, *Plantago lanceolata*, *Bellis perennis*, *Thymus praecox*, *Polygala vulgaris*, *Euphrasia* spp., *Achillea millefolium*, *Prunella vulgaris*, *Cerastium fontanum*, *Festuca ovina*, *Cynosurus cristatus*, and *Senecio jacobea* (see relevé 3 for full details).

Outside the Stop, additional species occurred amongst the rocky outcrops including the orchid *Coeloglossum viride* and an other calcareous indicator species, *Sanguisorba minor*.

**Monitoring Stop 3:**

This field, including the now improved field directly to the south, was highlighted by R. Fitzgerald in 1991 as being one of the areas east of Urlingford where *Orchis morio* was known to occur. More than 40 spikes were recorded at that time. The improved field to the south is excluded from the SAC. The 1993 NHA survey notes for this area (N2) describe a 'species-rich vegetation in which *Orchis morio* grows'. However, the slopes in the area of Stop 3 now show signs of agricultural improvement (see Photos 09-10). The area is fenced off and the vegetation is tightly grazed. Cattle were grazing at the time of survey.

The Monitoring Stop is located on west-facing slopes with thin soils and rocky extrusions similar to those described in Monitoring Stop 2. Some small, exposed, rocky ledges still retain minor quantities of *Thymus praecox* and *Galium verum* but in the sward itself, the diversity of calcareous indicator species is low. Within the Stop, only 4 indicator species were noted and herbs occupied only 30% of vegetation cover. The negative indicator species *Lolium perenne* also occurred, indicating a degree of re-seeding has occurred in this area in the past. No bracken or scrub was noted.

Also occurring within Monitoring Stop 3 are *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Cerastium fontanum*, *Trifolium repens*, *Plantago lanceolata*, *Veronica chamaedrys*, *Bellis perennis*, and *Achillea millefolium* (see relevé 4 for full details). Outside the Monitoring Stop, *Senecio jacobaea* and *Conopodium majus* are scattered.

The insufficient percentage cover of herbs, the low number of indicator species, and the presence of the negative indicator *Lolium perenne*, results in a 'Fail' at this Stop for the assessment of Structures and Functions. This reflects the decrease in grassland quality since the original NHA description of 1993.

**Monitoring Stop 4:**

This Monitoring Stop is located in a gradual, south west sloping area which was grazed by sheep at the time of surveying (see Photos 12-14). Areas of open grassland occur between mature *Ulex* scrub. Young Gorse seedlings were not noted, more than likely due to the very tight grazing patterns observed. The moderate-to-heavy grazing pressures (sheep) have resulted in a very short sward, measuring less than 5cm high.

Like at Monitoring Stop 3, the 1993 NHA survey notes for the area of Stop 4 (N2) describe 'small (30cm) outcrops of limestone as shelves at intervals with calcicole species' and a 'species-rich vegetation in which *Orchis morio* grows'.

Today, while herbs occupied 40% of vegetation cover, only three calcareous indicator species were recorded. Unlike the reseeded vegetation of Stop 3, however, Stop 4 does not include the negative indicator species *Lolium perenne*. Bracken also occurs but in low quantities (5% cover).

Additional species occurring within Monitoring Stop 4 are *Dactylis glomerata*, *Cynosurus cristatus*, *Poa pratensis*, *Holcus lanatus*, *Festuca ovina*, *Trifolium pratense*, *Rumex acetosa*, *Luzula campestris*, *Trifolium repens*, *Achillea millefolium*, *Ranunculus acris*, *Viola* spp., *Prunella vulgaris*, *Cerastium fontanum*, *Thymus praecox*, *Rhytidadelphus squarrosus*, and *Senecio jacobea* (see relevé 5 for full details).

Occurring outside the Monitoring Stop were *Hypochoeris radicata* and *Hieracium pilosella* while across the slopes, *Pteridium aquilinum* occurs in small quantities with *Cirsium palustre*.

Calcareous indicator species survive only around exposed limestone rocks or on the small limestone ledges which occur across these slopes. Species noted in these situations include small percentages of *Linum catharticum*, *Avenula pubescens*, *Antennaria dioica*, *Galium verum*, *Briza media*, and *Hieracium pilosella*.

If grazing pressure were reduced, these species would likely be more abundant across the slopes in general, and not be restricted only to around the rocky ledges.

**Monitoring Stop 5:**

The 1993 NHA notes (N1)) describe this area as having good limestone grassland, although colonisation by *Rubus fruticosus* and *Ulex europaeus* was occurring at that time. This field today shows indications of improvement (see Photo 18). The vegetation is grass-dominated (60% grass cover) with spreading *Rubus fruticosus* and *Cirsium arvense*. Even on the few outcropping limestone ledges, only very minor quantities of calcareous indicators occur such as *Briza media*, *Hieracium pilosella*, *Galium verum*, and *Lotus corniculatus* occur. *Trifolium repens* dominates the herb cover.

Within Stop 5, only one indicator species, *Lotus corniculatus*, was recorded. Vegetation is 10cm high and recently grazed. Bracken occurs but in minor quantities (<5% overall). No negative indicator species such as *Lolium perenne* occur.

Also occurring within Stop 5 are *Holcus lanatus*, *Dactylis glomerata*, *Cynosurus cristatus*, *Trifolium repens*, *Trifolium pratense*, , *Rumex acetosa*, and *Luzula campestris*. Outside the Stop, *Urtica dioica* occurs close to the boundary wall and along the track at the end of the field.

Due to the significant lack of indicator species and the insufficient cover of herbs, this Stop would be deemed to 'Fail' its assessment of Structures and Functions. However, when 1995, 2000, and 2005 digital aerial photographs are examined, a loss of habitat becomes apparent. Therefore, this Stop is not assessed for its Structures and Functions but is included instead in the assessment of Extent.

**Monitoring Stop 6:**

This Stop is located in a small area of limestone grassland which occurs on a high rocky mound within a semi-improved sheep-grazed pasture (see Photo 26). A good range of calcareous indicator species occur on the elevated area and Bracken or scrub does not occur. Grazing pressures appear to be light.

Within the Stop, herbs occupy 70% cover and 8 indicator species occur. Also occurring within the Stop are *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Thymus praecox*, *Bellis perennis*, *Achillea millefolium*, *Plantago lanceolata*, and *Potentilla erecta* (see relevé 6 for full details). Outside the Stop, *Danthonia decumbens* and *Dactylis glomerata* were also recorded.

The Structures and Functions at this Stop are deemed to 'Pass'.



**Monitoring Stop 7:**

This Stop is located on a gentle southwest-facing slope (see Photo 27). Sufficient herb cover occurs (40%) but only 5 calcareous indicator species occur. Grazing patterns in this area appear to be light and the vegetation here measured up to 30cm high.

Also occurring within the Stop are *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Dactylis glomerata*, *Holcus lanatus*, *Poa annua*, *Achillea millefolium*, *Ranunculus acris*, *Trifolium repens*, *Trifolium pratense*, *Potentilla erecta*, *Luzula campestris*, *Galium saxatile*, and the moss *Rhytidiadelphus squarrosus* (see relevé 1 for full details).

Outside the Stop, small hummocks of *Thymus praecox* occur with *Briza media* and *Galium verum*.

Due to the insufficient number of calcareous species present, this Stop is deemed to 'Fail' in its assessment of Structures and Functions.

**Monitoring Stop 8:**

This Stop is located on a gradual southwest-facing slope (see Photo 28). Herb content is high (70%) and 11 indicator species were recorded, the highest total at any Stop on the site. No negative indicator species or bracken/scrub species were recorded. Grazing patterns appear light to moderate.

In addition to the 11 indicator species, also occurring within the Stop were *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Thymus praecox*, *Luzula campestris*, *Potentilla erecta*, *Bellis perennis*, and *Hypochoeris radicata* (see relevé 7 for full details).

Outside the Stop, additional species occurring include *Polygala vulgaris* and *Dactylis glomerata*. Scattered mature Gorse also occurs but no young scrub seedlings were noted.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

## **Clonaslee Eskers and Derry Bog**

### **SITE DETAILS**

**Surveyed By:**            **Survey Dates:**

**Total Site Area (Ha):** 278.78

**Area of Priority Grassland (N2000) (Ha):**

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**6" Sheets:**

**Digital Aerial Photos (Tile Nos.):**

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

000000

**Priority Grassland Habitat Type:**        6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

### **Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

*Description given in the NATURA 2000 explanatory forms:*

*Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

**Previous surveys of relevance to the priority grassland habitats within the site:**

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.

## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*



## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

**Ridge Road, SW of Rapemills****SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Faith Wilson                08/06/2006  
Willie Crowley

**Total Site Area (Ha):** 16.75

**Area of Priority Grassland (N2000) (Ha):** Area not given but described as relatively small.

**Area of Priority Grassland 2006 (Ha)\*:** 2

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:**                        **Discovery Sheet No:**                **6" Sheets:**  
Offaly                                53                                        OY030, OY035.

**Digital Aerial Photos (Tile Nos.):**

O3700-a, O3700-b, O3700-c, O3700-d, O3701-a, O3701-b, O3701-c, O3701-d.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS****SAC Site Code:**

000919

**Priority Grassland Habitat Type:**        6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This steep-sided twin esker ridge, formed from glacial gravels, is situated under 2 km south-west of the village of Rapemills in County Offaly. The more northerly ridge supports a road running towards the Little Brosna River. Hollows are present with deeper soils which are more nutrient-enriched, while the banks are slightly leached.

Although small, this site is of ecological value as a good example of species-rich calcareous grassland, rich in orchids. This habitat type is increasingly rare as a result of agricultural intensification, and is given priority status on Annex I of the EU Habitats Directive. The vegetation at Ridge Road is diverse and features a variety of unusual plant communities. A large population of *Orchis morio* was recorded here in 1991.

### **Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

There was no description of the grassland habitats given in the site synopsis.

*Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: A relatively small example of orchid-rich dry calcareous grassland (< 0.1% of national total) which supports a rich diversity of plant species and a variety of unusual vegetation communities. Along with several uncommon and local plant species the habitat supports a large population of the rare and protected *Orchis morio*. The orchid *Orchis mascula* is also found. Scrub occurs scattered throughout the site. The site is damaged and disturbed in several places. The unimproved grassland on the site represents a fine example of orchid-rich "semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)".

*Description based on the 2006 Survey :*

The 2006 survey found that the best examples of calcareous grassland within the site were restricted to the leached and terraced steeply sloping areas of the esker ridges. Much of the remaining area of the site appeared to be a more neutral or rank grassland and it is unlikely that *Orchis morio* would remain in some of the areas identified by Fitzgerald in the 1991 Rare Plant survey. The following indicator species were recorded in 2006 - *Leontodon hispidus*, *Lotus corniculatus*, *Primula veris*, *Carex flacca*, *Ranunculus bulbosus*, *Sanguisorba minor*, *Galium verum*, *Hieracium pilosella*, *Briza media*, *Carex caryophyllea* and *Linum catharticum*. *Dactylorhiza fuchsii*, *Orchis morio* and *Dactylorhiza maculata* were also recorded.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the rare plant survey in 1991 by R. Fitzgerald. The site boundary was drawn up in 1993. The site was extended to include a section of the esker ridge to the east of the original site following recommendations by MPSU and was surveyed in 1999.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

This site consists of two polygons - an eastern one and a western one. The areas of calcareous grassland were found only in the western area, which was where the Rare Plant survey had been conducted. Four Monitoring Stops were conducted within this part of the site and their locations are depicted on Map 2. All of the Monitoring Stops were used to assess the Structures and Functions of the calcareous grassland within the site.

Three Monitoring Stops passed the assessment of Structures and Functions (see Table 1a). The assessed Stops were seen to be located in a single management unit. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	1
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Pass

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 2
Stop 02	1	Pass	Structures and Functions	Map 2
Stop 03	1	Pass	Structures and Functions	Map 2
Stop 04	1	Fail	Structures and Functions	Map 2

The site was treated as a two separate management units - one in the eastern polygon and one in the western polygon. The horses present were free to wander throughout the western polygon which contained the only remaining areas of calcareous grassland. The eastern polygon consisted of five separate fields but no Monitoring Stops were conducted in this area.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Species-rich calcareous grasslands are sensitive to agricultural improvement, e.g. fertiliser application or re-seeding. At Ridge Road, the steep esker banks have restricted the agricultural use of this site and the lands are, in general, unfertilised on the steep slopes. The site is currently used for horse grazing (140) and was formerly managed as a deer farm.

Overall, grazing (140) is a positive influence on calcareous grasslands. However, it is important that the correct level of grazing is achieved, i.e. enough to halt the spread of shrub species and to maintain the balance between scrub and species-rich grassland. While a degree of current undergrazing was noticed (149), there been some previous damage to the vegetation cover on the steeper slopes by poaching and erosion. Scrub is also seen to be increasing in the site (954). The more gradually sloped, south-facing slopes of the southern esker have become rank due to an increase in nutrients in these areas and possible reseeding/fertilising (103/120).

The eastern section of the site has mostly been improved (103/120) and there was no longer any species-rich calcareous grassland present on the upper slopes of the esker ridge. It is questionable as to whether or not this habitat was formerly present in this area as the descriptions given in the NHA Boundary Survey by Keane and Heery do not correspond to orchid-rich grassland. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-1	B
120	Fertilisation	-1	B
140	Grazing	1	C
149	Grazing: undergrazing	-1	A

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

This site requires active removal of scrub and control of regrowth. It also requires a continuation of the current grazing regime on the steeper slopes to ensure that scrub no longer encroaches, although the horses may be contributing to the poaching within the site.

## **CONSERVATION STATUS**

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

1.3ha of the habitat was mapped within the SAC along with a further 2.1ha classed as calcareous to neutral grassland. The Natura 2000 form does not estimate any area for the habitat at the site but states that it is relatively small. However, in comparison to the descriptions given by Fitzgerald in 1991, the Extent of calcareous grassland, particularly on the south facing slope of the southern ridge, would appear to have decreased as a result of fertilisation and reseeding. For this reason the Extent of calcareous grassland within the site is ranked as Unfavourable - bad.

### ***Structure and Functions:***

Four Monitoring Stops were conducted within this site and only one of these failed. Monitoring Stop 4 failed on the basis of lack of calcareous indicator species and poor herb cover. As a 25% failure rate in the assessment of Structures and Functions was recorded, the condition of the calcareous grassland within the site is therefore rated as Unfavourable - inadequate.

### ***Future Prospects:***

While the extent of the 6210 habitat at this site is described as being Unfavourable - bad and the Structures and Functions are seen to be Unfavourable - inadequate, the Future Prospects for this site are thought to be reasonable. The south-facing steep slopes of the northern esker ridge and the north facing slopes of the southern esker ridge (Monitoring Stops 1, 2 and 4) are likely to continue to support a good diversity of calcareous species.

The increased nutrient loading on the south facing slope of the southern esker ridge (Monitoring Stop 3) has resulted in a loss of species diversity in this area. Such actions should be reversed.

The encroachment of scrub within the site could also be relatively easily managed and would ensure that the site remains a good representative sample of calcareous grassland and may also aid in the recovery of the *Orchis morio* population.

The future prospects for the site are therefore determined as Unfavourable - inadequate.

### ***Conservation Assessment:***

The overall Conservation Status Assessment of orchid-rich grassland within the site is assessed as Unfavourable - bad (see Table 3). The Extent of calcareous grassland has decreased as a result of scrub encroachment, fertilisation and reseeding. Three of the four Monitoring Stops passed resulting in a 'Pass' for the Structures and Functions of the site which are described as Unfavourable - inadequate. The Future Prospects for the site will depend on a management agreement between the landowner and NPWS and some active

management in terms of scrub removal.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
	Structure and Function		
		Extent	



**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This SAC is located on two esker ridges which run parallel to each other. A local road runs along the crest of the northernmost ridge. The areas of orchid-rich calcareous grassland are limited to the steep slopes of the esker ridges, with more improved grassland found in the valley between the two ridges.

The south facing slopes of the northern ridge and the north facing slopes of the southern ridge show signs of terracing and some poaching by horses which currently graze the area. Areas of dense scrub are located in the valleys and on the slopes and ridges of the esker.

*Dactylorhiza maculata* and *Dactylorhiza fuchsii* were present on the steep slopes and in areas of grassland beneath scrub. Other species include *Alchemilla vulgaris*, *Plantago lanceolata*, *Dactylis glomerata*, *Brachypodium* sp., *Carlina vulgaris*, *Luzula campestris*, *Thymus praecox*, *Avenula pubescens*, *Danthonia decumbens*, *Festuca ovina*, *Potentilla erecta* and *Carex pilullifera*.

**Note 2:**

The valley floor is dominated by semi-improved grassland with *Anthoxanthum odoratum*, *Holcus lanatus*, *Ranunculus repens*, *Ranunculus acris*, *Cerastium fontanum* and *Cirsium arvense* - see Photo 26.

**Note 3:**

The grassland on the southern slope of the southern ridge is less species rich than that on the northern ridge. This may be because this area is gradually sloping as opposed to the steep slopes of the northern ridge.

This grassland is dominated by *Cerastium fontanum*, *Plantago lanceolata*, *Ranunculus repens*, *Ranunculus bulbosus*, *Anthoxanthum odoratum* and *Holcus lanatus*.

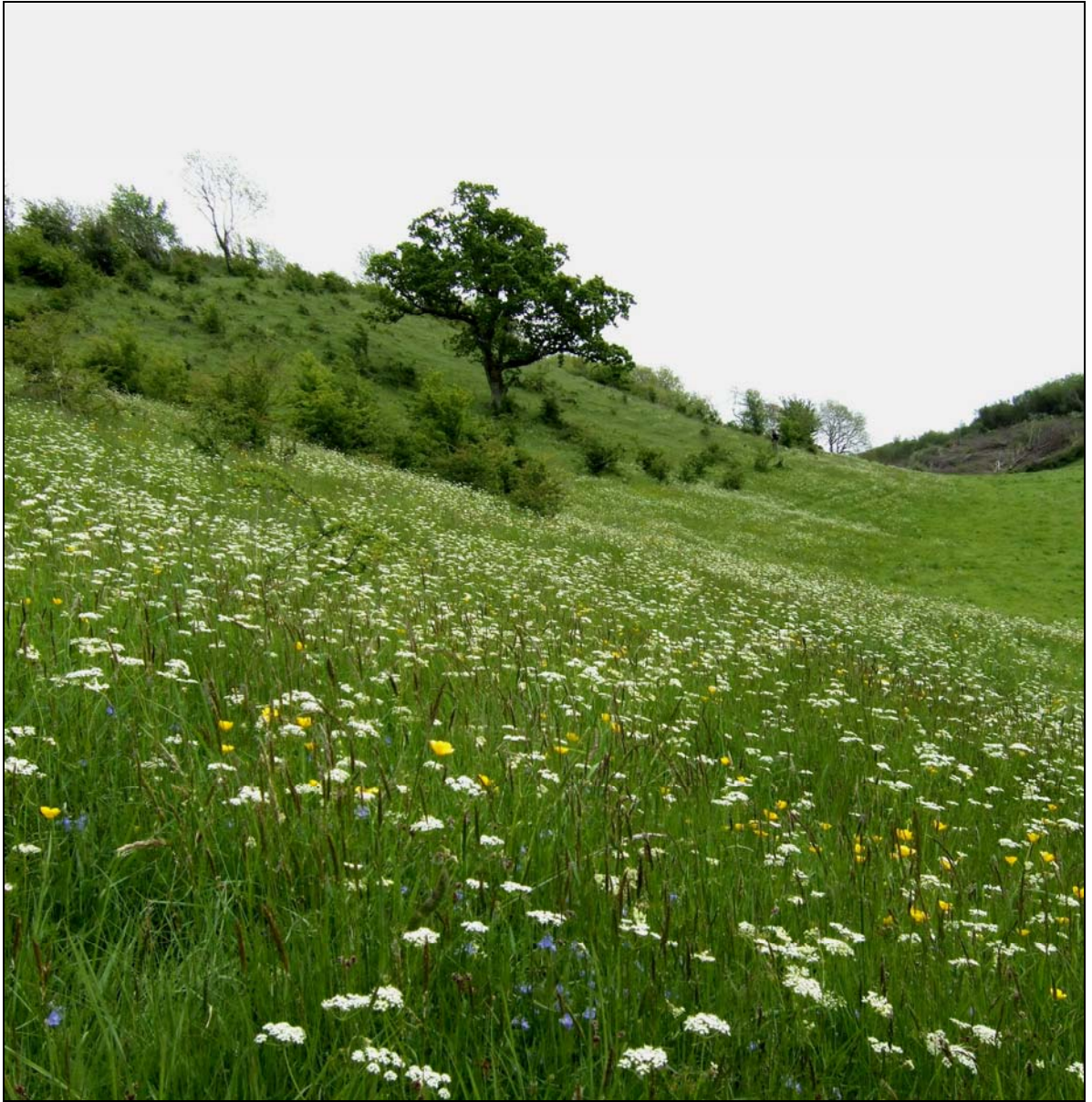
There is occasional *Dactylis glomerata*, *Bellis perennis*, *Lotus corniculatus* and *Centaureum erythraea*. There is scattered *Urtica dioica* and *Senecio vulgaris* in this area.

## Note 4:

This area adjacent to Ridge Road is now improved/semi-improved grassland.

Species present include occasional *Cynosurus cristatus*, *Holcus lanatus*, *Festuca ovina*, *Dactylis glomerata*, *Poa* sp. and *Ranunculus bulbosus*. The ground is heavily poached. Other species recorded include *Trifolium repens*, *Trifolium pratense*, *Centaurea nigra*, *Bellis perennis*, *Plantago lanceolata*, *Cerastium fontanum* and, very rarely, *Primula veris*. *Reseda luteola* was present near the access gate to the field where there has been recent disturbance. *Leucanthemum vulgare* was also present. There were abundant patches of *Cirsium arvense* in places. See Photos 38, 39, 40 and 41. This area corresponds to that described in NHA N04.

# **Grasslands Monitoring Project 2006**



## **Volume III**

### **Summary Site Reports**

#### **Orchid-rich Calcareous Grasslands**

Site Codes 000925 to 002256

Report produced by NPWS by Rosaleen Dwyer, Willie Crowley, and Faith Wilson  
as part of the Grasslands Monitoring Programme

# Grasslands Monitoring Project 2006

## Volume III

### Summary Site Reports

#### Orchid-rich Calcareous Grasslands

SITE CODE	SITE NAME
IE0000925	The Long Derries, Edenderry
IE0000925	The Long Derries, Edenderry
IE0001209	Glenasmole Valley
IE0001275	Inisheer Island
IE0001625	Castlesampson Esker
IE0001656	Bricklieve Mountains & Keishcorran
IE0001774	Lough Carra/Mask Complex
IE0001776	Pilgrim's Road Esker
IE0001831	Split Hills and Long Hill Esker
IE0001926	East Burren Complex
IE0002074	Slyne Head Peninsula
IE0002213	Glenloughaun Esker
IE0002214	Killeglan Grassland
IE0002256	Ballyprior Grassland

## **The Long Derries, Edenderry**

### **SITE DETAILS**

**Surveyed By:**                      **Survey Dates:**  
Faith Wilson                      06/06/2006  
Willie Crowley

**Total Site Area (Ha):** 30.24

**Area of Priority Grassland (N2000) (Ha):** 12.4.

**Area of Priority Grassland 2006 (Ha)\*:** 2

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                              **Discovery Sheet No:**              **6" Sheets:**  
Offaly                                  49    OF012, OF020.

**Digital Aerial Photos (Tile Nos.):**

O3316-a, O3316-b, O3316-c, O3316-d, O3379-a, O3379-b, O3379-c, O3379-d.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

000925

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

The Long Derries is located approximately 5 km south-east of Edenderry and is part of a low esker ridge running from Edenderry to Rathdangan. It primarily consists of glacial gravels interspersed with loam and peat soil. The site is best divided into two distinct areas - the eastern and western sections.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: The dominant habitat is dry calcareous grassland. This can be observed towards the north-western end where Carlina Thistle (*Carlina vulgaris*), Marjoram (*Origanum vulgare*), Wild Thyme (*Thymus praecox*) and Cowslip (*Primula veris*) grow. An interesting feature is a number of used and unused gravel pits which are host to plants such as Mountain Everlasting (*Antennaria dioica*) and the rare Fine-leaved Sandwort (*Minuartia hybrida*) among others.

An important aspect of this site is the presence of the rare, Red Data Book species, Blue Fleabane (*Erigeron acer*), and the legally protected (Flora Protection Order, 1987), Basil Thyme (*Acinos arvensis*) and Green-winged Orchid (*Orchis morio*). A large population of the latter species occurs in the grassland communities, including those in the transition to peatland zone. Blue Fleabane is found in grassland and gravel pits on the site, the latter habitat also supporting Basil Thyme.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the orchid-rich calcareous grassland as follows: Though small in extent in terms of the national area of this habitat (<0.1%), this is one of the larger examples of the habitat to be found on eskers (12.4 ha). Much of this habitat is, however, partitioned by gravel workings and scrub blocks. The best area of this habitat is found on the esker ridge in the eastern half of the site. This habitat includes a good range of vegetation communities and is species-rich.

A substantial population (> 350 spikes in 1991) of the rare and protected *Orchis morio* is found in this habitat. This species is found predominantly on dry, gravelly substrates on the esker ridge, but also occurs sparingly in base-flushed runnels in the eastern end of the site where this habitat grades into humid grassland over peat. The vegetation community, comprising a mixture of calcicole and calcifuge species, found here is particularly of note. The calcareous grassland found on the site is generally typical of other such unimproved calcareous grasslands found elsewhere on esker sites in the midlands.

#### *Description based on the 2006 Survey :*

The 2006 survey describes the habitats as follows: The dominant habitat in the western section of the site is recolonising bare ground with some small remnants of dry calcareous grassland, which support species such as *Carlina vulgaris*, *Thymus praecox*, *Primula veris*, *Antennaria dioica*, *Briza media*, *Carex flacca*, *Carex caryophylla*, *Daucus carota* and *Galium verum*. These areas of calcareous grassland are typically

small in extent and bounded by encroaching scrub and the gravel pits. The ongoing access of vehicles including scrambler bikes to this area has restricted the development of grassland in this section of the site, while lack of scrub control also threatens those existing areas. An interesting feature of this section of the site are the number of disused gravel pits which are host to rare plants such as *Minuartia hybrida*, *Acinos arvensis* and *Erigeron acer* (these were recorded here in 1991).

In the eastern section of the site *Crataegus monogyna* forms blocks of scrub interspersed with open areas of calcareous grassland which has become rank. *Pteridium aquilinum* and *Rubus fruticosus* agg. are also invading this area. This was the former location of *Orchis morio* (350 flowering spikes were recorded in 1991) but the species was not refound during the current survey. Some calcareous indicator species remain in this area such as *Briza media*, *Galium verum*, *Lotus corniculatus*, *Ranunculus bulbosus* and *Sanguisorba minor*.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1991 NHA Survey in 1991 and subsequently by R. Fitzgerald as part of the rare plant survey conducted in the same year.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.



## **SITE MONITORING AND MANAGEMENT UNITS**

Four Monitoring Stops were conducted in total (see Table 1a) and their locations are depicted on Map 2. All four stops were used to assess the Structures and Functions of calcareous grassland within the site. Two Monitoring Stops passed and two failed, resulting in an overall fail for the Structures and Functions of the site (see Table 1a). Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	2
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 2
Stop 02	2	Fail	Structures and Functions	Map 2
Stop 03	2	Fail	Structures and Functions	Map 2
Stop 04	1	Pass	Structures and Functions	Map 2

This site was divided into two management units. These comprise the eastern section of the site which is dominated by gravel pits and the western section of the site which is currently ungrazed and hence has gone rank and has encroaching scrub.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The western section of this site is used in connection with activities connected with the harvesting of peat and is dominated by disused gravel pits (301). Machinery, equipments and other materials are stored here by Bord Na Mona who own this site (412). Shooting (230) and motorbike scrambling (623) are ongoing activities in this section of the site. Although former gravel extraction (301) has helped create habitats for some rare plant species, overall the area of dry calcareous grassland within the site has decreased as a result of this activity. Of the remaining areas of grassland, undergrazing (149) is an issue. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

The gravel pits in this area are currently disused and a pioneer calcareous community is developing on these areas of bare ground. The areas of intact calcareous grassland in this part of the site are now only small fragments of what was likely to have been their former extent and are restricted to small areas at the boundaries of the gravel pits. Scrub encroachment (954) on these marginal fragments threaten their future prospects. The continued activity of scrambler bikes in this area also pose a threat to the recolonisation of exposed sand and gravels in this area by calcareous species and hence the future development of grassland on these disturbed areas. The ongoing storage of bog track way, machinery and other industrial equipment by Bord Na Mona also degrade the conservation value of the site.

The eastern section of the site is threatened by lack of grazing (149) which has resulted in rank grassland in this area, with subsequent loss of species diversity. No flowering spikes of *Orchis morio* were observed and it is unlikely that this species could survive here at present given the rank condition of the grassland. Encroaching scrub continues to threaten this section of the site and scrambler bikes have some access to this area although it is used to a lesser extent than the area to the west.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
149	Grazing: undergrazing	-1	A
230	Hunting	0	C
412	Industrial or commercial areas: industrial stockage	0	C
623	Outdoor sports & leisure activities: motorised vehicles	-1	A
301	Sand & gravel extraction: quarries	-2	A

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

divided into two separate management units - Management Units 1 and 2.

#### Management Unit 1.

The access of scrambler bikes and other vehicles to the western section of the site needs to be controlled in order to allow the natural recolonisation and regeneration of calcareous grassland in this section of the site. This access needs to be controlled not only from the main access point at the western entrance to the site but also from the Bord Na Mona tracks and pathways surrounding the site. The scrub in this section of the site should be controlled where it is encroaching on the calcareous grassland fragments. The storage of industrial equipment by Bord Na Mona in this area also needs to be reviewed. Bord Na Mona should also be appraised of the conservation value of the disused gravel pits to ensure that they are not reworked.

#### Management Unit 2.

In the eastern section of the site the ongoing encroachment of scrub needs to be controlled through physical removal of the *Crataegus monogyna* scrub, *Pteridium aquilinum* and *Rubus fruticosus* agg. followed by hard grazing. A hard grazing regime would also be of benefit to the grassland in the site and would allow the species diversity and the *Orchis morio* populations a chance to recover. The access by scrambler bikes to this area also need to be controlled.

## **CONSERVATION STATUS**

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

2.11ha of the 6210 habitat was mapped within the SAC. A further 6.5ha occurring within the disused quarries is also mapped, which is classed as recolonising bare ground and shows some elements of calcareous grassland.

The NATURA 2000 explanatory notes estimate that 12.4ha of habitat 6210 occurs within this site, 'making it one of the larger examples of the habitat to be found on eskers'. The NATURA notes also state that the best area of the habitat is found on the esker ridge in the eastern half of the site. An analysis of the geo-referenced ortho-rectified aerial photographs from the 1995, 2000 and 2005 series, however, shows how this part of the site is becoming seriously encroached by scrub due to lack of management. Although the estimate of 12.4ha in the NATURA form is likely to have been an over-estimate (and may have included the area classed during this survey as recolonising bare ground), it is clear from the aerial photographs (and from ground survey notes indicating the development of rank grassland), that there has been a substantial loss in habitat 6210 in the years between the 1995 and the 2005 aerial photos. Thus, the Extent of species-rich calcareous grassland within the site is ranked as Unfavourable - bad.

### ***Structure and Functions:***

Two of the four Monitoring Stops conducted within the site failed (Monitoring Stops 2 and 3) as a result of lack of calcareous indicator species and/or poor herb cover. This results in an overall 'Fail' for the Structures and Functions of the site. Both of these Stops were located in the eastern half of the site, which was highlighted in the NATURA 2000 explanatory notes as 'the best area of habitat 6210 in the site'. This highlights the seriousness of the problem of lack of management at the site, as both Stops failed due to the development of rank grassland with scrub encroachment also widespread in the vicinity. Thus, the Structures and Functions of species-rich calcareous grassland within the site is ranked as Unfavourable - bad.

### ***Future Prospects:***

The Future Prospects for the calcareous grassland within the site are uncertain. There would appear to have been a considerable loss in habitat extent, although in the absence of accurate data on the original extent, this is difficult to estimate. The condition of the remaining grassland areas are not good. However, the encroachment of scrub within the site and the development of rank grassland which has reduced the quality and extent of the habitat could be reversed with active management.

The continued access by scrambler bikes to the site would be difficult to prevent. Several access points are available and the area is unfenced. The likelihood of the gravel pits being reworked is also a matter for concern, particularly in the current economic climate.

For these reasons, the uncertain Future Prospects for the calcareous grassland within the site are described as being Unfavourable - inadequate.

***Conservation Assessment:***

The Extent of calcareous grassland within the site has been reduced due to encroachment by scrub and the development of rank grassland as a result of undergrazing. The condition of the grassland remaining within the site is also poor but it could be restored with hard grazing.

The ongoing management of access to the gravel pits by scrambler bikes and the use of these areas for storage of machinery etc. by Bord Na Mona also needs to be addressed. It is unclear as to whether or not the area of gravel pits has increased in size since the site was designated. It is likely that if sand/gravel was required by Bord Na Mona for its operations they could be reworked.

The overall Conservation Status Assessment for the calcareous grassland within the site is thus rated as Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	



## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

Note 1:

The eastern section of this site has become rank due to lack of grazing and management. Whilst some calcareous indicator species remain the grassland is unlikely to support a rich diversity of orchid species and the presence of *Orchis morio* in the site was unconfirmed.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop was located on a small area of intact grassland at the top of an old gravel pit (see Photo 1). It is bounded to the south by the steep face of the gravel pit (see Photo 2), which provides nesting habitat for sand martins and good burrowing habitat for solitary bees. To the north of this Monitoring Stop is encroaching scrub (see Photo 4) and the dirt track along the esker ridge.

Overall this section of the site is very disturbed and is subject to scrambler bike activity (See Photo 5). Some undisturbed areas are being recolonised with calcareous species. Eleven calcareous indicator species were recorded in a herb rich sward (40%) with no encroachment by *Pteridium aquilinum*/scrub and no negative indicator species present which resulted in a 'Pass' for the Monitoring Stop.

Additional species present to those recorded in the Monitoring Stop include *Leucanthemum vulgare*, *Dactylis glomerata*, *Holcus lanatus*, *Plantago lanceolata* and *Agrimonia eupatoria*.

Bord Na Mona store old railway tracks, equipment and other industrial debris within this section of the site (See Photo 3).

### **Monitoring Stop 2:**

This Monitoring Stop was located at the eastern end of the esker ridge in the area in which *Orchis morio* was found during the rare plant survey by R. Fitzgerald in 1991. Since that survey, the grassland has become rank with encroaching bramble and bracken (see Photo 6). Occasional indicators of calcareous grassland remain but overall the quality of this Monitoring Stop has declined considerably in comparison to the description given by Fitzgerald in 1991.

The extent of scrub has also increased in this area (see Photos 7 and 8).

Only five calcareous indicator species were recorded in a herb rich sward (50%) with no encroachment by *Pteridium aquilinum*/scrub within the stop and no negative indicator species present which resulted in a 'Fail' for the Monitoring Stop.

Additional species present include abundant *Dactylis glomerata*, and occasional *Anthoxanthum odoratum*, *Veronica chamaedrys*, *Centaurea nigra*, and *Luzula campestris*. No evidence of *Orchis morio* was found and the area is likely to have become too rank to support orchids due to lack of management and grazing.

Scrambler bikes continue to have access to this area and there is a well worn track along the ridge of the esker caused by these bikes (See Photo 11).



**Monitoring Stop 3:**

This Monitoring Stop was located on the northern slope of the eastern end of the esker ridge below the track created by scrambler bikes. This area has also become rank in comparison to the description given by Fitzgerald in 1991. The vegetation is dominated by *Anthoxanthum odoratum*, *Dactylis glomerata*, *Trifolium repens*, *Trifolium pratense*, *Cerastium fontanum*, *Luzula campestris* and *Equisetum arvense* in addition to the calcareous indicator species listed (See Photos 9 and 10).

Only four calcareous indicator species were recorded in a herb poor sward (30%) with no encroachment by *Pteridium aquilinum*/scrub and no negative indicator species present which resulted in a 'Fail' for the Monitoring Stop.

This area also requires grazing and management.

**Monitoring Stop 4:**

This Monitoring Stop is located on an area adjacent to the main track along the ridge of the esker in the western section (See Photo 12). This area was undoubtedly disturbed in the past but a thin layer of turf with a good selection of calcareous grassland indicator species has developed (See Photo 13).

Nine calcareous indicator species were recorded in a herb rich sward (90%) with no encroachment by *Pteridium aquilinum*/scrub or negative indicator species present which resulted in a 'Pass' for the Monitoring Stop.

Other species present include; *Leucanthemum vulgare*, *Polygala vulgaris*, *Plantago lanceolata*, *Achillea millefolium*, *Luzula campestris*, *Cirsium dissectum* and *Trifolium dubium*. Additional species in the general vicinity of this Monitoring Stop but not within the quadrat include *Primula veris*, *Agrimonia eupatoria*, *Blackstonia perfoliata* and *Antennaria dioica*.

The Malaise and pitfall traps erected by the EPA funded study on the 'Insects of Calcareous Grasslands' within this site are located approximately 5m to the south of this Monitoring Stop (See Photo 14).

To the north of this Monitoring Stop is a disused gravel pit, while the main track along the esker in this section of the site is found to the south. This grassland would appear to be in good condition but may be vulnerable to the impacts of leisure activities such as scrambler bikes which currently use the site and further equipment storage by Bord Na Mona.

## **Glenasmole Valley**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	03/07/2006
Faith Wilson	04/07/2006

**Total Site Area (Ha):** 149.29

**Area of Priority Grassland (N2000) (Ha):** 25.

**Area of Priority Grassland 2006 (Ha)\*:** 2.

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Dublin	50	DU024, DU025.

**Digital Aerial Photos (Tile Nos.):**

O3453-c, O3514-a, O3514-b, O3514-c, O3514-d.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

001209

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Glenasmole Valley in south Co. Dublin lies on the edge of the Wicklow uplands, approximately 5 km from Tallaght. The River Dodder flows through the valley and has been impounded here to form two reservoirs which supply water to south Dublin. The non-calcareous bedrock of the Glenasmole Valley has been overlain by deep drift deposits which now line the valley sides. They are partly covered by scrub and woodland, and on the less precipitous parts, by a herb-rich grassland. There is much seepage through the deposits, which brings to the surface water rich in bases, which induces local patches of calcareous fen and, in places, petrifying springs, a priority habitat listed on Annex I of the EU Habitats Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Orchid-rich grassland occurs in the drier parts of this site and in places grades into Molinia meadow, both of these habitats are listed on Annex I of the EU Habitats Directive. Species recorded in these habitats include Frog Orchid (*Coeloglossum viride*), Northern Marsh-orchid (*Dactylorhiza purpurella*), Fragrant Orchid (*Gymnadenia conopsea*), Marsh Helleborine (*Epipactis palustris*), Early-purple Orchid (*Orchis mascula*) and Greater Butterfly Orchid (*Platanthera chlorantha*). Two Red Data Book species have also been found here, Green-winged Orchid (*Orchis morio*) and Small-white Orchid (*Pseudorchis albida*). The sward includes Sweet Vernal-grass (*Anthoxanthum odoratum*), Creeping Bent (*Agrostis stolonifera*) and Crested Dog's-tail (*Cynosurus cristatus*). Other species which occur are Common Bird's-foot-trefoil (*Lotus corniculatus*), Kidney Vetch (*Anthyllis vulneraria*), Common Restharrow (*Ononis repens*), Yellow-wort (*Blackstonia perfoliata*) and Autumn Gentian (*Gentianella amarella*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: The glacial drifts on both side of the valley support in placed dry calcareous grassland, some of which is orchid-rich. The dry grassland occurs in association with wet flushed areas and both of these habitats are well known for their diversity of orchid species (See Colgan 1904 and Doogue et. al. 1999). The dry grassland would have been more frequent in former times prior to agricultural intensification of recent decades. Species present include *Carlina vulgaris*, *Lotus corniculatus*, *Blackstonia perfoliata*, *Euphrasia* sp., *Thymus praecox*, *Galium verum*, *Primula veris*, *Centaurium erythraea*, *Centaurea nigra*, *Anthyllis vulneraria*, *Linum catharticum*, *Linum bienne* with scarcer species such as *Centaurea scabiosa* and *Hieracium umbellatum*.

The orchid interest lies in the occurrence of several species. *Orchis morio* (c.20 spikes in the 1992 survey) occurs on semi-improved pasture in the St. Anne's area, as does *Dactylorhiza fuchsii* and *Anacamptis pyramidalis*. The rare (and legally protected) *Pseudorchis albida* has been recorded on pasture grassland in the past. Other orchid species which occur on pasture, some of which are more characteristic of wet grassland area, include *Coeloglossum viride* and *Platanthera chlorantha*.

While much of the calcareous grassland has been improved to some extent, there still remains a good species diversity and a notable diversity of orchid species. It is typical of the habitat and probably one of the best examples in the east.

*Description based on the 2006 Survey :*

The 2006 survey found that the calcareous grassland within the site is currently varied in extent and quality. It is typically restricted to the upper steep slopes of fields above the reservoir and is often found on thin soils which show signs of leaching and terracing. Typical species encountered include *Briza media*, *Carex flacca*, *Galium verum*, *Hieracium pilosella*, *Leontodon hispidus*, *Linum catharticum*, *Lotus corniculatus* and *Ranunculus bulbosus*. Other species less frequently encountered include *Dactylorhiza fuchsii*, *Conopodium majus*, *Primula veris*, *Sanguisorba minor* and *Origanum vulgare*. The only orchid species recorded during the present survey within calcareous grassland was *Dactylorhiza fuchsii*, while *Gymnadenia conopsea* was found in an area of wet grassland/flush/Molinia meadow/alkaline fen. An area of species-rich hay meadow was identified during the survey. This was located outside the current SAC boundary in the area in which *Orchis morio* was previously identified (Note 4). It is proposed that the boundary is amended to include this area.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

Initial information on this site was found in the ASI survey records. This site was subsequently surveyed during the 1993 NHA Survey. A rare plant survey was conducted in 1991 and 1992 by D. Doogue, C. Brady, and D. Nash. The site was also surveyed by Biosphere Environmental Services.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

A review of the NHA Notes, Rare Plant Survey information and the habitat maps presented in the MPSU Conservation Plan were used to select two areas for survey. The location of these are shown on the overview of the site on Map 1.

Eight Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that two of the Stops were not included in the assessment of Structures and Functions. On analysis, Stops 3 and 5 were seen to reflect a loss of habitat rather than poor quality. Therefore, the results of these two Stops are not included in the assessment of Structures and Functions but are considered instead in the estimation of habitat Extent.

The remaining six Monitoring Stops were used to assess the Structures and Functions of calcareous grassland within the site. Four of the six Monitoring Stops failed, resulting in an overall 'Fail' for the Structures and Functions of the site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	8
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Sheet 2 of 2
Stop 02	2	Fail	Structures and Functions	Sheet 2 of 2
Stop 03	3	Fail	Extent	Sheet 2 of 2
Stop 04	4	Fail	Structures and Functions	Sheet 2 of 2
Stop 05	5	Fail	Extent	Sheet 1 of 2
Stop 06	6	Fail	Structures and Functions	Sheet 1 of 2
Stop 07	7	Pass	Structures and Functions	Sheet 1 of 2
Stop 08	8	Pass	Structures and Functions	Sheet 1 of 2

Each individual field in which a Monitoring Stop was conducted was treated as an individual management unit.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The main threats to the future conservation of calcareous grassland within the site is a discontinuation of traditional farming practices on the land (141). This is currently occurring and is likely to continue as the farming community in this valley become older and new housing for commuters to the adjoining urban areas of Tallaght and Dublin City become occupied. Planning controls in the area have apparently recently been relaxed and several new bungalows were constructed in the valley (402).

There has been some agricultural improvement (103) of some of the fields surveyed - *Lolium perenne* was recorded in Monitoring Stops 3, 4 and 8. The traditional grazing management of these grassland sites appears to have diminished (149) with resulting encroachment of *Pteridium aquilinum* (954) from adjoining hedgerows (see note 1 and 6, Monitoring Stops 1 and 2). The development of swards of *Cirsium palustre* is becoming a common feature in much of the site. There would appear to have been some low levels of scarification and reseeded of the hillsides - typically with *Lolium perenne* (103). In contrast, some areas of the site are closely grazed and show some signs of poaching and erosion (142) - see Note 3. One area was recently mown (102) - see Monitoring Stop 3.

Access to much of the areas of grassland is somewhat restricted at present and the main amenity use in the valley is based around the existing road network adjacent to the reservoir and the public roads higher up on the valley slopes. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-1	B
102	Cultivation: mowing/cutting	1	C
141	Grazing: abandonment of pastoral systems	-1	B
142	Grazing: overgrazing by sheep	-1	B
149	Grazing: undergrazing	-1	B
402	Urbanised areas, human habitation: discontinuous urbanisation	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The spread of *Pteridium aquilinum* on these species-rich calcareous slopes requires immediate management. In some areas, particularly around Monitoring Stop 1, much of what was probably formally calcareous grassland is now dominated by *Pteridium aquilinum*. The continued spread of *Cirsium palustre* in these fields (see photo 20) also requires attention.

The grazing regime in each management unit (and potentially in each individual field) will also require immediate action as some areas are undergrazed, allowing *Pteridium aquilinum* to spread. Other areas are heavily grazed by sheep resulting in a tight sward and also potentially the loss of orchids within the field in question as they are not such selective grazers as cattle.

A valley farming and conservation field meeting could prove to be a useful forum for local landowners and NPWS staff to explore some of the management issues at stake with a field visit to some of the species-rich areas to demonstrate the end goal.



## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

1.8ha of the habitat was mapped within the SAC. This contrasts considerably with the figure estimated in the Natura 2000 Explanatory Notes where the extent is estimated as up to 20% of the site or 25ha. However, it is likely that the Natura figure is an over-estimate, as it would appear to include the wet flushed areas that occur in association with habitat 6210 at Glenasmole. Furthermore, it is noted in the explanatory notes that *Orchis morio* occurs on semi-improved pasture in the St. Anne's area and thus this area is also likely to have been included in the Natura 2000 estimate of the extent of the habitat

Given that the underlying acidic substrate is overlain by glacial till and that leaching has most certainly occurred at this altitude, the potential areas of calcareous grassland are naturally restricted in their Extent. On the eastern side of the site, the fields are characterised by undulating ridges running down towards the reservoir (Monitoring Stops 1 and 2). At present the calcareous grassland is restricted to the drier ridges in these areas which, due to a lack of grazing, are becoming encroached by *Pteridium aquilinum*. The areas between these ridges support species-rich wet grassland, *Molinia* meadows and patches of alkaline fen fed by tufa springs. These habitats were never individually mapped but it is evident that the remaining areas of calcareous grassland are decreasing due to encroachment of *Pteridium aquilinum*, reseeding, and heavy grazing pressures.

On the western side of the reservoir (Monitoring Stops 5, 6 and 7, and Notes 6, 7 and 8) the area and extent of calcareous grassland has also decreased and is now typically restricted to the steeper terraced slopes of these fields while the lower sections are more nutrient-rich and grass-dominated. However a field which contained probably the largest area of calcareous grassland within the site (Note 5) was previously mapped as scrub as was the location of Monitoring Stop 8.

Overall, however, the Extent of calcareous grassland within the site appears to have decreased through a combination of reseeding and fertilising, coupled with a degree of overgrazing and under grazing. Therefore, the Extent of calcareous grassland within the site is thus described as Unfavourable - bad

### ***Structure and Functions:***

Four of the six Monitoring Stops used to assess Structures and Functions conducted within the site failed, resulting in an overall 'Fail' for the Structures and Functions of the site. Monitoring Stop 1 failed as a result of encroachment by *Pteridium aquilinum*, Monitoring Stops 2 and 3 failed due to poor herb cover and a lack of indicator species, while Monitoring Stop 6 failed solely due to lack of indicator species. The Structure and function of calcareous grassland within the site is thus assessed as Unfavourable - bad.

### ***Future Prospects:***

The Future Prospects for the calcareous grassland within the site are assessed as Unfavourable - inadequate as many of the indicator species are still present (albeit not in abundance) and with correct management this decline could be reversed. The fields in question within the site are still relatively unimproved and have a good chance of recovering with appropriate management.

#### **Conservation Assessment:**

The current Extent of the 6210 habitat in Glenasmole Valley cSAC was seen to be very limited. It was seen to occur mainly on the upper reaches of the steep slopes above the reservoir where it is most likely to occur on shallow soils which show signs of leaching and terracing. Where it occurs, the dry, raised, ridges which support the habitat occur in association with intervening species-rich wet grassland and flushed areas. These wetter areas currently show significantly more species diversity and orchid-richness than the adjacent calcareous areas.

Extent of calcareous grassland within the site has been reduced as a result of agricultural improvements coupled with incorrect levels of grazing. This has resulted in the development of more semi-improved grassland dominated by *Cynosurus cristatus* and by the encroachment of *Pteridium aquilinum* across a number of slopes. The species diversity and the overall quality of the remaining habitat has also been reduced, with a general lack of indicator species recorded.

Based on the estimated loss in Extent and the current management practices, the Future Prospects for the habitat on this site are not good. However, a range of calcareous indicator species still remains so rehabilitation of the most representative areas could be possible with correct management protocols. Nonetheless, the Future Prospects for the site will depend on management agreements between NPWS and local landowners.

Taking all of these factors into account, the overall Conservation Assessment of the orchid-rich calcareous grassland within the site is assessed as being Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

Note 1:

Wet flushed slope vegetated with *Cynosurus cristatus*, *Holcus lanatus*, *Arrhenatherum elatius*, *Filipendula ulmaria*, *Equisetum telmateia*, *Luzula campestris*, *Mentha aquatica*, *Cerastium fontanum*, *Ranunculus acris*, *Trifolium pratense*, *Plantago lanceolata*, *Cirsium palustre*, *Equisetum fluviatile*, *Juncus acutiflorus*, *Lathyrus pratensis*, *Galium saxatile*, *Dactylorhiza fuchsii*, *Hypericum tetrapterum*, *Centaurea nigra*, *Trifolium repens*, *Briza media*, *Pedicularis palustris*, *Triglochin palustris*, *Vicia cracca*, *Caltha palustris* and *Rumex acetosella*. *Cynosurus cristatus*, *Holcus lanatus* and *Cirsium palustre* were found in drier areas.

This area was very species rich and is currently ungrazed. *Pteridium aquilinum* is encroaching on the drier upper slopes.

See photos 1 - 4.

Note 2:

Flushed slopes at margin of drier calcareous ridges are very species rich and grade into wet grassland/fen with frequent *Prunella vulgaris*, *Briza media*, *Pinguicula* sp., *Centaurea nigra*, *Anagallis tenella*, *Luzula campestris*, *Carex echinata*, *Carex limosa*, *Eriophorum* sp., *Dactylorhiza fuchsii*, *Plantago lanceolata*, *Lotus corniculatus*, *Euphrasia* sp., *Trifolium repens*, *Cirsium palustre*, *Filipendula ulmaria*, *Molinia caerulea*, *Gymnadenia conopsea*, *Ranunculus acris*, *Parnassia palustris*, *Juncus acutiflorus*, *Ranunculus flammula*, *Caltha palustris*, *Medicago lupulina*, *Leucanthemum vulgare*, *Epilobium palustre*, *Galium verum*, *Vicia cracca*, *Galium palustre* and *Euphrasia* sp.

See photos 11 - 18.

Note 3:

This is a much eroded esker ridge located above the Glenasmole Reservoir. It is badly poached and eroded in places with steep terracing. The EPA funded 'Insects of Calcareous Grassland' project has a malaise and pitfall traps erected in this area.

Species present include *Hieracium pilosella*, *Briza media*, *Galium verum*, *Polygala vulgaris*, *Senecio jacobaea*, *Leontodon hispidus*, *Equisetum arvense*, *Blackstonia perfoliata*, *Linum catharticum*, *Holcus lanatus*, *Medicago lupulina*, *Primula veris*, *Leucanthemum vulgare*, *Rosa canina*, *Achillea millefolium*, *Centaurea nigra*, *Carex flacca*, *Danthonia decumbens*, *Lolium perenne* and *Cirsium palustre*.

See photo 26.

## Note 4:

Species rich hay meadow with frequent *Centaurea nigra*, *Galium verum*, *Lotus corniculatus*, *Plantago lanceolata*, *Prunella vulgaris*, *Ranunculus acris*, *Ranunculus bulbosus*, *Cerastium fontanum* and *Potentilla erecta*. Relevé 1 was taken here.

Fourteen plants of *Orchis morio* were previously recorded here in 1991 and 1992 by Doogue et. al.

This area is currently outside the SAC boundary and is limited to the sloping area within the field. Above this on flatter ground the sward is grass dominated and no longer herb rich.

See photos 27 - 36.

## Note 5:

Area of species rich calcareous grassland - probably the most intact field of calcareous grassland found within the site. Previously mapped as scrub in MPSU management plan habitat map.

The sward was dominated by *Trifolium repens*, *Lotus corniculatus*, *Plantago lanceolata* and *Galium verum* with frequent *Leontodon autumnalis*, *Achillea millefolium*, *Leontodon taraxacoides*, *Trifolium pratense* and occasional *Leucanthemum vulgare*, *Cynosurus cristatus*, *Centaurea nigra*, *Cerastium fontanum* and rarely *Briza media*. A full species list is presented in relevé 2.

See photos 63 - 67.

## Note 6:

The lower slopes of this field are primarily neutral grassland with *Holcus lanatus*, *Agrostis tenuis*, *Anthoxanthum odoratum*, and *Festuca rubra* with *Rumex acetosella*, *Trifolium pratense*, *Trifolium repens* and *Ranunculus acris*.

The steep slopes at the north-eastern boundary of the field support a small area of calcareous grassland.

Encroachment of spreading *Pteridium aquilinum* from the adjoining hedgerows threaten this habitat. There is also a patch of *Epilobium* sp. and *Cirsium* sp. near the top of the field.

See Photos 68 - 70.

Note 7:

This field is similarly vegetated with neutral grassland as that described in Note 6. The area of calcareous grassland is once again restricted to a small triangular area at the top of the field with a few indicator species present - *Lotus corniculatus*, *Briza media* and *Linum catharticum*.

See photo 71.

Note 8:

The southernmost field has a larger area of calcareous grassland present - again it is restricted to the steeper slopes near the top of each field which are terraced. These areas are grazed by sheep.

See photos 72 - 74.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop was located on a gradually sloped field above the Glenasmole Reservoir. Eight calcareous indicator species were recorded in a herb-rich sward (70%) with no negative indicator species present and some encroachment by *Pteridium aquilinum* (>10%). This resulted in a 'Fail' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare*, *Cynosurus cristatus*, *Danthonia decumbens*, *Anthoxanthum odoratum*, *Lolium perenne*, *Dactylis glomerata*, *Festuca rubra*, *Prunella vulgaris*, *Potentilla erecta*, *Euphrasia officinalis*, *Cirsium palustre*, *Centaurea nigra*, *Plantago lanceolata*, *Bellis perennis*, and *Trifolium repens*.

Encroaching *Pteridium aquilinum* threatens the calcareous grassland within this field. The hillside here is undulating with the calcareous grassland restricted to the drier ridges within the site which run north-east to south-west through the fields towards the reservoir. The valleys between the ridges and small hollows elsewhere within the site support a rich wet grassland/marsh/fen community as described in Note 1.

The area is lightly grazed by sheep, with an occasional goat and a deer also observed. The main threat to these fields is the encroaching bracken which is beginning to dominate the drier ridges in the site which support the drier calcareous grassland communities.

See photos 4 - 9.

**Monitoring Stop 2:**

This Monitoring Stop was located on gently sloping thin soils near a major drain. *Orchis morio* was previously recorded at this location by Doogue et. al. in 1991/1992. Only two indicator species were recorded in a herb-poor sward (20%) with no negative indicators and some small scrub encroachment, resulting in a 'Fail' for this Monitoring Stop.

Additional species recorded include *Ranunculus acris*, *Leontodon taraxacoides*, *Pteridium aquilinum*, *Euphrasia officinalis*, *Centaurea nigra*, *Prunella vulgaris*, *Trifolium repens*, *Cirsium palustre*, *Festuca rubra*, *Anthoxanthum odoratum*, *Danthonia decumbens*, *Dactylorhiza fuchsii*, *Hypochaeris radicata*, *Potentilla erecta*, *Pedicularis sylvatica*, and *Rumex acetosella*.

*Briza media* was recorded outside the Monitoring Stop and *Dactylorhiza fuchsii* was common beneath *Pteridium aquilinum* on the banks of the drain (see photo 25).

*Pteridium aquilinum* is encroaching from the adjoining drain (up to 10m in places) and there is abundant *Cirsium palustre* in the area.

See photo 21 - 24.

**Monitoring Stop 3:**

This Monitoring Stop was located on the upper slopes of the Glenasmole Valley and had been recently cut. This area had abundant *Cirsium palustre*. Only one calcareous indicator species was recorded in a herb poor sward (10%) with no scrub encroachment and some low levels of *Lolium perenne*, resulting in a 'Fail' for this Monitoring Stop.

The landscape is characterised by undulating land with rush-dominated hollows containing *Lychnis flos-cuculi*. Drier ridges support neutral - calcareous grassland.

Additional species recorded include *Trifolium repens*, *Rumex acetosella*, *Holcus lanatus*, *Cynosurus cristatus*, *Festuca rubra*, *Anthoxanthum odoratum*, *Cirsium palustre*, *Lolium perenne*, *Ranunculus acris*, *Luzula campestris*, and *Cerastium fontanum*. *Lolium perenne* forms c. 20% of the sward, indicating that these areas have been reseeded recently.

The area is currently grazed by sheep.

**Monitoring Stop 4:**

This Monitoring Stop was located on a steeply sloped field south of the forest edge with occasional *Cirsium palustre*. Five calcareous indicator species were recorded in a herb-rich sward (40%) with no scrub encroachment and some *Lolium perenne*. This results in a 'Fail' for this Monitoring Stop.

Additional species recorded include *Alchemilla xanthochlora*, *Leontodon taraxacoides*, *Lolium perenne*, *Centaurea nigra*, *Danthonia decumbens*, *Potentilla erecta*, *Cirsium palustre*, *Festuca rubra*, *Trifolium repens*, *Agrostis tenuis*, *Carex flacca*, *Plantago lanceolata*, *Holcus lanatus*, *Leucanthemum vulgare*, and *Polygala vulgaris*.

*Briza media* was recorded outside the Monitoring Stop.

See photos 37 - 39.

**Monitoring Stop 5:**

This Monitoring Stop was located on a steeply sloped field. No calcareous indicator species were recorded in a herb -poor sward (10%) with no negative indicators or scrub encroachment. This results in a 'Fail' for this Monitoring Stop.

Additional species recorded include; *Arrhenatherum elatius*, *Potentilla erecta*, *Rumex acetosella*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Ranunculus repens*, *Holcus lanatus*, *Lathyrus pratensis* and *Stellaria* sp.

This area was badly poached and *Pteridium aquilinum* is encroaching from the field boundaries.

A small area of species rich wet grassland/flush is located below this Monitoring Stop.

See photos 43 - 47.



**Monitoring Stop 6:**

This Monitoring Stop was located on a steep, slightly terraced slope in the eastern section of a field. The areas of calcareous grassland within this field are very much restricted to the terraced slopes. Only four indicator species were recorded in a herb-rich sward (80%) with no negative indicators or scrub encroachment. This resulted in a 'Fail' for this Monitoring Stop.

Additional species recorded include *Prunella vulgaris*, *Anthoxanthum odoratum*, *Centaurea nigra*, *Leucanthemum vulgare*, *Bellis perennis*, *Danthonia decumbens*, *Trifolium repens*, *Trifolium pratense*, *Potentilla erecta*, *Juncus acutiflorus*, *Succisa pratensis*, *Carex panicea*, *Leontodon hispidus*, and *Cynosurus cristatus*.

Other species present but recorded outside the Monitoring Stop include *Euphrasia officinalis*, *Carex echinata* and *Juncus conglomeratus*. This sward was quite sedge-rich.

See photos 48 - 50.

**Monitoring Stop 7:**

This Monitoring Stop was located on south facing, steep, terraced slopes. Seven calcareous indicator species were recorded in a herb-rich sward (60%) with no negative indicators or scrub encroachment. This results in a 'Pass' for this Monitoring Stop.

Additional species present include *Centaurea nigra*, *Euphrasia officinalis*, *Trifolium repens*, *Prunella vulgaris*, *Bellis perennis*, *Potentilla erecta*, *Cynosurus cristatus*, *Cirsium palustre*, *Anthoxanthum odoratum*, *Ranunculus repens*, *Plantago lanceolata*, and *Holcus lanatus*.

See photos 51 - 54.

**Monitoring Stop 8:**

This Monitoring Stop was located on steep terraced slopes above a water pipe. No orchids were recorded in this Monitoring Stop but there were several flowering spikes of *Dactylorhiza fuchsii* located on the face of a terrace below the water pipe line. Seven calcareous indicator species were recorded in a herb-rich sward (80%) with a small amount of *Lolium perenne* and no scrub encroachment. This results in a 'Pass' for this Monitoring Stop.

Additional species recorded include *Cynosurus cristatus*, *Heracleum sphondylium*, *Cerastium fontanum*, *Prunella vulgaris*, *Ranunculus acris*, *Trifolium repens*, *Trifolium pratense*, *Bellis perennis*, *Holcus lanatus*, *Plantago lanceolata*, *Anthoxanthum odoratum*, *Cirsium palustre*, *Polygala vulgaris*, *Arrhenatherum elatius*, and rare *Lolium perenne*.

See photos 55 - 62.

**Inisheer Island****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	13/09/2006
Willie Crowley	14/09/2006

**Total Site Area (Ha):** 552.13

**Area of Priority Grassland (N2000) (Ha):** 67.

**Area of Priority Grassland 2006 (Ha)\*:** 80

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Galway	51	GA119, GA120, GA120a.

**Digital Aerial Photos (Tile Nos.):**

O3792-c, O3792-d, O3849-a, O3849-b, O3849-c, O7402-b.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

001275

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Inisheer is the smallest of the three Aran Islands, situated approximately 10km off the west coast of County Clare. The Island is a geological extension of the Karstic Carboniferous region of the Burren. Upper Carboniferous limestone strata, interleaved with layers of shale and clay, form these exposed Islands, which rise to a maximum height of 64m on Inisheer. The land surface is divided up by a network of fissures, varying from fine to deep cliffs. The soil cover is thin with pockets of rendzina between the bare limestone. This naturally-occurring soil is combined with a mixture of sand and seaweed to form a man-made soil unique to these Islands. The land surface is subdivided into a labyrinth of high stone walls, each one enclosing a small area of limestone pavement and its associated species rich calcareous grassland.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the calcareous grassland within the site as follows: The more species-rich meadows support a plant community dominated by grasses (Gramineae), but with many flowering herbs. Species common to this habitat include Black and Greater Knapweeds (*Centaurea nigra* and *C. scabiosa*), Ox-eye Daisy (*Leucanthemum vulgare*), Harebell (*Campanula rotundifolia*), Eyebright (*Euphrasia* spp.) and orchids (Orchidaceae). In other areas, Woodsage (*Teucrium scorodonia*) and Blue Moor-grass (*Sesleria albicans*) feature, while Blackthorn (*Prunus spinosa*) and Burnet Rose (*Rosa pimpinellifolia*) are colonising some grasslands.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describes the calcareous grassland as follows: The habitat plays host to an excellent variety of orchid species along with a diverse range of species typically associated with calcareous grasslands. Common orchid species include *Anacamptis pyramidalis*, *Orchis mascula*, *Listera ovata* and *Platanthera bifolia* with occasional *Dactylorhiza fuchsii*, *Dactylorhiza fuchsii* subsp. *okellyi*, *Spiranthes spiralis*, *Dactylorhiza maculata*, *Orchis majalis*, and lesser amounts of *Gymnadenia conopsea*, *Ophrys apifera* and *Neotinea maculata*. The latter species *N. maculata*, has a limited distribution in Ireland being generally associated with the Burren in Co. Clare and rare elsewhere.

#### *Description based on the 2006 Survey :*

The 2006 survey found very few examples of orchid-rich calcareous grassland in the areas surveyed. Many of the fields had become rank and/or encroached by *Pteridium aquilinum* or more worryingly, showed signs of agricultural improvement. The better examples of calcareous grassland were found in fields with frequent outcropping limestone and shallower soils. Where exposed limestone rock was greater than 40%, these areas were not monitored.

Typical indicator species recorded during the 2006 survey include *Anthyllis vulneraria*, *Avenula pubescens*, *Blackstonia perfoliata*, *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Centaurea scabiosa*, *Daucus carota*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Primula veris*, *Koeleria macrantha*, *Carlina vulgaris*, *Sanguisorba*

minor, *Geranium sanguineum* and *Sesleria albicans*. Orchid species recorded include *Spiranthes spiralis* and several seeding/fruiting unidentified orchid species.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1993 NHA Survey. There are only general habitat and boundary notes available with no notes located within the SAC boundary.

## **SITE MONITORING AND MANAGEMENT UNITS**

A summary of the results of the assessments undertaken at the Monitoring Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Twenty-four Monitoring Stops were conducted within this site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that eight of the Stops were not included in the assessment of Structures and Functions. On analysis of the field survey data, these seven Stops were seen to more representative of loss in habitat extent and were therefore excluded from the assessment of habitat condition. Grassland in the area of Stop 8 was seen to have been lost to encroachment by *Pteridium aquilinum* (up to 60% cover of this species was noted) while the remaining seven Stops were lost to agricultural improvement involving reseeded and the application of fertiliser.

Of the sixteen Monitoring Stops used in assessing the Structures and Functions of calcareous grassland, only seven passed the assessment process (see Table 1a). The primary reason for this failure was an insufficient number of indicator species, caused mainly by the development of more rank grassland.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

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<b>Number of Management Units:</b>	24
<b>Number of Monitoring Stops:</b>	24
<b>Number of Stops That Pass:</b>	6
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Extent	Map 2
Stop 02	2	Fail	Extent	Map 2
Stop 03	3	Pass	Structures and Functions	Map 2
Stop 04	4	Fail	Structures and Functions	Map 2
Stop 05	5	Fail	Extent	Map 2
Stop 06	6	Fail	Structures and Functions	Map 2
Stop 07	7	Pass	Structures and Functions	Map 2
Stop 08	8	Fail	Extent	Map 2
Stop 09	9	Pass	Structures and Functions	Map 2
Stop 10	10	Pass	Structures and Functions	Map 2
Stop 11	11	Fail	Extent	Map 2
Stop 12	12	Fail	Extent	Map 2
Stop 13	13	Fail	Extent	Map 2
Stop 14	14	Fail	Extent	Map 2
Stop 15	15	Fail	Structures and Functions	Map 2
Stop 16	16	Fail	Structures and Functions	Map 2
Stop 17	17	Fail	Structures and Functions	Map 2
Stop 18	18	Fail	Structures and Functions	Map 2
Stop 19	19	Pass	Structures and Functions	Map 2
Stop 20	20	Pass	Structures and Functions	Map 2
Stop 21	21	Fail	Structures and Functions	Map 2
Stop 22	22	Fail	Structures and Functions	Map 2
Stop 23	23	Fail	Structures and Functions	Map 2
Stop 24	24	Pass	Structures and Functions	Map 2

There were 24 management units identified within the areas surveyed in the site. Each field was treated as a single management unit within the site.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The key threats to the calcareous grassland within the field systems of Inisheer Island vary from both agricultural improvement (103) to abandonment (141). Many of the fields surveyed show signs of improvement of the sward by application of fertilisers (120) and reseeded using a *Lolium perenne*/Trifolium mix. These fields are visually obvious on the aerial photographs. Many of the fields now have constructed barred metal gates as opposed to the traditional retention of the stone wall which was rebuilt after stock were moved from one field to the other. Many of these gates are large enough to accommodate farm machinery which assist in improving the fields (530).

Contrary to this, there is also an issue of abandonment of traditional pastoral activities (141) with many of the fields surveyed now dominated by rank grassland or becoming encroached by bracken and scrub (954) due to a lack of grazing (149). There was also some damage to limestone pavement in a number of areas (103).

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	B
104	Cultivation: removal of limestone pavement	-2	C
120	Fertilisation	-1	B
141	Grazing: abandonment of pastoral systems	-1	B
149	Grazing: undergrazing	-1	B
530	Improved access to site	0	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The reseeded and fertilisation of many of the fields surveyed within the site (Monitoring Stops 1, 2, 5, 11, 12, 13 and 14 and notes 1 and 2) require immediate attention. This and the abandonment of traditional grazing regimes in other fields (Monitoring Stops 3, 4, 6, 8, 15, 16, 17, 18, 21, 22 and 23) which has resulted in encroachment by *Pteridium aquilinum* and the development of rank grassland have resulted in a decrease in the extent and quality of orchid rich calcareous grasslands within the site.



## CONSERVATION STATUS

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and is not accurately mapable from aerial photographs. This is because:

- a) It forms a mosaic with calcareous heath and limestone pavement and
- b) It is not easily distinguishable on the aerial photographs from calcareous heath and/or lowland hay meadows.

Thus, in order to have some estimate as to the extent of the habitat, the following can be considered.

1. The area of dry grassland on Inisheer was crudely digitised using ArcView GIS 3.2 and geo-referenced ortho-rectified aerial photographs (2000 series) to be 192ha.
2. During this ground survey of the grassland on the island, eight of the 24 Monitoring Stops conducted failed, mainly due to reseeded with *Lolium perenne* or other agricultural improvements. The fields where these stops were conducted can thus be considered not to be the habitat type 6210 and should be omitted in calculating the current area of the habitat. Assuming that this is a representative sample it can be extrapolated that only 17/24ths of the area of dry grassland on Inisheer is of the habitat type 6210. This leads to an estimate of ca. 135ha for the extent of the habitat (or 25% of the SAC). However, it is likely that some of this 135ha would be better classified as calcareous heath. From site observations it was estimated that up to 40% of the calcareous heath/grassland mosaic tended more towards calcareous heath so that ca. 55ha could be classified as heath, giving an estimate of 80ha for habitat 6210 (14% of the SAC).

From the above considerations it can be estimated that the area of habitat 6210 in Inisheer SAC is 80ha. The Natura 2000 form estimated that habitat 6210 extended across 12% of Inisheer SAC, which is equal to 67ha. This would appear to have been an under-estimation as it is unlikely that 13ha of the habitat were created in the last ten years by traditional island farming practices of 'making soil'. Indeed during the ground survey it became apparent that the traditional practice of 'making of land' as described in NHA Note 13 now appears to have been replaced with the use of commercial fertiliser and seed mixtures. Furthermore, vehicular access to fields has been improved with the installation of five-barred gates.

Unfortunately the NHA notes for the site are of a general nature so a direct comparison of areas surveyed in 1993 and those surveyed today was not possible. However, the signs on the ground would indicate that, at least some (if not many), of the improved fields have been improved since the NHA survey was carried out in 1993. In the absence of a detailed base line therefore, the Extent of calcareous grassland within the site is thus described as Unfavourable - inadequate.

### ***Structure and Functions:***

Of the sixteen Monitoring Stops used to assess Structures and Functions, only seven were seen to pass. These Stops were seen to have a reasonable range of calcareous indicator

species and herb cover was generally good.

Of the nine Monitoring Stops that failed, five failed solely due to a lack of indicator species (Monitoring Stops 6, 15, 17, 21, and 23). Two Monitoring Stops failed due to a combination of lack of indicator species and poor herb cover (Monitoring Stops 16 and 22), one failed due to development of rank grassland (Monitoring Stop 18). One Monitoring Stop failed due to encroachment by *Pteridium aquilinum* (Monitoring Stop 4). Due to the significant failure of the assessment of Structures and Functions at this site, the condition of the grassland habitat is described as being Unfavourable - bad.

### ***Future Prospects:***

Six of the seven Monitoring Stops that were used to assess Extent had been reseeded and agriculturally improved with *Lolium perenne*. The reinstatement of orchid-rich calcareous grassland within these areas would be unlikely to succeed without significant management. A large number of additional fields within the site which were viewed from a distance were also seen to be agriculturally improved and many fields appear improved on the OSI aerial photographs (2000). This suggests that the extent of agricultural improvement within the site is likely to be higher than the Monitoring Stops alone indicate. Other areas which have become rank or encroached by *Pteridium aquilinum* could be reinstated with active management through hard grazing.

The lack of a resident Conservation Ranger on the island also means that damaging activities are more likely to go unobserved, especially if they occur in several fields in from the main walking tracks or roads within the island. The conservation future of these areas is dependent on management agreements between landowners and NPWS and will be dependent on local NPWS resources. The overall Future Prospects for the site is thus described as Unfavourable - inadequate.

### ***Conservation Assessment:***

The Extent of orchid-rich calcareous grassland within the site has decreased as a result of agricultural improvements - fertilisation and reseeded. The condition of calcareous grassland has also dis-improved due to lack of grazing and a reduction in traditional grazing practices which has allowed *Pteridium aquilinum* to encroach and resulted in the development of rank grassland with subsequent loss of species diversity.

The Future Prospects for the site will depend on management agreements between private landowners and NPWS and the restoration of orchid-rich calcareous grassland will require active management on the part of the landowner and NPWS.

The overall Conservation Status Assessment for the site is described as Unfavourable - bad as each of the following criteria - Extent and Structures and Functions were all rated as Unfavourable - bad. The Future Prospects for the site were described as Unfavourable - inadequate (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
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001275    *Inisheer Island*

*NPWS Grassland Monitoring Project 2006*

			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This small field has been improved and is now dominated by *Trifolium pratense*, *Arrhenatherum elatius*, *Dactylis glomerata* and *Lolium perenne*. See photo 1. All the fields adjacent to the track between this and monitoring stop 1 are improved. These fields have 40% herb cover but this is based on the abundance of *Trifolium repens* and *Taraxacum* agg.

**Note 2:**

There has been recent clearance of limestone pavement with heavy machinery, spreading of sand and the construction of a water tank in this field. *Geranium sanguineum*, *Rosa pimpinellifolia*, *Daucus carota*, *Thymus praecox*, *Plantago lanceolata* and *Galium verum* were present and were pushing their way up through the recently spread sand. This area is currently grazed by cattle - cow pats were present. See photo 22.

**Note 3:**

The eastern half of this field has c.60 - 70% outcropping limestone bedrock/shattered limestone and supports good calcareous grassland on thin soils over the bedrock. Species present include *Sesleria albicans*, *Carlina vulgaris*, *Antennaria dioica*, several fruiting/seeding orchids, *Lotus corniculatus*, *Geranium sanguineum*, *Sanguisorba minor*, *Succisa pratensis*, *Thymus praecox*, *Rhinanthus minor*, *Carex flacca*, *Rosa pimpinellifolia*, *Campanula rotundifolia*, *Hieracium pilosella*, *Leontodon* sp., *Potentilla anserina*, *Blackstonia perfoliata*, *Anthyllis vulneraria* and *Linum catharticum*. This field would appear to have been recently grazed and is in good condition. See photo 33.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop was located in a small field adjacent to the track. See photo 2. Despite a high herb:grass ratio of 40% this Stop had only one indicator species and an abundance of negative indicators resulting in a 'Fail' for the Monitoring Stop.

Species recorded within the Monitoring Stop include *Holcus lanatus* (A), *Plantago lanceolata* (F), *Taraxacum* agg. (F), *Rumex acetosa* (O), *Rumex obtusifolius* (O), *Trifolium repens* (A), *Trifolium pratense* (O) and *Urtica dioica* (R). The relevé data for this Monitoring Stop is presented in Quadrat 1. This area was grazed by cattle.

### **Monitoring Stop 2:**

This Monitoring Stop was located in an improved field with outcropping strips of limestone. See photo 3. It is currently grazed by cattle. Only one indicator species was recorded within the Stop which had 40% herb cover. *Lolium perenne* was frequent within the sward resulting in a 'Fail' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Plantago lanceolata* (O), *Odontites verna* (R), *Leucanthemum vulgare* (R), *Trifolium repens* (F), *Taraxacum* agg. (O), *Senecio vulgaris* (R), *Trifolium pratense* (R), *Festuca rubra* (O) and *Leontodon* sp. (F). The relevé data for this Monitoring Stop is presented in Quadrat 2.

### **Monitoring Stop 3:**

This Monitoring Stop was located in an unimproved field on the eastern side of the track. See photo 5. This field is currently ungrazed. A high herb content occurred (60%) but only 6 indicator species were recorded. However, as fruiting/seeding orchids (R) were also present, this is seen as an 'indicator of local distinctiveness' and the Stop is therefore deemed to pass.

Additional species recorded include *Plantago lanceolata* (O), *Odontites verna* (F), *Trifolium pratense* (O), *Trifolium repens* (R), *Prunella vulgaris* (R), *Cynosurus cristatus* (O), *Dactylis glomerata* (O), *Leontodon* sp. (F), *Holcus lanatus* (R), *Rumex acetosella* (R), *Ranunculus acris* (R), *Leucanthemum vulgare* (F), *Senecio vulgaris* (R), and *Festuca rubra* (O). The relevé data for this Monitoring Stop is presented in Quadrat 3.

Other species recorded outside the Monitoring Stop include *Centaurea nigra*, *Campanula rotundifolia* (next to the wall), *Crataegus monogyna* seedlings and *Cerastium fontanum*. There is some *Rubus fruticosus* agg. spreading from the field margins.

**Monitoring Stop 4:**

This Monitoring Stop was located in a field with frequent outcropping limestone bedrock (c. 30%). See photo 6. The Stop had 70% herb cover and 10 indicator species recorded but some of these areas are becoming quite encroached with *Pteridium aquilinum* which resulted in a 'Fail' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (O), *Plantago lanceolata* (O), *Pteridium aquilinum* (R), *Rumex acetosa* (R), *Euphrasia* spp. (O), *Festuca rubra* (O), *Rosa pimpinellifolia* (R), *Leucanthemum vulgare* (R), *Potentilla erecta* (R), *Anthoxanthum odoratum* (R), *Dactylis glomerata* (R), *Cynosurus cristatus* (O), *Rubus fruticosus* agg. (R), *Cerastium fontanum* (R), *Prunella vulgaris* (R), *Achillea millefolium* (R), *Prunus spinosa* seedlings (R) and *Leontodon* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 4.

This area is currently ungrazed, but was previously grazed by donkeys. *Pteridium aquilinum* encroachment is an issue in this field (c. 10% of the 5x5m Quadrat). Outside the Monitoring Stop there was a good diversity of additional species recorded - typically on thin soils near outcropping rocks. These include *Thymus praecox*, *Sesleria albicans*, *Hieracium pilosella*, *Polygala vulgaris*, *Teucrium scorodonia*, *Plantago maritima*, *Solidago virgaurea*, *Lonicera periclymenum*, *Asplenium trichomanes*, *Origanum vulgare*, *Succisa pratensis*, *Prunus spinosa* and *Rubus fruticosus* agg.

**Monitoring Stop 5:**

This Monitoring Stop was located in a semi-improved field. See photo 7. Only one indicator species was recorded and the high herb cover (80%) was based principally on *Trifolium* sp. thus this Monitoring Stop 'Failed'.

The sward was dominated by *Trifolium pratense* (D), *Plantago lanceolata* (A), *Festuca rubra* (O), *Rumex acetosa* (R), *Ranunculus repens* (O), *Arrhenatherum elatius* (R), *Dactylis glomerata* (R), *Holcus lanatus* (R), and *Leontodon* sp. (O). The relevé data for this Monitoring Stop is presented in Quadrat 5. The herb cover of 80% for this Monitoring Stop was based on the dominance of *Trifolium pratense*.

Outside the Monitoring Stop there are occasional ridges/sloped areas with thinner soils which also have *Lotus corniculatus*, *Daucus carota* and *Leucanthemum vulgare*. *Rumex obtusifolius* and *Cerastium fontanum* are occasional throughout this field.

**Monitoring Stop 6:**

This Monitoring Stop was conducted in a field north of the track to the lighthouse complex. See photo 8. This field has had some improvement - *Lolium perenne* was present but it is now becoming dominated by *Dactylis glomerata* and is currently ungrazed. Within the Monitoring Stop no negative indicators were recorded but only 6 indicator species were present amidst a herb cover of 40% resulting in a 'Fail' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Rosa pimpinellifolia* (R), *Dactylis glomerata* (D), *Plantago lanceolata* (F), *Odontites verna* (R), *Anagallis arvensis* (R), *Leucanthemum vulgare* (R), *Achillea millefolium* (R), *Trifolium pratense* (R), *Taraxacum* agg. (R), *Festuca rubra* (O), *Cynosurus cristatus* (R) and *Medicago lupulina* (R). The relevé data for this Monitoring Stop is presented in Quadrat 6.

There were several orchid seed heads present amidst the *Lolium perenne* sward in this field. *Succisa pratensis*, *Prunella vulgaris* and *Centaureum erythraea* were also recorded. Spreading *Rubus fruticosus* agg. and *Pteridium aquilinum* is a threat in this location. The soil was quite sandy in places.

**Monitoring Stop 7:**

This Monitoring Stop was located on shallow soils in a field with outcropping limestone bedrock. See photo 10. This Monitoring Stop had 40% herb cover, 13 indicator species and the presence of a fruiting/seeding orchid. There were no negative indicator species or encroachment by scrub within this Monitoring Stop resulting in a 'Pass'.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (O), *Thymus praecox* (R), *Rosa pimpinellifolia* (R), *Centaureum erythraea* (R), *Plantago maritima* (O), *Centaurea nigra* (R), *Euphrasia* sp. (R), *Trifolium repens* (R), *Polygala serpyllifolia* (R), *Potentilla erecta* (R), *Festuca rubra* (O), *Achillea millefolium* (R) and *Leucanthemum vulgare* (R). The relevé data for this Monitoring Stop is presented in Quadrat 7. Exposed rock accounts for c.10 - 15% of the Monitoring Stop.

The encroachment by *Pteridium aquilinum* and *Rubus fruticosus* agg. is not yet an issue but is spreading from field margins.

**Monitoring Stop 8:**

This Monitoring Stop was conducted in an area encroached by *Pteridium aquilinum* and *Rubus fruticosus* agg. See photo 11. This led to a loss of species diversity (only 1 indicator species was recorded) resulting in a 'Fail' for this Monitoring Stop.

The lack of grazing has resulted in an abandoned rank grassland dominated by *Dactylis glomerata* (A), *Centaurea nigra* (F), *Agrimonia eupatoria* (D), *Plantago lanceolata* (O), *Festuca rubra* (O) and *Hieracium* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 8.

Cattle have access to this field from the adjoining one in which Monitoring Stop 7 was conducted and although there were some cow pats present this field was ungrazed. Outside the Monitoring Stop *Prunella vulgaris* and *Daucus carota* were present amidst a thick thatch of *Festuca rubra*.

**Monitoring Stop 9:**

This Monitoring Stop was located in an unimproved field which has gentle undulations of hummocks, hollows and flatter areas. See photo 12. The greatest species diversity is found on the hummocks where the soils are thinner. The Monitoring Stop was conducted on half a hummock and half a flat area to get a representation of both. Ten indicator species were recorded with 50% herb cover resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (O), *Plantago lanceolata* (F), *Achillea millefolium* (O), *Cerastium fontanum* (R), *Trifolium pratense* (R), *Trifolium repens* (O), *Cynosurus cristatus* (O), *Dactylis glomerata* (F), *Festuca rubra* (O), *Euphrasia* sp. (R), *Leontodon* sp. (F), *Odontites verna* (R), *Taraxacum* agg. (R), *Veronica chamaedrys* (O), *Anthoxanthum odoratum* (O), *Rumex acetosa* (R), *Trifolium dubium* (R) and *Ranunculus repens* (R). The relevé data for this Monitoring Stop is presented in Quadrat 9.

Additional species recorded outside the Monitoring Stop include *Centaurea nigra*, *Succisa pratensis*, *Anagallis arvensis*, *Rosa pimpinellifolia* and *Basic* sp. *Rubia perigrina* was present on the wall.



**Monitoring Stop 10:**

This Monitoring Stop was conducted in a field of semi-rank grassland. See photo 14. Herb cover was good at 50% and 8 indicator species and several unidentified orchids were present. The lack of scrub or negative indicators resulted in a 'Pass' for this Monitoring Stop.

Additional species present within the Monitoring Stop include *Dactylis glomerata* (O), *Arrhenatherum elatius* (R), *Anthoxanthum odoratum* (R), *Plantago lanceolata* (O), *Festuca rubra* (F), *Odontites verna* (R), *Trifolium dubium* (R), several fruiting/seeding orchids, *Trifolium repens* (F), *Centaurea nigra* (O), *Cerastium fontanum* (R), *Orobancha* sp. (R), *Rumex acetosa* (R) and *Achillea millefolium* (O). The relevé data for this Monitoring Stop is presented in Quadrat 10.

*Euphrasia* sp. and *Leontodon* sp. were present outside the Monitoring Stop. Anthills were also present.

**Monitoring Stop 11:**

This Monitoring Stop was conducted in a semi-improved field near a track. See photo 15. The sward has *Lolium perenne* and *Cynosurus cristatus* and has been improved. Small hummocks with thin soils have remnants of calcareous grassland with species such as *Hieracium pilosella*, *Daucus carota*, *Galium verum*, *Leucanthemum vulgare* and *Lotus corniculatus* present.

Within the Monitoring Stop the following species were recorded - *Cynosurus cristatus* (D), *Lolium perenne* (F), *Plantago lanceolata* (O), *Trifolium repens* (F), *Leontodon* sp. (O), *Ranunculus repens* (R), *Cirsium vulgare* (R), *Rumex obtusifolius* (R) and *Leucanthemum vulgare* (R). The abundance of *Lolium perenne* and resulting decrease in herbs lead to an overall 'Fail' for this Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 11.

There is some encroachment of *Rubus fruticosus* agg. in this field.

**Monitoring Stop 12:**

This Monitoring Stop was conducted in a semi-improved field on sandy soil. Currently grazed by rabbits. See photo 16. Three indicator species were recorded amidst a sward with 40% herb cover. The abundance of *Lolium perenne* lead to a 'Fail' for this Monitoring Stop.

The sward is dominated by *Festuca rubra* (D), *Dactylis glomerata* (O), *Leucanthemum vulgare* (R), *Plantago lanceolata* (O), *Trifolium repens* (F), *Trifolium dubium* (R), *Achillea millefolium* (R), *Trifolium pratense* (R), *Ranunculus repens* (R), *Rubus fruticosus* agg. (R), *Cerastium fontanum* (R) and *Senecio vulgaris* (R). There was good moss cover. The relevé data for this Monitoring Stop is presented in Quadrat 12.

*Rumex acetosa* and *Rumex obtusifolius* were recorded outside the Monitoring Stop.

**Monitoring Stop 13:**

This Monitoring Stop was located in an improved field near the northern boundary of the SAC. The soil within this field was quite sandy. See photo 23. The lack of indicator species (only 2 were present) lead to a 'Fail' for this Monitoring Stop.

Additional species recorded within the sward include *Dactylis glomerata* (F), *Holcus lanatus* (F), *Centaurea nigra* (O), *Trifolium repens* (F), *Trifolium pratense* (R) and *Leucanthemum vulgare* (R). The relevé data for this Monitoring Stop is presented in Quadrat 13.

**Monitoring Stop 14:**

This Monitoring Stop was conducted in an improved field within the SAC. See photo 24. The sward had only 5% herb cover and the Monitoring Stop 'Failed' due to a lack of indicator species and the abundance of *Lolium perenne*.

The sward was dominated by *Arrhenatherum elatius*, *Dactylis glomerata* and *Festuca rubra*. *Vicia cracca*, *Rumex acetosa*, *Trifolium repens*, and *Lolium perenne* were occasional. There was some *Rubus fruticosus* agg. Along the wall margins in this field. The relevé data for this Monitoring Stop is presented in Quadrat 14.

**Monitoring Stop 15:**

This Monitoring Stop was conducted in a field with outcropping limestone bedrock (the field to the north has c.60% limestone pavement). See photo 25. Despite a high herb ratio (60%) only 5 indicator species were present resulting in a 'Fail' for this Monitoring Stop, despite the presence of *Spiranthes spiralis*.

Additional species recorded within the Monitoring Stop include *Cerastium fontanum* (R), *Achillea millefolium* (F), *Trifolium repens* (A), *Festuca rubra* (F), *Arrhenatherum elatius* (R), *Senecio sylvaticus* (R), *Leucanthemum vulgare* (O), *Hypochoeris radicata* (R), *Trifolium pratense* (R), *Plantago lanceolata* (R) and *Rumex acetosa* (R). The relevé data for this Monitoring Stop is presented in Quadrat 15.

This field had a population of c.50 flowering spikes of *Spiranthes spiralis*. The field is very moss rich. Additional species recorded outside the Monitoring Stop include *Daucus carota*, *Succisa pratensis*, *Prunella vulgaris*, *Koeleria macrantha*, *Sesleria albicans*, *Linum catharticum* and *Euphrasia* sp.

**Monitoring Stop 16:**

This Monitoring Stop was located in a field which looked unimproved on the OSI aerial photograph (2000) and which had occasional outcropping limestone pavement. See photo 29. The field is now dominated by rank grassland with *Dactylis glomerata* (D), *Holcus lanatus* (D), *Festuca rubra* (A), *Vicia cracca* (R), *Plantago lanceolata* (O), *Rumex acetosa* (O), *Lathyrus pratensis* (R), *Trifolium repens* (R), *Pteridium aquilinum* (R), *Geranium molle* (R) and *Lolium perenne* (R). Herb cover was low at 10%, only one indicator species was present resulting in a 'Fail' for this Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 16.

Outside the Monitoring Stop *Achillea millefolium* and *Centaurea nigra* were recorded, while *Thymus praecox*, *Galium verum*, *Lotus corniculatus*, *Geranium sanguineum*, *Primula* sp., *Rosa pimpinellifolia*, *Campanula rotundifolia* and *Prunella vulgaris* are also present on the thinner soils around outcropping rocks.

Clumps of *Pteridium aquilinum*, *Prunus spinosa* and *Rubus fruticosus* are frequent within this field which is currently ungrazed. There is a recently constructed water tank in this field.

**Monitoring Stop 17:**

This Monitoring Stop was located in a field with several patches of outcropping limestone. See photo 30. This Monitoring Stop 'Failed' due to a lack of indicator species (only 5 were recorded) despite good herb cover (50%).

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (R), *Prunella vulgaris* (O), *Succisa pratensis* (O), *Hypochoeris radicata* (F), *Cynosurus cristatus* (F), *Trifolium repens* (O), *Trifolium pratense* (O), *Ranunculus acris* (R), *Euphrasia* sp. (O), *Ranunculus repens* (R), *Festuca rubra* (F), *Danthonia decumbens* (R), *Plantago lanceolata* (F), and *Sagina nodosa* (R). The relevé data for this Monitoring Stop is presented in Quadrat 17.

This area is currently ungrazed. Within 30m of the Monitoring Stop *Daucus carota*, *Anthyllis vulneraria*, *Linum catharticum*, *Geranium sanguineum*, *Coeloglossum viride*, *Lotus corniculatus* and *Galium verum* are present and in greater abundance than recorded previously.

**Monitoring Stop 18:**

This Monitoring Stop was conducted in a field which looked unimproved on the OSI aerial photograph (2000). This field is now becoming rank and a thick thatch of *Festuca rubra* is dominating it in parts. See photo 31. This thick thatch has reduced diversity in the Stop and only 6 indicator species were recorded resulting in a 'Fail' for the Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Plantago lanceolata* (O), *Cynosurus cristatus* (O), *Festuca rubra* (A), *Prunella vulgaris* (R), *Achillea millefolium* (R), *Trifolium repens* (R), *Leucanthemum vulgare* (R), *Lathyrus pratensis* (R), *Sagina nodosa* (R), *Trifolium pratense* (R), *Euphrasia* sp. (R), *Rosa pimpinellifolia* (R), *Anthoxanthum odoratum* (R), *Dactylis glomerata* (R) and good moss over. The relevé data for this Monitoring Stop is presented in Quadrat 18.

Areas of outcropping limestone in this field support *Thymus praecox*, *Solidago virgaurea*, *Carlina vulgaris*, *Succisa pratensis*, *Plantago maritima*, *Sanguisorba minor*, *Hieracium pilosella*, *Koeleria macrantha*, *Rubus fruticosus* agg., *Anthyllis vulneraria*, prostrate *Prunus spinosa* and *Campanula rotundifolia*.

**Monitoring Stop 19:**

This Monitoring Stop was conducted on an area of thin soils over outcropping limestone. See photo 32. The remainder of the field is very similar to Monitoring Stop 18 and is quite rank. Within the Stop there was good herb cover (60%), two different varieties of orchid were recorded and 10 indicator species were present resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (O), *Plantago maritima* (O), *Trifolium repens* (R), *Festuca rubra* (F), *Thymus praecox* (O), *Prunella vulgaris* (R), *Sagina nodosa* (R), *Cynosurus cristatus* (R), *Centaurea nigra* (R), *Centaureum erythraea* (R) and *Leucanthemum vulgare* (R). The relevé data for this Monitoring Stop is presented in Quadrat 19.

This field has fruiting/seeding spikes of two different varieties of orchids and was previously grazed by cattle. Approximately 5% of the Monitoring Stop was composed of bare rock which supported a rich moss flora.

There was some low *Prunus spinosa* and *Rubus fruticosus* agg. scrub in the vicinity of the Monitoring Stop.

**Monitoring Stop 20:**

This Monitoring Stop was conducted in the western part of the same field as Monitoring Stop 19 where there were deeper soils and occasional outcrops of limestone. See photo 34. There were several *Spiranthes spiralis* stems present in this area - often growing amidst *Thymus praecox* on an ant hill. The Stop had high herb cover (70%) and ten indicator species were recorded resulting in a 'Pass' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (F), *Leucanthemum vulgare* (R), *Prunella vulgaris* (O), *Plantago lanceolata* (O), *Festuca rubra* (F), *Rhinanthus minor* (O), *Orobancha* sp. (R), *Euphrasia* sp. (R), *Achillea millefolium* (O), *Trifolium pratense* (R), *Cynosurus cristatus* (R) and *Plantago maritima* (R). The relevé data for this Monitoring Stop is presented in Quadrat 20.

Additional species recorded outside the Monitoring Stop include several fruiting/seeding orchids, *Blackstonia perfoliata* and *Potentilla erecta*. The adjoining field to the east is of similar quality.

**Monitoring Stop 21:**

This Monitoring Stop was located in a field beside the track/road which looked quite improved on the OSI aerial photograph (2000) but is still quite species-rich. See photo 35. The field is currently ungrazed but had been recently - old cow pats were present. Despite a herb cover of 40% only five indicator species were present resulting in a 'Fail' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (F), *Vicia cracca* (R), *Prunella vulgaris* (F), *Centaurea nigra* (R), *Lathyrus pratensis* (R), *Centaurea erythraea* (R), *Festuca rubra* (F), *Trifolium pratense* (O), *Plantago lanceolata* (R), *Cynosurus cristatus* (O) and *Dactylis glomerata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 21.

**Monitoring Stop 22:**

This Monitoring Stop was located in a field adjacent to the track which looks like it is improved on the OSI aerial photograph (2000). See photo 36. There are some small isolated *Crataegus monogyna* shrubs present but these do not pose a threat at present (<5% cover in the Stop). Seven indicator species were present but herb cover was low at 30% resulting in a 'Fail' for this Monitoring Stop.

Additional species recorded within the Monitoring Stop include *Festuca rubra* (F), *Plantago lanceolata* (R), *Centaurea nigra* (F), *Achillea millefolium* (F), *Lathyrus pratensis* (O), *Crataegus monogyna* (R), *Trifolium pratense* (R), *Hypochaeris radicata* (R) and *Leucanthemum vulgare* (O). The relevé data for this Monitoring Stop is presented in Quadrat 22.

**Monitoring Stop 23:**

This Monitoring Stop was located in a field adjacent to the road which looked unimproved in the OSI aerial photograph (2000). See photo 37. Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (F), *Festuca rubra* (A), *Plantago lanceolata* (R), *Trifolium repens* (O), *Galium* sp. (R) and *Holcus lanatus* (R). The sward had a high content of moss.

This Monitoring Stop 'Failed' due to a low herb cover (25%) and the presence of only 3 indicator species. The relevé data for this Monitoring Stop is presented in Quadrat 23. This field was previously grazed but would not appear to have been grazed recently.

Outside the Monitoring Stop *Dactylis glomerata*, *Centaurea nigra*, *Trifolium pratense* and *Prunella vulgaris* were recorded.

**Monitoring Stop 24:**

This Monitoring Stop was located in a field adjacent to the road which had a stepped appearance with occasional outcropping limestone. See photo 38. This field has recently been improved through the addition of sand to the soil. 7 indicator species were recorded amidst a sward with 40% herb cover and no negative indicators or significant encroachment by scrub resulting in a 'Pass' for this Stop.

Additional species recorded within the Monitoring Stop include *Euphrasia* sp. (O), *Trifolium pratense* (O), *Plantago lanceolata* (O), *Succisa pratensis* (F), *Rumex acetosa* (O), *Cynosurus cristatus* (R), *Holcus lanatus* (O), *Odontites verna* (R), *Taraxacum* agg. (R), *Leucanthemum vulgare* (O), *Festuca rubra* (F), and *Dactylis glomerata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 24.

Outside the Monitoring Stop *Centaurea scabiosa*, *Campanula rotundifolia* and abundant *Galium verum* were present. *Thymus praecox*, *Hieracium pilosella*, *Teucrium scorodonia*, *Geranium sanguineum* and *Rosa pimpinellifolia* were present around areas of exposed rock.

There is some encroachment of the flat part of the stepped slope by *Pteridium aquilinum* and *Rubus fruticosus* agg. *Prunus spinosa* is also present near outcropping limestone.

There is a water collecting/treatment device at the top of this field. The lower section of this field has been reseeded with *Lolium perenne*.

## **Urlaur Lakes**

### **SITE DETAILS**

**Surveyed By:**            **Survey Dates:**

**Total Site Area (Ha):** 265.89

**Area of Priority Grassland (N2000) (Ha):**

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**6" Sheets:**

**Digital Aerial Photos (Tile Nos.):**

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

000000

**Priority Grassland Habitat Type:**        6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

### **Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

*Description given in the NATURA 2000 explanatory forms:*

*Description based on the 2006 Survey :*



## **BACKGROUND INFORMATION**

**Previous surveys of relevance to the priority grassland habitats within the site:**

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.

## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### **Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

## **Castlesampson Esker**

### **SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 28/06/2006

**Total Site Area (Ha):** 34.4

**Area of Priority Grassland (N2000) (Ha):** 15.2

**Area of Priority Grassland 2006 (Ha)\*:** 7.3

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:** Roscommon

**Discovery Sheet No:** 47

**6" Sheets:** RO050, RO051.

**Digital Aerial Photos (Tile Nos.):**

O3101-a, O3101-b, O3101-c, O3100-b.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

001625

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Castlesampson Esker is the most westerly of an important group of eskers centred on Adrnacloon Hill in south-east County Roscommon, 9 km west of Athlone. The site is dominated by a steep-sided, crescent-shaped esker composed of glacial gravels, situated on the south side of a metalled road. Although gravel is being quarried all around the esker and gravel pits occur within the site, the esker is largely intact and fairly undisturbed.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis describes the site as follows - The vegetation of most of the esker is of dry grassland, with small amounts of scrub scattered throughout. Improved grassland in the site is found mainly at the base of the esker. Dry grassland on the site is quite species-rich and the following are commonly found: Mountain Everlasting (*Antennaria dioica*), Wild Thyme (*Thymus praecox*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Carline Thistle (*Carlina vulgaris*), St. John's-wort (*Hypericum pulchrum* and *H. perforatum*), Purging Flax (*Linum catharticum*), Kidney Vetch (*Anthyllis vulneraria*), Crested Hair-grass (*Koeleria cristata*), Glaucous Sedge (*Carex flacca*), Sheep's-fescue (*Festuca ovina*), Hairy Oat-grass (*Avenula pubescens*) and Spring Sedge (*Carex caryophyllea*). The esker grassland supports several species not usually seen on eskers, i.e. Goldenrod (*Solidago virgaurea*) and Sea Plantain (*Plantago maritima*), as well as some regional rarities, e.g. Hedge Bedstraw (*Galium mollugo*). The grassland is also notable for the variety of orchids it supports, i.e. Early-purple Orchid (*Orchis mascula*), Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted-orchid (*Dactylorhiza fuchsii*) and Fragrant Orchid (*Gymnadenia conopsea*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - A good example of orchid-rich dry calcareous grassland. Compared to other eskers this site holds a relatively large area of the habitat (15.2 ha or 0.25% of national area estimate) - Pilgrim's Road has more but All Saints, Long Derries, Split Hills/Long Hill and Ridge Road eskers all have less. A good diversity of vegetation communities and species is found; several species not usually seen on eskers occur. Several regional rarities are found and the grassland is notable for the variety of orchids it supports (*Anacamptis pyramidalis*, *Dactylorhiza fuchsii*, *Gymnadenia conopsea* and *Orchis mascula*). Surprisingly, *Orchis morio* appears not to have been recorded from the site.

#### *Description based on the 2006 Survey :*

During the 2006 survey, 6210 habitat was deemed to occur only in the eastern of the two polygons which comprise this site. The western polygon is primarily a turlough habitat.

In the eastern polygon, 6210 habitat occurs mainly on the slopes of the esker and on the hilly landscape directly east of the main esker. An area of calcareous grassland was also seen to occur in the low-lying fields at the south-eastern corner of the main esker.



Semi-improved grassland was restricted to the flat, low-lying areas of the site and these were mostly grazed by sheep.

On the esker itself, the calcareous grassland was seen to be in relatively good condition. Herb content was good and a high number of indicator species (up to 16) were recorded. While orchids were not seen in any great quantity, species noted include *Dactylorhiza fuchsii*, *Gymnadenia conopsea*, and *Listera ovata*. The south western esker slopes show some signs of surface disturbance, but species diversity is still very high. The spread of *Cotoneaster* sp. in this area and in other parts of the site is a cause for concern.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was first surveyed by NPWS regional staff as part of the NHA Survey in 1993 and then subsequently in 1994 by NPWS research staff. A boundary survey was conducted in 1996 by NPWS staff and the site was extended following a turlough survey in 2003/2004 by R. Goodwillie.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

During the 2006 survey, a series of Monitoring Stops were recorded at each site. A summary of the results of the assessments undertaken at these Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Structures and Functions were assessed at 4 Monitoring Stops. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It can be seen from Table 1a that of the 4 Monitoring Stops assessed, 3 Stops passed the assessment of Structures and Functions. 1 Stop failed as a result of excessive Bracken cover, resulting in an overall 'Fail' of the Structures and Functions at this site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	4
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 2
Stop 02	2	Pass	Structures and Functions	Map 2
Stop 03	3	Fail	Structures and Functions	Map 2
Stop 04	4	Pass	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the

grassland habitats represented by the Monitoring Stops were assigned to 4 separate management units.

Stop 1 is located in Management Unit 1. This Unit represents the north-facing side of the esker. The top and the bottom of the esker were fenced off.

Management Unit 2 represents the area at the south eastern end of the esker. It is well-grazed. Stop 2 is located in this Unit.

Management Unit 3 contains Stop 3. This area is characterised by relatively a flat or gently hummocky open grassland, fenced on all sides.

The final Management Unit, Unit 4, is located on the west facing slopes of the esker. The summit and the base of the esker are fenced.

## **FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE**

### **Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

General agricultural improvement via reseeded or the application of fertilisers does not appear to have occurred and does not appear to be a threat. General agricultural improvement via reseeded or the application of fertilisers does not appear to have occurred and does not appear to be a threat. The most pressing issues impacting on much of the 6210 habitat at Castlesampson Esker are grazing levels (149) and invasion by a species (954).

Grazing pressures on the esker slopes where most of the 6210 habitat occurs, has reduced in recent years. This change in grazing patterns is evident in the fact that high percentages of plant litter were noted in some locations on the esker (see Stops 3 and 4, and Note 9) although a high number of indicator species were still being recorded. The landowner indicated that grazing patterns were being re-assessed under a new Farm Plan and that a more suitable regime would be implemented.

Concurrent with this, the spread of scrub species (954) is a threat, particularly on the north and southwest-facing slopes described at Stop 1 and Notes 4, 8, and 9 (see Photographs 5, 6, and 7). Photograph 5 also indicates that the spread of Bracken is a potential threat also in the vicinity of Stop 1. Bracken does not currently pose a serious threat over most of the remainder 6210 habitat on the site.

One species which does, however, pose a significant threat to the species diversity on the esker slopes is the non-native prostrate *Cotoneaster* species. Mature specimens of this species were noted to be spreading on the southwest facing esker slopes (see Notes 8 and 9 with Photographs 10 and 11) and on the hillocky ground around Stop 3 (see Photographs 16, 17, 18, 19). New seedlings were also noted in on the west-facing slopes of the esker, in the vicinity of Stop 4. Urgent management of this species is required.

Removal of scrub (152) has begun on the esker as part of a new Farm Plan for some areas of the site. This is seen as a positive activity, reducing the spread of invasive scrub on good calcareous grassland. It was noted on the day of surveying that shrubs had previously been cut at their base and left to die off. An examination of the scrub in the backgrounds of Photographs 18 and 26 show dead shrubs scattered amongst more mature, living, specimens.

For the north eastern slopes of the esker, north of the fence line noted in Note 12 (see Photographs 23 and 24), there does not appear to be any recent management of the grassland (141). While some calcareous indicator species remain, the vegetation is grass-dominated and young scrub seedlings are frequent. This area is not owned by the landowner who is involved in a Farm Plan. Without immediate management, the grassland habitat on these northern slopes will be lost.

Finally, there is a potential threat that future pressure may force the re-opening of the 2 disused quarries present on the site (301). This is not seen to be a serious threat at present. However, as other active quarries in the locality come to the end of their production life, pressure may increase to reactivate those at Castlesampson, particularly given the fact that Roadstone Quarries already owns much of the esker that forms the south western boundary of the site. Reactivation of the quarry at Note 14 would be especially destructive. The recolonising process in that area is well under way (see Note details and Photographs 32 to 35) and it would be expected that 6210 habitat would eventually become re-established there in the near (rather than the distant) future.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
141	Grazing: abandonment of pastoral systems	-1	B
149	Grazing: undergrazing	-1	B
152	Restructuring agricultural land holding: removal of scrub	1	C
301	Sand & gravel extraction: quarries	0	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The two most pertinent management issues at Castlesampson esker are grazing patterns and the control of scrub and invasive species including Bracken and Cotoneaster.

Discussions with the landowner indicate that prior to being involved in a Rural Environmental Protection Scheme a few years ago, grazing levels were comparatively high. These levels were significantly reduced under the scheme. However, a new Farm Plan for the landowner's property recommends increasing these levels to a more suitable level. The consequences of the reduced grazing was evident in the high percentage of plant litter and the spread of scrub in some areas of the esker. Good species diversity still exists, however, suggesting that a better sward structure should be re-established relatively easily if correct stocking levels and a suitable grazing regime were to be put in place immediately. If this is delayed, there is strong potential for rank grassland to develop with a resulting loss in species diversity.

Another target under the Farm Plan is scrub removal. This has already been initiated by the landowner in the last few years. It was noted on the day of surveying that occasional, younger shrubs had been cut at the stumps and left in place to die off. While more mature shrubs are to be left in place to leave an acceptable low density presence, further cutting and management of younger shrubs and saplings is also apparently planned. This will have a positive, long term, impact on the grassland.

Scrub control on the slopes where Stop 1 is located is also a management issue. While current populations of *Crataegus monogyna* and *Prunus spinosa* did not exceed 5% within the area of the Stop, scrub encroachment was seen to be more severe further along the

esker at Note 4. A greater percentage of young saplings and seedlings were noticeable in the vicinity of Note 4. As these saplings grow, the horses which graze this area will no longer penetrate the increasingly prickly vegetation and the vegetation will become rank. This area currently retains good grassland characteristics so immediate control of the scrub is essential to avoid any loss of habitat quality.

A particularly important management issue at Castlesampson however, is the control and eradication of *Cotoneaster*. The sprawling nature of the prostrate form of this particular variety of the species will be very detrimental to the 6210 habitat. Mature and well-established clumps already occur on the southwest-facing slopes at Note 9. The absence of a formal grazing regime or of any other noticeable management protocols on this part of the esker (much of which is the property of Roadstone Quarries), has allowed this species to become established and act as a source of seed for the remainder of the site. *Cotoneaster* seedlings and young saplings are now occurring on good quality grassland in the vicinities of Stops 3 and 4. The high percentage cover of the saplings (10%) at Stop 3 resulted in the failure of the Structures and Functions at that location, despite the good herb content (60%) and the high number of positive indicator species (14). This issue will require urgent focus to control current populations and to prevent further establishment.

While it appears that much of the esker which contains good 6210 habitat will be managed as part of a Farm Plan, two significant areas are currently unmanaged. The northern slopes referred to in Note 12 and the south western slopes which are the property of Roadstone Quarries, currently do not appear to be subject to any form of regulated management. Loss of 6210 habitat in these two locations is a real possibility if management protocols are not introduced.

A future management issue exists for the site in relation to the area of recolonising grassland at the disused quarry at Note 14. The revegetating process is proceeding at a good rate in this location but future management via grazing and scrub control perhaps, will be required to encourage the establishment of good 6210 grassland.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

7.3ha (3% of the SAC) of habitat 6210 was mapped within the site, with a further 2.5ha classed as “Recolonising Bare Ground containing elements of habitat 6210”.

The Natura 2000 Explanatory Notes estimate that the extent of the habitat at Castlesampson is 15.2ha. However, this estimate is likely to include areas of Exposed Sand, Gravel or Till as well as the category described above as “Recolonising Bare Ground containing elements of habitat 6210”. As the current survey estimates (from OSI 2005 aerial photographs and field survey) that there is 4.3ha of Exposed Sand, Gravel or Till present at the site, the figure to compare to that of the Natura 2000 Form would be 14.1ha ( $7.3 + 2.5 + 4.3$ ). This would indicate that there has been a loss of 1.1ha (or 7% of the original extent) of habitat 6210 since the site was first designated in 1999. This is likely to have been due to scrub encroachment, which is a serious problem on the site (e.g. N04 and N11), especially on the southern facing esker slopes (see N08 and N09).

Because the loss in extent is estimated to be between 0-25% of the original extent, the Conservation Assessment of Extent is considered to be Unfavourable - inadequate.

### ***Structure and Functions:***

In general, the Structures and Functions of the 6210 habitat at Castlesampson Esker are relatively good. Of the 4 Monitoring Stops assessed, 3 Stops passed their assessment. Herb content was good at all Stops (between 50-70%) and high numbers of calcareous indicator species were recorded (between 11 and 16). While Stop 3 failed its assessment as a result of an excessive cover of scrub species, namely *Cotoneaster* and some *Crataegus monogyna*, herb content was also high (60%) and 14 indicator species were recorded. Scrub species were also present in Stop 1 and although current percentage cover values (5%) do not suggest an immediate problem here, management of scrub and bracken encroachment in the vicinity of Stop 1 will become an issue in the near future.

Sward structure, however, highlights some issues in current management, such as high percentages of plant litter, which need to be addressed before sward composition becomes affected.

While there are some positive aspects to the condition of the 6210 habitat over much of this site, the 25% failure rate in the assessment of Structures and Functions cannot be ignored, particularly as it reflects the wider problem of encroachment which is threatening other areas of the site apart from the Monitoring Stop locations.

For this reason, the Structures and Functions at Castlesampson Esker are described as being Unfavourable - inadequate.



***Future Prospects:***

The Future Prospects for the 6210 habitat at Castlesampson Esker are expected to be reasonably good. Currently, the Structures and Functions of the habitat are relatively good, although the assessment of that attribute is currently described as being Unfavourable - inadequate. Good herb cover exists at all Monitoring Stops and a high number of indicator species occur. The failure of one Stop due to an excessive cover of scrub species reflects the encroachment problem which exists in some parts of the site.

Central to the Future Prospects of the 6210 habitat at the site is the fact that the landowner who owns a sizeable portion of the SAC is participating in a Farm Plan for his property. This Plan will address the current stocking levels and grazing patterns on the esker. A programme of scrub removal has already been initiated by the landowner which will reduce the threat from encroachment. It is expected that these management activities will safeguard the future quality of much of the 6210 grassland on the site.

For those areas outside the control of the Farm Plan, namely the esker slopes north of Note 12 and the southwest-facing slopes owned by Roadstone Ltd., alternative protocols will need to be devised by NPWS to guarantee the future of the habitat in those areas. The encroachment of scrub (including Cotoneaster) is already seen as a management issue on the Roadstone property and the progression to rank grassland has already begun on the slopes referred to in Note 12.

A positive factor at this site is that there is the potential that in the future, as recolonisation process at the quarry sites proceeds, the extent of 6210 habitat within the site as a whole could expand. With correct management, additional areas of calcareous grassland, particularly in the eastern quarry at Note 14, are likely to qualify as 6210 habitat as the recolonisation process continues. The communities currently present in the quarries are more representative of recolonising situations and are not included in the current assessment process.

While the Future Prospects for approximately half of the site are seen to be very favourable, the lack of management on two substantial esker slopes are problematic. Therefore, the overall Future Prospects for 6210 habitat at Castlesampson Esker are described as being Unfavourable - inadequate. These prospects would be more favourable if the future of the unmanaged areas were secured.

***Conservation Assessment:***

In general, much of the 6210 habitat recorded at Castlesampson Esker during the 2006 survey was seen to be in reasonably good condition. Species diversity and herb content were seen to be high and orchids, while not plentiful at the time of survey, were distributed throughout. The habitat extent was also seen to be good, occurring as a single, integrated unit, almost half of which is under the ownership of one landowner. There is also the potential that this area will increase in the future, when the revegetating process in the various quarry sites progresses further.

There are problems, however. The vegetation structure highlights issues in current management which need to be addressed in order to safeguard the habitat. Varying levels in

grazing over recent years have led to high plant litter cover and scrub species (including *Cotoneaster* spp.) are seen to be spreading in some areas. The fact that the primary landowner is involved in an NPWS Farm Plan is a significantly positive factor. It is expected that management issues are likely to be tackled under this plan for the 6210 habitat on his property.

Particular effort will be required, however, to deal with the lack of management on the property owned by Roadstone Ltd. and on the northern esker slopes which currently show little or no input. Without any structured management, these areas, which account for approximately a third of the habitat's extent on the site, will deteriorate further and 6210 habitat will be lost.

The overall Conservation Assessment for the site is therefore described as being Unfavourable - inadequate. If management protocols were to be introduced for those areas currently showing a lack of input, the overall assessment would be more favourable.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
	Future Prospects		<i>Unfavourable - inadequate</i>
	Structure and Function		
	Extent		

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

### Note 1:

The site habitat map identifies this field as dry grassland (GS1). A 1996 NHA note for this area (N 8) describes a semi-improved field with thistles and nettles but with a better species composition on drier slopes.

On inspection during the current survey, this field appears to be abandoned or at least not to show any management for the last few years. Vegetation was rank and overgrown on soil which appears deep and moisture retentive.

The field slopes gently upwards towards the northern end. Vegetation is dense and tall at this end (up to 1.5m) and is dominated by *Cirsium arvense*, *Heracleum sphondylium*, and *Pteridium aquilinum*. *Prunus spinosa* is also encroaching from the hedgerow. Also occurring in this dense vegetation are species such as *Arrhenatherum elatius*, *Dactylis glomerata*, *Festuca trivialis*, *Rumex acetosa*, *Holcus lanatus*, *Ranunculus repens*, *Vicia cracca*, *Trifolium repens*, *Cerastium fontanum*, *Galium aparine*, and *Leucanthemum vulgare*. In more open areas, *Rumex obtusifolius*, *Trifolium pratense*, *Plantago lanceolata*, *Festuca rubra*, *Urtica dioica*, and *Cirsium vulgare* also occur.

On the flatter areas of the field, vegetation on the damper and deeper soil is characterised by abundant *Potentilla anserina* with scattered *Ranunculus repens*, *Heracleum sphondylium*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Ranunculus repens*, *Cirsium vulgare*, *Vicia cracca*, *Centaurea nigra*, *Senecio jacobea*, *Arctium minus*, *Stellaria media*, and *Senecio jacobea*. At the base of the slopes, *Equisetum fluvatile* and *Myosotis scorpioides* occur where soil is particularly damp.

### Note 2:

This note was taken close to the edge of an inactive quarry where re-vegetation is occurring. The area noted measures approximately 10m x 20m and is located between the edge of the quarry and an unmanaged hedgerow from which bracken, thistles, and nettles are encroaching.

7 indicator species were recorded in the low-growing vegetation (see relevé 1 for full list). Also occurring within a 2m x 2m quadrat were *Festuca rubra*, *Holcus lanatus*, *Potentilla sterilis*, *Achillea millefolium*, *Centaurea erythraea*, *Senecio jacobea*, *Trifolium dubium*, *Thymus praecox*, *Leucanthemum vulgare*, *Trifolium pratense*, and *Prunella vulgaris*.

On the sloping, disturbed edge of the quarry itself, *Verbascum thapsus* and *Silene vulgaris* occur. Additional species in the vicinity include *Carex flacca*, *Euphrasia* spp., *Blackstonia perfoliata*, *Hypericum pulchrum*, *Geranium robertianum*, *Potentilla anserina*, *Daucus carota*, *Plantago lanceolata*, and *Sanguisorba minor*.

## Note 3:

This field is a semi-improved pasture, currently grazed at a moderate to tight level by a mare and a foal.

Vegetation is grass-dominated and includes *Cynosurus cristatus*, *Festuca ovina*, *Festuca rubra*, *Dactylis glomerata*, *Holcus lanatus*, *Trifolium repens*, *Bellis perennis*, *Centaurea nigra*, *Cirsium arvense*, *Senecio jacobea*, *Galium aparine*, *Heracleum sphondylium*, and *Urtica dioica*.

The esker runs east/west along the southern end of this field. On the north-facing slopes of the esker, more typical calcareous indicator species occur such as *Briza media*, *Galium verum*, *Lotus corniculatus*, *Conopodium majus*, *Linum catharticum*, *Avenula pubescens*, and *Leontodon hispidus*, with additional species including *Centaurea nigra*, *Hypericum pulchrum*, and the orchids *Listera ovata* and *Dactylorhiza fuchsii*. Stop 1 is located on these slopes.

## Note 4:

Towards the eastern end of the field, the esker grassland vegetation becomes rank. Grasses such as *Anthoxanthum odoratum*, *Avenula pubescens*, *Briza media* and *Dactylis glomerata* dominate and young *Prunus spinosa* saplings are more frequent. The horses appear not to access this area, perhaps due to the prickly and shrubby nature of the vegetation.

Some indicator species still occur with occasional *Listera ovata* but plant litter is high (up to 50% cover). Management is urgently required in this area.

## Note 5:

This area is currently tightly grazed by sheep and frequent rabbit droppings were also recorded. The vegetation is closely cropped and grasses such as *Anthoxanthum odoratum*, *Holcus lanatus*, *Dactylis glomerata*, *Cynosurus cristatus* and *Festuca rubra* dominate. Also occurring are *Cirsium arvense*, *Potentilla anserina*, *Achillea millefolium*, *Cerastium fontanum*, *Ranunculus repens*, *Trifolium repens*, *Plantago lanceolata*, *Leucanthemum vulgare*, *Ranunculus bulbosus* and *Centaurea nigra*.

Large patches of *Urtica dioica* occur with *Rubus fruticosus* agg., *Potentilla reptans* and *Cerastium fontanum*. Mature scrub is scattered but at a very low density. No scrub seedlings were noted, more than likely due to the heavy grazing pressure.

## Note 6:

The lower slopes of the esker have a species composition more typical of calcareous grassland with frequent *Ranunculus bulbosus*, occasional *Briza media*, *Leontodon hispidus*, *Hieracium pilosella*, *Knautia arvensis*, *Lotus corniculatus*, and *Carlina vulgaris*. Additional species include *Polygala serpyllifolia*, *Thymus praecox*, *Hypericum pulchrum*, *Succisa pratensis*, and *Plantago lanceolata*. Grazing pressure is lighter on these lower esker slopes. Mature scrub and some scrub seedlings are scattered.

## Note 7:

Higher up, towards the summit of the esker, the grassland appears to be ungrazed. Vegetation is taller and more plant litter occurs (up to 60%). Orchids occur however, including *Listera ovata* and *Dactylorhiza fuchsii*. Scrub appears to be spreading.

## Note 8:

This is the south-facing slope of the esker in this area. Plant litter content is high and animal trails occur across the slopes. Vegetation is low-growing but disturbance levels are an issue.

Good calcareous indicators occur on the thin, stony soil including *Briza media*, *Galium verum*, *Hieracium pilosella*, *Carex flacca*, *Leontodon hispidus*, *Carlina vulgaris*, *Anthyllis vulneraria*, *Daucus carota*, *Antennaria dioica*, *Centaurea scabiosa*, and *Blackstonia perfoliata*. Also occurring are *Thymus praecox*, *Hypericum pulchrum*, *Centaurea nigra*, and *Rosa pimpinellifolia*.

Scrub of different ages is scattered across these slopes (e.g. 10% cover in a 5m<sup>2</sup> area). Also present are occasional spreading clumps of *Cotoneaster* (most likely *C. integrifolius*). Unless the current population is rapidly controlled, further spread of this species in this rocky, gravelly, habitat type is very likely.

Information from the landowner on the day of survey indicates that this part of the esker is owned by Roadstone who operate an active quarry in the locality. Planning permission to extract sand and gravel was denied in the past and the land along this length of roadway is therefore currently unmanaged.

## Note 9:

This area of the south-facing esker slope is encroached with scrub (*Prunus spinosa*, *Crataegus monogyna*, and *Rubus fruticosus* agg.), occupying 50% cover in a 5m<sup>2</sup> area. *Cotoneaster* spp. is more abundant and widespread and far fewer indicator species occur at this location than at Note 8. Plant litter is abundant and bare patches occur which are colonising with *Leontodon hispidus*. *Rosa pimpinellifolia* is scattered throughout. This side of the esker are steep and may also suffer a degree of wind exposure, facing into the south east.

## Note 10:

This represents the nose-end of the esker. Vegetation cover is good and unlike previous notes describe, there is no surface erosion in this area. Scattered scrub, including young patches of *Cotoneaster* spp., occur.

The EPA funded study on the 'Insects of Calcareous Grasslands' has a malaise trap and pitfall traps located on the eastern sloping end of this section of the esker. A badger sett occurs on the northern side of the esker.

## Note 11:

Mature scrub with some *Fraxinus excelsior* occurs in an area of grassland with deeper soil. The area is grazed by sheep. Current grazing patterns appear to be sufficient to control the spread of scrub as no young scrub seedlings were noted.

Good calcareous grassland indicator species occur e.g. *Galium verum*, *Linum catharticum*, *Daucus carota*, *Briza media*, *Hieracium pilosella*, *Conopodium majus*, *Sanguisorba minor*, *Ranunculus bulbosus*, and *Primula veris*. However, the semi-improved nature of the pasture is evident with the occurrence of species such as *Lolium perenne*, *Trifolium repens*, *Cirsium arvense*, *Ranunculus repens*, and *Cerastium fontanum*. A full species list for this area is recorded in relevé 4.

## Note 12:

A wire fence line runs in a south east/north west direction along the top edge of this part of the esker. On the northern side of the fence, the esker slopes away quite steeply to the lower lying sheep pasture below.

Those esker slopes appear unmanaged and grasses dominate (*Avenula pubescens*, *Dactylis glomerata*, *Holcus lanatus*, *Anthoxanthum odoratum*, *Briza media*), becoming rank and overgrown. Other species such as *Succisa pratensis*, *Centaurea nigra*, *Galium verum*, and *Ranunculus bulbosus* also occur.

Discussions with one of the local landowners indicate that this section of the esker is not included within a Farm Plan and is currently not being managed.

On the flatter, southern side of the wire fence, grazing by cattle and rabbits is evident.

## Note 13:

At the base of the esker in this location, scrub has been controlled. Bushes have been cut at the base and left in place to die off. Current grazing patterns (cattle and sheep) appear to be preventing further scrub development as no young seedlings were noted.

6 calcareous indicator species were recorded (*Ranunculus bulbosus*, *Galium verum*, *Lotus corniculatus*, *Conopodium majus*, *Daucus carota*, *Leontodon hispidus*). However, the deeper nature of the soil and the tight grazing pattern has resulted in more of a semi-improved appearance to the vegetation in this area. Additional species include *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Holcus lanatus*, *Achillea millefolium*, *Hypochoeris radicata*, *Prunella vulgaris*, *Centaurea nigra*, *Cirsium palustre*, and *Cirsium vulgare* (see relevé 7 for full details).

## Note 14:

This area represents an old, inactive quarry which is in the process of re-vegetating. Calcareous indicator species are occasional and include species such as *Blackstonia perfoliata*, *Carlina vulgaris*, *Leontodon hispidus*, *Trisetum flavescens*, *Antennaria dioica*, *Hieracium pilosella*, *Koeleria macrantha*, *Galium verum*, *Briza media*, and *Linum catharticum*.

Additional species include *Holcus lanatus*, *Anthoxanthum odoratum*, *Dactylis glomerata*, *Centaurea nigra*, *Achillea millefolium*, *Ranunculus repens*, *Centaureum erythraea*, *Thymus praecox* and *Bellis perennis*.

## Note 15:

This note is similar to the 1996 NHA note for this area (N8). The field is seen to be semi-improved, managed as a hay field and sheep pasture. The field slopes down gently, away from the inactive quarry in the north west. The bottom end of the field, to the north east, shows a deeper and more damp soil.

On the day of survey, the vegetation was tall (up to 40cm) with grasses occupying up to 80% of vegetation cover (*Anthoxanthum odoratum*, *Cynosurus cristatus*, *Dactylis glomerata*, *Holcus lanatus*, *Arrhenatherum elatius*, *Festuca rubra*, and *Lolium perenne*). Only 3 calcareous indicator species occurred (*Ranunculus bulbosus*, *Trisetum flavescens*, and *Daucus carota*). Also occurring were *Cirsium arvense*, *Cerastium fontanum*, *Bellis perennis* and *Rumex acetosa*. *Pteridium aquilinum* occurred infrequently.

Sheep were present on the day. These were concentrated in the shorter vegetation towards the low-lying bottom of the field where access was open into the adjacent sheep pasture.

## Note 16:

This note refers to the fields adjacent and to the east and north of that described in Note 15. The fields are currently in use as sheep pastures where grazing pressures are heavy. Soil appears moist also, with *Potentilla anserina* being frequent. *Cirsium* spp. are also widespread.

## Note 17:

This part of the site, close to the edge of the bog, is wet grassland with species such as *Agrostis stolonifera*, *Molinia caerulea*, *Anthoxanthum odoratum*, *Juncus bulbosus*, *Holcus lanatus*, *Galium saxatile*, and *Potentilla anserina*.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Stop is located on the sides of the low esker which runs in an east/west direction. The sides of the esker show a degree of disturbance from grazing horses. Tracks traverse the slope and the surface is broken up with clods of turf scattered in places. Horses were grazing in the field at the base of the esker on the day of survey.

Scrub is scattered across the slope, consisting of mature *Crataegus monogyna* with young *Prunus spinosa*. Trailing *Rubus fruticosus* agg. also occurs in small patches. Open areas occur between the scrub but young scrub is encroaching down slope from the summit of the esker.

Within the area of the Stop, herb content is good (50%) and 11 indicator species were recorded. Sward height is 20cm tall on average but bare ground occupies up to 20% of the area of the Stop. No negative indicators were recorded and while Bracken occurred, low percentages were noted (<5% cover). As a result, this Stop is deemed to 'Pass' its assessment of Structures and Functions.

In addition to the 11 indicator species, also occurring within the Stop are *Holcus lanatus*, *Dactylis glomerata*, *Centaurea nigra*, *Plantago lanceolata*, *Vicia cracca*, *Potentilla reptans*, *Leucanthemum vulgare*, and *Viola* spp (see relevé 2 for full species list). Across the rest of the slope, other species noted include *Listera ovata*, *Dactylorhiza fuchsii*, and *Knautia arvensis*.

### Monitoring Stop 2:

This Stop is located in a gradually sloping area of good calcareous grassland. This area appear to be moderately to tightly grazed. Sward height is low (5cm) and there is very little plant litter in the ground cover (<5%).

Within the Stop, herb cover is very high (70%) and 16 indicator species were recorded. No negative indicator species or Bracken/scrub species were noted. As a result, the Stop is deemed to 'Pass' its assessment of Structures and Functions.

In addition to the 16 indicator species recorded, 9 additional species were noted within the Stop (see relevé 3 for details). Outside the Stop, *Cynosurus cristatus*, *Holcus lanatus*, *Centaurea nigra*, *Leucanthemum vulgare*, *Primula veris*, and *Bellis perennis* also occur. *Gymnadenia conopsea* and another, unidentified, seeding orchid were noted. Some scrub occurs on the upper edge of the field wall but no young seedlings were noted.



**Monitoring Stop 3:**

This Stop is located on the top of a low-lying hillock at the end of the esker.

Vegetation is low and recent grazing is evident from fresh cowpats.

Within the Stop, herb cover is currently good (60%) and 14 indicator species were recorded. An additional 5 species were also noted (see relevé 5 for full species list). However, the presence of *Crataegus monogyna* and *Cotoneaster* spp. within the Stop (10% cover in total) results in a 'Fail' at this Stop for the assessment of Structures and Functions.

Mature scrub occurs across this whole area. However, much of the more mature specimens have recently been cut at the base of the stems and either removed to one side or left in place to rot. Discussions with the landowner indicate that scrub control measures are part of his Farm Plan and that further scrub removal is planned. However, both mature and seedling forms of *Cotoneaster* spp. are also present and will pose a serious encroachment problem in the near future if left unchecked.

The landowner also indicated that as part of his recent involvement with REPS, cattle numbers had been reduced in the past. However, his new Farm Plan suggests an increase in stocking rates. This may help to reduce the relatively high percentage of plant litter noted (currently 20%) and prevent the vegetation becoming rank.

**Monitoring Stop 4:**

This is the steep, west-facing side of the esker, overlooking low-lying pasture and areas of scrub (see Photograph 29).

Within the Stop, herb cover is good (60%) but a significant percentage cover of plant litter occurs (up to 40%). In places, the vegetation is relatively tall (30-40cm) and appears ungrazed. 11 calcareous indicator species occur and there are no negative indicators or invading Bracken/scrub species. The orchid *Gymnadenia conopsea* occurs within the Stop and it is also scattered across the slopes.

In addition to the 11 indicator species, 8 additional species also occur within the Stop: *Potentilla erecta*, *Centaurea nigra*, *Hypericum pulchrum*, *Succisa pratensis*, *Carex pulicaris*, *Thymus praecox*, *Plantago lanceolata*, *Polygala serpyllifolia* (see relevé 6 for full details).

Mature scrub (*Crataegus monogyna* and *Prunus spinosa*) occurs on the slopes but it is well scattered and does not currently pose a problem. However, seedlings of *Cotoneaster* occur with sufficient frequency to suggest that this species will shortly become a problem if it is not immediately controlled. A degree of soil disturbance is evident across the slopes, due perhaps to previously higher grazing pressures.

**Bricklieve Mountains & Keishcorran****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	08/08/2006
Faith Wilson	09/08/2006
Willie Crowley	10/08/2006
	11/08/2006

**Total Site Area (Ha):** 1697.1

**Area of Priority Grassland (N2000) (Ha):** Area not given.

**Area of Priority Grassland 2006 (Ha)\*:** 45

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Sligo	25	SL034, SL039, SL040.
	33	

**Digital Aerial Photos (Tile Nos.):**

O1463-d, O1464-c, O1530-b, O1530-d, O1531-a, O1531-b, O1531-c, O1531-d, O1532-a, O1532-c, O1599-a, O1599-b, O1599-d, O1600-a, O1600-c.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS****SAC Site Code:**

001656

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

The Bricklieve Mountains and Keishcorran are located west of Lough Arrow and approximately 6 km north-west of the town of Boyle. The site is a large isolated block of carboniferous limestone that reaches a height of approximately 300m. Typical landscape features associated with a karst topography are present, caves, dry valleys, and limestone pavement. A striking feature of the Bricklieve Mountains is that they are cut into four slices by narrow rift valleys which run north-north-west and south-south-east. The walls of these valleys are vertical cliffs which vary between 10-30m in height. During the last ice age retreating ice deposited morainic debris across the rift valleys, to form lakes which subsequently developed into bog.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Botanically, the site is extremely rich and varied; this is primarily due to the very different floras of the limestone and peat areas (i.e. the calcicole and calcifuge element of the flora). In places, leaching has facilitated the development of an interesting calcifuge flora. The dominant habitats on the site include upland grassland on peaty soil, blanket bog, heath, upland grassland on mineral soil and scrub woodland. Calcareous dry grassland occurs on the lower slopes, bogland on the upper slopes above 200m, and scrub woodland by the cliff walls of the rift valleys. The most widespread community throughout the site is calcareous grassland dominated by Bent Grass (*Agrostis* sp.), Sheep's Fescue (*Festuca ovina*) and Crested Dog's Tail (*Cynosurus cristatus*). Associated species are Blue Moor-grass (*Sesleria albicans*), Heath-grass (*Danthonia decumbens*), False Oat-grass (*Arrhenatherum elatius*), Quaking Grass (*Briza media*), Lady's Bedstraw (*Galium verum*), Mouse-ear Hawkweed (*Hieracium pilosella*), Pignut (*Conopodium majus*), Woodrush (*Luzula sylvatica*), Self Heal (*Prunella vulgaris*), Yellow Rattle (*Rhinanthus minor*) and Fairy Flax (*Linum catharticum*). The legally protected (Flora Protection Order, 1987) Small-white Orchid (*Pseudorchis albida*) has recently (1994) been recorded from the site.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Webb, when surveying the flora of the eastern portion of this site in 1947, found only nineteen calcicole plants, some of which are not typically associated just with limestone habitats. Characteristic species such as *Carlina vulgaris*, *Anacamptis pyramidalis*, *Hypericum perforatum*, *Pimpinella saxifraga* and *Gentianella amarella* were not recorded by him or during both NHA surveys, even though the suitable habitat is present and lies within the geographical range of these species. Webb maintains that "the combination of elevation, latitude and longitude produces on Carrowkeel (Bricklieve Mountain) conditions so uncongenial that the calcareous nature of the soil cannot compensate for them". He further notes that the grassland 'community differs rather wildly from normal siliceous grassland, but it is even more noticeable that hardly a square yard of it could be described as typical calcareous grassland'. Small isolated pockets of limestone grassland, especially at the south east of the site, are found with characteristic species such as *Thymus praecox*, *Campanula rotundifolia* and *Galium verum*, etc. (NHA notes 1995 and C. O' Criodain pers.

comm.). On the basis of this information, the habitat is considered significant as it is one of the more northerly examples of it.

*Description based on the 2006 Survey :*

During the 2006 survey, the best examples of the 6210 priority habitat were seen to occur on the south western corner of the site, on the grazed lower slopes of Keishcorran and on the western shores of Lough Gowra. Traditional farming practices were seen to be still employed until recently in the small, rocky fields on the western shores of Lough Gowra. Other good, more limited examples of the habitat occur on the south eastern corner of the site.

Indicator species recorded on the site include species such as *Carex flacca*, *Carex caryophylla*, *Briza media*, *Galium verum*, *Hieracium pilosella*, *Koeleria macrantha*, *Anthyllis vulneraria*, *Linum catharticum*, *Lotus corniculatus*, *Avenula pubescens*, *Campanula rotundifolia*, *Primula veris*, *Conopodium majus*, and *Ranunculus bulbosus*. While orchids were not frequent on the site, *Coeloglossum viride* was seen to occur as did another unidentified orchid which presented as seeding heads.

At many locations on the site, the calcareous grassland habitat was seen to occur in close association with communities more representative of heath habitats. Calcareous grassland indicators were still present, but occurred with low percentage cover of species such as *Calluna vulgaris*, *Vaccinium myrtillus*, *Succisa pratensis*, and *Potentilla erecta*. Upland grassland on mineral soil, more characteristic of species-rich *Nardus* grassland, was also seen to occur in a mosaic with 6210 habitat. 7 of the indicator species listed by the Grassland Monitoring Project 2006 for the species-rich *Nardus* grassland habitat (EU habitat category 6230) were noted to occur in association with small quantities of the heath species *Calluna vulgaris* and *Vaccinium myrtillus* (see relevé 20 for full details).

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the NHA Survey in 1993 and 1995. The notes from this survey that relate to lowland dry grassland or calcareous grassland are presented in Appendix 1. The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

Twenty Monitoring Stops were conducted within this site. The locations of these Stops are depicted on Map 2, Sheets 1 to 6. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2.

The results of the assessment for Structures and Functions is presented in Table 1a below. Structures and Functions were assessed at all 20 Stops. 9 Stops were seen to fail the assessment, resulting in an overall 'Fail' for this attribute at this site. A summary of the individual Monitoring Stop results and the Management Units they are assigned to is presented in Table 1b.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	13
<b>Number of Monitoring Stops:</b>	20
<b>Number of Stops That Pass:</b>	9
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 1 of 6
Stop 02	2	Pass	Structures and Functions	Sheet 1 of 6
Stop 03	3	Pass	Structures and Functions	Sheet 1 of 6
Stop 04	3	Pass	Structures and Functions	Sheet 1 of 6
Stop 05	4	Fail	Structures and Functions	Sheet 1 of 6
Stop 06	5	Fail	Structures and Functions	Sheet 1 of 6

Stop 07	5	Pass	Structures and Functions	Sheet 1 of 6
Stop 08	6	Pass	Structures and Functions	Sheet 1 of 6
Stop 09	7	Fail	Structures and Functions	Sheet 2 of 6
Stop 10	7	Pass	Structures and Functions	Sheet 3 of 6
Stop 11	7	Fail	Structures and Functions	Sheet 4 of 6
Stop 12	7	Fail	Structures and Functions	Sheet 4 of 6
Stop 13	7	Fail	Structures and Functions	Sheet 4 of 6
Stop 14	8	Fail	Structures and Functions	Sheet 5 of 6
Stop 15	8	Fail	Structures and Functions	Sheet 5 of 6
Stop 16	9	Fail	Structures and Functions	Sheet 5 of 6
Stop 17	10	Pass	Structures and Functions	Sheet 5 of 6
Stop 18	11	Pass	Structures and Functions	Sheet 5 of 6
Stop 19	12	Fail	Structures and Functions	Sheet 5 of 6
Stop 20	13	Fail	Structures and Functions	Sheet 6 of 6

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 13 separate management units.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

Fertilisation (120) was noted as having a minor impact at most of the Stops visited. The impacts of previous applications were apparent at only 2 Stops (Stops 6, 14, and 15). Grazing (140) was also evident at some Stops, with some old damage from poach holes being noted. However, any damage noted was not severe in any location.

Undergrazing (149) may be a factor in the noticeable development of more heath-like elements in some Stops, a process which may have contributed to the insufficient number of calcareous indicators on parts of the site. Acidification of the calcareous substrates is seen to be a natural process (990), especially at these altitudes. However, it is uncertain whether this process could be either prevented or reversed by heavier grazing levels.

The spread of *Senecio jacobea* (954) at some locations on the site is seen as a negative indicator, reflecting insufficient management. While this species was recorded in many locations (recorded in both Monitoring Stops and Site Notes), it was noted as a particular problem at Notes 1 and 8.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
120	Fertilisation	-1	C
140	Grazing	1	B
149	Grazing: undergrazing	-1	B
990	Other natural processes	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The best examples of the 6210 habitat was seen to occur in the western section of the site, on the lower slopes of Keishcorran and on the western edge of Lough Gowra. On the day of survey, both cattle and horses were noted on Keishcorran while cattle were seen grazing around Lough Gowra. Poaching of the soils on the slopes of Keishcorran, however, would need to be monitored.

In the lower lying, rocky fields around Lough Gowra, old traditional methods of pasture farming were evident. Current grazing patterns appear to be sufficient to maintain the calcareous grassland at those Stops which were seen to pass the assessment. However, a local landowner indicated that the elderly farmer who owned that land had recently died



and the new owner had already begun to remove hedgerows and alter farming practices. While the local Conservation Ranger intervened to prevent further hedgerow removal, the alteration of traditional farming practices will result in the loss of the calcareous grassland habitat in this area. This situation would need to be monitored closely.

For the 11 Stops which failed the assessment of Structures and Functions, fertiliser application was implicated in only 3 areas (Stops 6, 14, and 15). While this impact was deemed to be currently relatively minor and easy to redress, further applications would need to be monitored.

While natural processes of soil acidification would be a feature at the site, undergrazing may be a factor in the development of a heath-like flora over much of the areas visited. While 6 of the failed Stops were seen to have elements of heath vegetation, 5 or 6 calcareous indicator species were still recorded at most of these Stops (see Stops 9, 11, 12, 13, 16, 19, and 20). It is thought that higher levels of grazing may assist in halting the development and expansion of heath. As significant calcareous species were still seen to be present in these 6 Stops, a closely monitored programme of slightly higher grazing pressures may be beneficial to the calcareous grassland on the slopes.

## **CONSERVATION STATUS**

### ***Extent:***

Six target areas were chosen for survey following an analysis of aerial photographs (2000 series) and an assessment of previously recorded NHA notes and habitat maps. Following the field surveys, the Extent of the habitat within this site was digitised using a combination of the information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and an analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

45ha of the habitat was mapped within the SAC with a further 1ha mapped in an area adjacent to the SAC, close to Lough Gowra in the southwest of the site. However, the field survey results indicate that the 6210 habitat on the site occurs in close association with calcareous heath and it is thus difficult to accurately assess its full Extent. It is thought likely therefore, that the Extent of habitat 6210 has been slightly overestimated, since all of the area mapped also contains elements (sometimes strong elements) of calcareous heath. In addition, some of the areas (e.g. around Stops 9, 14 to 16 and 18 to 20) also show signs of slight agricultural improvement.

NATURA 2000 forms did not give an estimate of the previous Extent of 6210 habitat at the site, other than to indicate, "the area of the habitat at this site is very small and is confined to pockets at the south-east".

Although there are signs of agricultural improvement in some areas of 6210 habitat, the improvement is not of a very intensive nature and may, in fact, have preceded the site's designation as an SAC. Hence, the Extent of habitat 6210, estimated to be up to 45ha, appears to have been maintained and the Conservation Status of the habitat's Extent is therefore considered to be Favourable.

### ***Structure and Functions:***

Of the 20 Monitoring Stops assessed at this site, 9 Stops were seen to pass the assessment process. Most of the Stops that passed are located in the southern and south western corner of the site. Herb content was good in these Stops, ranging from 40% at a number of Stops to 80% at Stop 17. A representative number of indicator species also occurred, ranging from the target number of 7 to the highest number of recorded species of 10 at Stop 8. Overall, a total of 14 different calcareous indicator species were recorded. Orchids were not frequent but unidentified seeding orchid heads were noted at Stops 2, 4, 8, 10, 18, and 19.

Bracken or scrub was not seen to be an encroachment issue at this site. These species were recorded at only 4 Stops but as percentage cover did not exceed 5%, they did not contribute to a failure of Structures and Functions at any Stop.

Of the 11 Stops which failed the monitoring process, low herb cover was implicated at only 2 Stops, Stops 5 and 15. All 11 Stops which failed, recorded insufficient indicator species, ranging from 4 species (at Stops 13, 14, and 15) to 6 species (at Stops 6, 11, and 12). The agricultural grass species *Lolium perenne* was noted at only one Stop, Stop 6, but the

frequency of occurrence was seen to be low (Rare).

While at 3 of the failed Stops (Stops 6, 14 and 15), past agricultural improvement was evident, the occurrence of heath species contributed to the insufficient number of indicator species at 6 Stops (Stops 9, 11, 12, 13, 16, 19, and 20). This was reflected in the occurrence of species such as *Calluna vulgaris*, *Vaccinium myrtillus*, *Succisa pratensis*, *Potentilla erecta*, *Danthonia decumbens*, *Agrostis capillaris*, *Carex pulicaris*, and *Galium saxatile*. Nonetheless, 5 or 6 calcareous indicator species were still recorded at these failed Stops. Grazing levels at these Stops were also seen to be light, a factor which may be contributing to the development of heath vegetation.

As there is more than a 50% failure rate in the assessment of Structures and Functions at this site, the Structures and Functions are described as being Unfavourable - bad.

***Future Prospects:***

The Future Prospects of the 6210 habitat at this site are uncertain. If current grazing levels and agricultural practices can be maintained at Keishcorran and at Lough Gowra (where the best examples of 6210 habitat occur), the status of the grassland habitat should be maintained. However, it was noted that at Lough Gowra, a recent change in land ownership had occurred and hedgerows had been removed in preparation for agricultural improvements. The local Conservation Ranger had acted quickly to halt further removal but pressure remains to develop the grassland.

Throughout the rest of the site, increased levels of grazing would be required to try and prevent the expansion of heath communities. This would necessitate a closely monitored management programme, involving NPWS and a significant number of landowners. While this may be unlikely to occur, the implementation of such a programme could have the potential to significantly add further areas of 6210 habitat to the overall total for this site, thereby improving the current assessment of Unfavourable - inadequate for the site's Future Prospects.

***Conservation Assessment:***

The assessment of the Extent of the 6210 habitat at this site resulted in a Favourable result. It should be noted, however, that as the habitat occurs in close association with calcareous heath communities, it is difficult to accurately assess the Extent of the priority habitat.

As a result of the field survey, the best examples of the 6210 calcareous grassland habitat were seen to occur on the western portion of this site, on the lower slopes of Keishcorran and on the western shores of Lough Gowra (see Map 2, Sheet 1 of 6). 6 of the 8 Monitoring Stops conducted in this area were seen to pass the assessment of Structures and Functions (Stop 3, which passed, is located outside the SAC boundary). Slight impacts from agricultural improvement were noted but on the whole, condition was good. Smaller and more limited areas of calcareous grassland habitat also occurred on the south eastern side of the site (see Map 2, Sheet 5 of 6).

Throughout the rest of the site, Structures and Functions were seen to fail in the remainder of the assessed Stops. For 6 of the 11 Stops which failed the assessment however, the

habitat was seen to be more representative of a calcareous heath habitat. While 5 or 6 calcareous grassland indicator species were still noted to be present, they occurred in association with varying percentage cover of more typical heath species such as *Calluna vulgaris*, *Vaccinium myrtillus*, *Succisa pratensis*, and *Potentilla erecta*.

Assigning such areas to a heath habitat category would exclude them from the current process of conservation assessment, leaving Structures and Functions to be assessed at 14 instead of 20 Monitoring Stops. Without a more extensive phytosociological examination, this would be difficult to justify. In any case, the exclusion of the 6 heath-like Stops would not alter the current Unfavourable - bad status of the Structures and Functions assessment. 5 Stops would still be seen to fail as a result of other factors such as agricultural improvement. The overall assessment of Structures and Functions would remain Unfavourable - bad.

The Future Prospects of the 6210 habitat are uncertain and are described as being Unfavourable - inadequate. If current grazing and agricultural practices can be maintained (and improved slightly) at Keishcorran and at Lough Gowra, the status of the grassland habitat in that area should be maintained. If increased levels of grazing in other parts of the site were seen to prevent the expansion of heath communities, then further areas of 6210 habitat could be added to the current Extent in the future. However, the possibility of such an extensive management programme being undertaken at the site is not great.

Despite the positive assessment of the habitat's Extent and the fact that there are some positive features in the Future Prospects for the site, the failure of the Structures and Functions assessment dictates that the overall Conservation assessment of the 6210 habitat at this site is described as being Unfavourable - bad.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
Extent			
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

The lower slopes of the hill in this area support a type of calcareous heath vegetation. Patches occur where *Calluna vulgaris* cover is greater than 40% but the species is absent in some places. The substrate is an organic limestone soil with occasional outcropping stones and rocks. The slope faces south to south-east. More level areas on the slopes show signs of slight agricultural improvement and cattle were observed grazing in these locations.

On the slopes themselves, herb content is high (60%) and a few mature shrubs of *Crataegus monogyna* are scattered across the lower slopes. *Calluna vulgaris* is also more frequent on the lower slopes, becoming much more rare as altitude increases. *Linum catharticum* is abundant in patches. 6 calcareous indicator species occur with an additional 20 species, making this area quite species-rich (see relevé 2 for full details). The frequency of species such as *Calluna vulgaris*, *Succisa pratensis*, *Carex pulicaris*, *Danthonia decumbens*, *Pedicularis sylvatica*, *Potentilla erecta*, and *Polygala serpyllifolia*, reflect the heathy nature of the vegetation.

The orchid *Coeloglossum viride* occurs as does another unidentified orchid which presented as seeding heads. *Senecio jacobea* will potentially be a problem as it shows signs of spreading across the slopes. Also occurring across the slopes are *Teucrium scorodonia*, and *Viola* spp.

**Note 2:**

At an altitude of 250m, this location marks the interface between the calcareous grassland which dominates the lower slopes and the dry, calcareous, heath which is more frequent with altitude. While 6 indicator species were observed, *Calluna vulgaris* dominates the vegetation. The substrate is an organic soil (not peat) with some exposed rock.

The heath vegetation is dominated by *Calluna vulgaris* (>60% cover) with intervening areas supporting *Succisa pratensis*, *Vaccinium myrtillus*, and *Potentilla erecta*. Grasses include *Deschampsia caespitosa*, *Molinia caerulea*, *Avenula pubescens*, *Agrostis canina*, *Festuca rubra*, *Dactylis glomerata*, and *Anthoxanthum odoratum*.

Also occurring are species such as *Carex flacca*, *Carex binervis*, *Luzula sylvatica*, *Galium verum*, *Campanula rotundifolia*, *Lotus corniculatus*, *Conopodium majus*, *Plantago lanceolata*, *Trifolium pratense*, *Achillea millefolium*, *Euphrasia* spp., *Rumex acetosa*, and *Senecio jacobea*. Mature shrubs of *Crataegus monogyna* are scattered and occasional seedlings of *Sorbus aucuparia* also occur.

## Note 3:

This is an area of dense scrub consisting mainly of *Corylus avellana*. When surveyed, it was deemed to be more extensive and more dense than it appears on the OSI aerial photographs (OSI 2000).

## Note 4:

Bracken is encroaching onto one of several archaeological raths in this area.

## Note 5:

This long field shows some agricultural improvement. The vegetation is dominated by grasses such as *Cynosurus cristatus*, *Dactylis glomerata*, and *Anthoxanthum odoratum*. Herb cover is low (30%) and no calcareous indicator species remain. Herb content is accounted for by *Succisa pratensis*, *Senecio jacobea*, *Cirsium palustre*, *Veronica chamaedrys*, *Trifolium repens*, *Plantago lanceolata*, *Prunella vulgaris*, *Potentilla erecta*, and *Rumex acetosa*. Scrub and bracken is encroaching across the slopes.

## Note 6:

This marks the zonation in vegetation around the edge of the turlough, Lough Gowra. On the day of survey (9th Aug 2006), the area of open water remaining was considerably smaller than that presented on the aerial photos (OSI 2000), hence the positioning of the Note on what appears to be open water.

A band of *Filipendula ulmaria*, approximately 7m wide, extends from the agricultural pasture to a vegetation band dominated by *Potentilla anserina*. This band also measures approximately 7m wide, extending down to dense vegetation dominated by *Polygonum hydropiper*. A wide band of mud and white marl deposit surrounds the remaining open water. Swallow holes mark the location where the water in the turlough drains away.

## Note 7:

A heathy, wet grassland occurs on these low slopes with species occurring such as *Juncus effusus*, *Juncus articulatus*, *Holcus lanatus*, *Cynosurus cristatus*, *Danthonia decumbens*, *Anthoxanthum odoratum*, *Succisa pratensis*, *Potentilla erecta*, *Trifolium repens*, *Ranunculus acris*, *Cerastium fontanum*, and *Hypochoeris radicata*. The slopes have been trampled and poached by cattle.

## Note 8:

The grassland on the flatter summit at this end of the hill is semi-improved. *Senecio jacobea* is spreading and the lower slopes are dominated by *Juncus effusus*.

## Note 9:

Steep to severe slopes surround the flatter summit of this hill. The grassland on this summit and on the more gently sloping south to southeast-facing shoulder, show signs of being semi-improved. Sheep graze these more improved areas.

## Note 10:

This is a re-seeded field with *Lolium perenne*, *Holcus lanatus*, *Trifolium repens*, *Trifolium pratense*, *Ranunculus repens*, occasional *Lotus corniculatus*, *Senecio jacobaea*, *Rumex acetosa*, *Cerastium* sp. and *Heracleum sphondylium*.

## Note 11:

This field on the slope is semi-improved. On steeper parts of the slope, a few calcareous indicators occur.

## Note 12:

This is a flat terraced area between ridges with outcropping boulders. The heathy grassland is dominated by *Cynosurus cristatus* with frequent *Succisa pratensis*, *Potentilla erecta*, *Agrostis* sp. and *Lotus corniculatus*. *Galium verum* was occasional.

Around outcropping boulders, *Galium saxatile* (F), *Lotus corniculatus* (F), *Saxifraga* sp. (F), *Succisa pratensis* (F) and *Anthoxanthum odoratum* (O) occur. Between the boulders the grassland species present included frequent *Trifolium repens*, *Trifolium pratense*, *Senecio jacobaea* (F), *Arrhenatherum elatius* (O), *Alchemilla* sp. (R), *Plantago lanceolata* (O) and *Euphrasia* sp. (O).

## Note 13:

This is a heathy vegetation dominated by *Calluna vulgaris* with frequent *Succisa pratensis*, *Potentilla erecta*, *Vaccinium myrtillus* (R), *Hypericum* sp. (O), *Agrostis* sp. (O), *Carex flacca* (O), *Deschampsia caespitosa* (O), *Luzula campestris* (F), and *Juncus squarrosus* vegetation occurs on peaty soils c. 20cm deep.

## Note 14:

This was located on undulating land adjacent to the road. The field had outcropping limestone. The sward is dominated by *Succisa pratensis* with *Trifolium repens* (F), *Trifolium pratense* (O), *Prunella vulgaris* (O), *Lathyrus pratensis* (F), *Plantago lanceolata* (F), *Senecio jacobaea* (O), *Campanula rotundifolia* (R), *Carex flacca* (O), *Agrostis* sp. (R), *Ranunculus repens* (O), *Achillea millefolium* (F), *Potentilla erecta* (O) and *Cynosurus cristatus* (F). There are occasional patches of *Calluna vulgaris* present and the lower slopes of this field are characterised by *Juncus effusus*.

## Note 15:

This area gently slopes down to a wet, rush-dominated valley floor. Light grazing by sheep is evident. The grassland is not deemed to be 6210 habitat. It is more characteristic of a semi-improved grassland with a slight heathy nature. Herb content is good (50%) and the sward averages at 20cm high.

*Succisa pratensis* and *Potentilla erecta* are frequent. Grasses are dominated by *Holcus lanatus* with occasional *Cynosurus cristatus*, *Anthoxanthum odoratum*, and *Agrostis capillaris*. The heathy species *Danthonia decumbens* is rare. Two calcareous indicator species occur: *Conopodium majus* is frequent throughout and *Lotus corniculatus* is occasional. Also occurring are *Achillea millefolium*, *Centaurea nigra*, *Plantago lanceolata*, *Hypochoeris radicata*, *Trifolium repens*, *Trifolium pratense*, *Prunella vulgaris*, *Senecio jacobea*, and *Galium saxatile* (see Relevé 11 for full details). Small hummocks of *Hylocomium splendens* occur throughout which support *Galium saxatile*, *Potentilla erecta*, *Lotus corniculatus*, and *Festuca ovina*.

At the top of the slope, close to the field boundary, *Prunus spinosa* occurs as an open scrub. No young seedlings or saplings were noted, suggesting current grazing may be curtailing further spread of scrub.

## Note 16:

As the slope rises northwards, the landscape becomes drier and the soil thinner. This field is improved and is seriously encroached with *Senecio jacobea*. Other adjacent fields show a similar problem but to a lesser degree than this one.

## Note 17:

At the base of the steep slope, the grassland is less improved than at Note 16 and a few calcareous indicator species occur.

## Note 18:

This is a steep rocky limestone slope facing south west. Cattle track up the slope but there is very little soil disturbance. Herb cover is high (70%) and vegetation height averages at 15cm.

Four indicator species were recorded within a 2m<sup>2</sup> area: *Lotus corniculatus*, *Campanula rotundifolia*, *Linum catharticum*, and *Galium verum*. There is a distinct heathy element to the vegetation however, with abundant *Succisa pratensis*, frequent *Plantago lanceolata*, and occasional occurrences of *Festuca ovina*, *Thymus praecox*, and *Potentilla erecta* (see Relevé 12). Outside the relevé, *Coeloglossum viride* was observed with *Hieracium pilosella*, *Avenula pubescens*, and *Potentilla sterilis* occurring around exposed rock.

Above the area of Note 18, where the slope levels a little, a heath vegetation occurs with *Calluna vulgaris*, *Luzula sylvatica*, *Deschampsia caespitosa*, *Festuca ovina*, *Potentilla erecta*, *Succisa pratensis*, and *Vaccinium myrtillus* occurring.

## Note 19:

On the summit, a mosaic of heathy grassland and semi-improved grassland exists.



## Note 20:

Attempts have been made to improve areas of the flat summit. *Lolium perenne* is rare but there are signs of fertiliser application in the past. The open grassland areas grade frequently into more heathy grassland and areas of dry *Calluna* heath.

## Note 21:

This is an open heath vegetation on steeply sloping ground. *Calluna vulgaris* and *Vaccinium myrtillus* dominate with *Deschampsia caespitosa*, *Agrostis canina*, and *Holcus lanatus* also occurring. Herbs are represented by *Potentilla erecta*, *Galium saxatile*, *Plantago lanceolata*, *Trifolium repens*, *Succisa pratensis*, *Senecio jacobea*, *Rumex acetosa*, *Luzula sylvatica*, *Achillea millefolium*, and *Ranunculus acris*.

## Note 22:

This habitat is *Calluna vulgaris* heath, occurring on peat which is up to 50cm deep in places. *Calluna vulgaris* dominates the vegetation and the shrubs can reach up to 75cm high. Also occurring are *Deschampsia caespitosa*, *Tricophorum caespitosum*, *Potentilla erecta*, *Juncus squarrosus*, and *Sphagnum capillifolium*.

## Note 23:

This is an area of heathy grassland occurring under scattered shrubs of *Crataegus monogyna*. Vegetation is relatively high at approximately 30cm. The area is notable for its frequency of the orchid *Coeloglossum viride*. Within a 2m<sup>2</sup> relevé, 6 spikes of this species were recorded. Also occurring were 4 calcareous indicator species *Galium verum*, *Lotus corniculatus*, *Linum catharticum*, and *Koeleria macrantha*. Additional species include *Calluna vulgaris*, *Succisa pratensis*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Festuca ovina*, *Agrostis canina*, *Plantago lanceolata*, *Trifolium pratense*, *Achillea millefolium*, *Thymus praecox*, *Prunella vulgaris*, and *Euphrasia* spp.

## Note 24:

Shattered limestone rocks on these north west facing slopes support a mosaic of *Calluna* heath and heathy grassland. Patches of *Juncus effusus* also occur.

## Note 25:

This is a calcareous heath habitat, similar to that described in Stop 11.

## Note 26:

This is a heath habitat, dominated by *Calluna vulgaris*.

## Note 27:

The nose of the hill is characterised by stepped, flat, terraces. These flat areas show signs of some agricultural improvement in the past and are therefore less species-rich. Such areas are grazed by cattle. The vegetation is dominated by grasses such as *Agrostis stolonifera*, *Holcus lanatus*, and *Dactylis glomerata*. Herbs include *Potentilla erecta*, *Senecio jacobaea*, *Rumex acetosa*, *Plantago lanceolata*, *Achillea millefolium*, *Ranunculus repens*, *Ranunculus acris*, *Luzula campestris*, *Succisa pratensis* and *Cirsium palustre*.

## Note 28:

As percentage cover of *Calluna vulgaris* was >40%, this area is defined as calcareous heath. In addition to *Calluna vulgaris*, other species present include the 5 calcareous indicator species *Lotus corniculatus* (F), *Carex flacca* (O), *Campanula rotundifolia* (R), *Galium verum* (R), and *Linum catharticum* (R). Grasses include *Dactylis glomerata* (O), *Agrostis capillaris* (O) and *Festuca rubra* (O) while herbs include *Succisa pratensis* (O), *Potentilla erecta* (O), *Thymus praecox* (R), *Centaurea nigra* (O), *Plantago lanceolata* (O), *Prunella vulgaris* (R), and *Hypericum* sp. (R).

## Note 29:

Occasional narrow strips of improved or enriched grassland occur across the slopes. These typically are less species-rich than the intervening areas of heathy grassland.

## Note 30:

The vegetation in this area is similar to the heathy grassland described in Stop 12.

## Note 31:

This area is dominated by wet grassland vegetation.

## Note 32:

This is an area of semi-improved grassland at the shoulder of the slope. Grasses include *Lolium perenne*, *Cynosurus cristatus*, *Holcus lanatus*, and *Agrostis* sp. Herb species present include *Trifolium repens*, *Ranunculus repens*, *Cerastium fontanum*, *Cirsium palustre*, and *Juncus conglomeratus*. Outcropping limestone is occasional within this area and there are scattered *Crataegus monogyna* shrubs. This area was grazed by cattle.

Further upslope (beyond the field boundary) this area grades into a calcareous heath dominated by *Calluna vulgaris*. The small sloped areas of the ridge have a heathy element with *Succisa pratensis*, *Lotus corniculatus*, *Euphrasia* sp., *Thymus praecox*, *Galium saxatile*, *Potentilla erecta*, *Agrostis* sp., *Achillea millefolium*, *Cerastium* sp., *Rumex acetosa*, *Prunella vulgaris*, and *Plantago lanceolata*. The herbs *Galium verum* and *Alchemilla xanthochlora* are present near outcropping rocks in pasture.

## Note 33:

This area is located on steep east-facing slopes, looking towards Lough Arrow. These slopes are lightly poached by cattle, with frequent *Cirsium palustre* and *Juncus effusus* amidst a closely grazed sward.

No calcareous indicator species occur. Species recorded include *Plantago lanceolata* (F), *Bellis perennis* (O), *Thymus praecox* (R), *Cynosurus cristatus* (F), *Succisa pratensis* (F), *Euphrasia* sp. (R), *Trifolium pratense* (O), *Trifolium repens* (F), *Cerastium fontanum* (R), *Achillea millefolium* (F), *Potentilla erecta* (F), *Prunella vulgaris* (O), *Galium saxatile* (R) and *Senecio jacobaea* (R).

There is some scattered *Crataegus monogyna* on the slope. Areas of *Calluna vulgaris* are also developing on the lower slopes.

## Note 34:

This is a wet grassland valley, dominated by *Juncus* spp. and *Holcus lanatus*.

## Note 35:

The vegetation in this area is similar to that described at Stop 14.

## Note 36:

This area is characterised by short (<10m) steep slopes which terrace up the sides of the mountain. A mosaic occurs of heath dominated by *Calluna vulgaris* and *Vaccinium myrtillus* interspersed with flat areas of wet grassland. The wet grassland supports species such as *Anthoxanthum odoratum*, *Holcus lanatus*, *Agrostis* spp., *Carex binervis*, *Juncus effusus*, *Juncus acutiflorus*, *Potentilla erecta*, *Succisa pratensis*, *Trifolium pratense*, *Linum catharticum*, and *Achillea millefolium*.

## Note 37:

This is a flat area with extensive dry heath. Mature *Calluna vulgaris* shrubs dominate with some *Vaccinium myrtillus*, tussocks of *Molinia caerulea* and *Juncus effusus*, and scattered *Carex binervis*, *Potentilla erecta*, *Succisa pratensis*, *Juncus squarrosus*, *Luzula sylvatica*, and *Agrostis* spp. Scattered mature bushes of *Crataegus monogyna* also occur.

## Note 38:

This is a gentle slope with damp, semi-improved grassland, supporting species such as *Holcus lanatus*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Lotus corniculatus*, *Galium verum*, *Trifolium repens*, *Plantago lanceolata*, *Juncus effusus*, *Cirsium palustre*, and *Achillea millefolium*.

## Note 39:

These slopes are wetter and less improved than those described in Note 38. Here, the wet grassland is dominated by *Juncus effusus* with other species occurring such as *Filipendula ulmaria*, *Juncus acutiflorus*, *Lathyrus pratensis*, *Holcus lanatus*, *Ranunculus acris*, *Prunella vulgaris*, and scattered *Dactylorhiza fuchsii*.

## Note 40:

The grassy slopes in this location are rocky with thin soils. The vegetation composition is similar to, but less species-rich, than that described at Stop 14.

## Note 41:

This is an area of wet heath which is comprised of species such as *Eriophorum vaginatum*, *Molinia caerulea*, *Calluna vulgaris*, *Carex echinata*, *Succisa pratensis*, *Potentilla erecta*, *Juncus effusus*, *Juncus acutiflorus*, *Anthoxanthum odoratum*, *Holcus lanatus*, and *Deschampsia caespitosa*.

## Note 42:

The grassland in this area of the slopes is similar to that described in Stop 15 except that in Note 42, *Pteridium aquilinum* is encroaching upslope.

## Note 43:

The vegetation here is similar to that described in Stop 16, i.e. rocky limestone ledges on steep slopes supporting a heathy calcareous grassland.

## Note 44:

The gently sloping floor of this valley is wet and supports a wet grassland similar to that described in Note 39. Cattle tracks criss-cross the valley.

## Note 45:

The slopes on this side of the hill are gentle at the base but rise quickly to become steep-to-/severe. They face west south-west. Herb content is good (50% cover) and the vegetation height averages at 15cm,

Several calcareous indicators are present e.g. *Lotus corniculatus*, *Carex flacca*, and *Hieracium pilosella*. However, the overall impression from this grassland is more of an upland grassland on mineral soil, with the vegetation composition reflecting a more heathy, *Nardus*-type grassland. 7 of the indicator species listed by the NPWS Grassland Monitoring Project 2006 for the *Nardus* species-rich grassland habitat (EU habitat category 6230) occur. These occur in association with small quantities of the heath species *Calluna vulgaris* and *Vaccinium myrtillus* (see relevé 20 for full details). Outside the area of the relevé, *Carex binervis*, *Polygala serpyllifolia* and *Primula vulgaris* also occur.

## Note 46:

The slopes of this hill are a close mosaic of *Nardus*-type grassland as described in Note 45 and calcareous grassland.

## Note 47:

The summit of this hill is covered with shattered limestone rock. Small patches of calcareous grassland are interspersed amongst the rock but not to any great degree. Species occurring amongst the rocks include *Thymus praecox*, *Galium verum*, *Lotus corniculatus*, *Campanula rotundifolia*, *Primula veris*, *Euphrasia* spp., *Viola* spp., *Cirsium palustre*, and *Succisa pratensis*. Seeding heads of unidentified orchids are distributed throughout. Scattered shrubs of *Crataegus monogyna*, *Prunus spinosa*, and *Ilex aquifolium* also occur. In places, the scrub density is higher, bordering on encroachment.

## Note 48:

Areas of the summit in this vicinity show signs of agricultural improvement. Cattle currently graze the flat fields (fresh cowpats were noted). Herb content remains good (60%) and sward height is low (5cm). Grasses are dominated by *Cynosurus cristatus* (O) with some *Festuca ovina* (R) and *Agrostis capillaris* (R). Herbs include *Trifolium repens* (F), *Ranunculus repens* (O), *Achillea millefolium* (O), *Galium saxatile* (O), *Conopodium majus* (R), *Potentilla erecta* (R), and *Cerastium fontanum* (R). This comprises relevé 22. Tussocks of *Juncus effusus* are rare and *Cirsium palustre* is scattered throughout.

## Note 49:

On the steep slopes at this end of the hill, heath vegetation with *Calluna vulgaris* and *Vaccinium myrtillus* has developed over peat. The peat has accumulated to a depth of >15cm in places.

## Note 50:

Calcareous grassland occurs at the base of the cliff. A narrow strip occurs, however, before wet grassland is again encountered towards the centre of the valley.

## Note 51:

The vegetation in this area was similar to the calcareous grassland described in Stop 18, except that *Rhinanthus minor* occurred with less frequency in the vicinity of Note 51.

## Note 52:

Peaty soil occurs at the change of slope and the vegetation is dominated by a mosaic of heath and grassland vegetation. *Calluna vulgaris* and *Vaccinium myrtillus* dominate the heath vegetation with some *Galium saxatile* and *Pteridium aquilinum* also occurring.

## Note 53:

On flatter, more gentle slopes, there is evidence of recent mowing, keeping heath vegetation at bay. These flatter areas are semi-improved and cattle were grazing them on the day of survey. *Calluna vulgaris* also occurs in minor percentages (see relevé 25 for full species list).

## Note 54:

This is a short, very steep slope within an area of improved sloping grassland. It is ungrazed and uncut and the grass-dominated vegetation (60% cover) is noticeably more species-rich than the surrounding semi-improved grassland. The soil is thin and rocky and supports grass species such as *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Avenula pubescens*, *Dactylis glomerata*, and *Agrostis capillaris*. Herbs include *Hieracium pilosella*, *Primula veris*, *Viola* spp., *Fragaria vesca*, *Euphrasia* spp., *Centaurea nigra*, *Trifolium repens*, *Taraxacum officinale* agg., *Prunella vulgaris*, *Hypericum pulchrum*, *Succisa pratensis*, *Luzula multiflora*, and *Lysimachia nemorum* (see relevé 26 for full details). Seedlings of *Ilex aquifolium* and *Crataegus monogyna* occur outside the relevé.

## Note 55:

The upper flat summit of the hill is improved and had been mown in the days prior to survey. The vegetation is dominated by grasses and clovers.

## Note 56:

This area of the summit is a field with rocky limestone outcrops. The exposed rock is covered in mosses and herbs which include *Hylocomium splendens*, *Rhytidiadelphus triquetrus*, *Lotus corniculatus*, *Achillea millefolium*, *Veronica chamaedrys*, *Succisa pratensis*, *Plantago lanceolata*, *Trifolium repens*, And minor percentages of *Calluna vulgaris*. Grasses which occur include *Cynosurus cristatus*, *Festuca rubra*, and *Anthoxanthum odoratum*.

The remainder of the field has been semi-improved and is dominated by grasses such as *Cynosurus cristatus*, *Holcus lanatus*, *Agrostis capillaris*, and *Anthoxanthum odoratum*. Herbs occurring include *Rumex acetosa*, *Trifolium repens*, *Trifolium pratense*, *Ranunculus acris*, *Cirsium palustre*, and *Senecio jacobea*. Recent grazing by cattle was evident (fresh cowpats). Patches of *Rubus fruticosus* agg. and *Prunus spinosa* saplings also occur but overall cover is low.

## Note 57:

As the slopes become less steep with altitude, narrow ledges of grassland occur which show indications of past agricultural improvement. These occur in a mosaic with more species-rich heathy grassland similar to that described in Stop 20 which occurs towards the base of the slope.

## Note 58:

This field has been semi-improved (but not re-seeded).

## Note 59:

This is an area of outcropping limestone rock. It occurs as flat clints with shallow grykes vegetated by *Galium verum*, *Thymus praecox*, *Saxifraga* spp., and *Geranium robertianum*.

## Note 60:

This is a limestone grassland on the flat summit of the hill. Limestone rock is exposed in places. There are signs of previous agricultural improvement but on the whole, it is species-rich in several locations. A good moss layer is noticeable and while *Crataegus monogyna* and *Prunus spinosa* occur, they are grazed back and are stunted. Sheep currently graze the grassland.

The moss layer is represented by *Hylocomium splendens*, *Rhytidiadelphus loreus*, and *Rhytidiadelphus triquetrus*. Four calcareous indicator species occur, *Galium verum*, *Lotus corniculatus*, *Linum catharticum*, and *Campanula rotundifolia*.

Grasses include *Anthoxanthum odoratum*, *Holcus lanatus*, and *Festuca rubra* while herbs include *Thymus praecox*, *Trifolium repens*, *Trifolium pratense*, *Prunella vulgaris*, *Euphrasia* spp., *Succisa pratensis*, *Plantago lanceolata*, *Veronica chamaedrys*, *Potentilla erecta*, *Cerastium fontanum*, *Achillea millefolium*, *Potentilla sterilis*, and *Viola* spp. (see relevé 28 for full details).

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This area is located on a steep slope facing southwest. The field initially slopes gently away from the road before rising more steeply towards the base of the mountain. There is no evidence of current grazing but old poach holes suggest previous or more recent grazing by cattle.

The substrate is an organic soil and the grassland vegetation, while showing a minor degree of agricultural improvement, also shows a heath-like nature. Short bushes of grazed *Calluna vulgaris* are scattered throughout and *Succisa pratensis* is frequent.

Within the Stop, herb content is good (50%) and 7 indicator species were recorded. No negative indicators occur and less than 5% cover was accounted for by *Crataegus monogyna*. These factors result in a 'Pass' for Structures and Functions at this Stop.

The presence of species such as *Calluna vulgaris* (O), *Potentilla erecta* (O), *Succisa pratensis* (F), *Danthonia decumbens* (R), *Agrostis capillaris* (R), and *Carex pulicaris* (R), indicate the heathy nature of the vegetation at this location. Also occurring within the Stop are *Euphrasia* spp., *Plantago lanceolata*, *Anthoxanthum odoratum*, *Festuca ovina*, *Hypochoeris radicata*, *Hypericum pulchrum*, *Trifolium pratense*, *Senecio jacobea*, *Cerastium fontanum*, *Alchemilla xanthochlora*, and *Prunella vulgaris* (see relevé 2 for full details).

Outside the Stop, *Rubus fruticosus* agg. and seedlings of *Fraxinus excelsior* are scattered. Mature *Crataegus monogyna* are also distributed across the slopes.

**Monitoring Stop 2:**

At an altitude of approximately 200m, this area is higher up on the slopes from Note 1. The Stop is located approximately 10m on the north-eastern side of a stone wall where the slopes face to the south. Below the wall, the vegetation is more improved and cattle were concentrated in small, flat areas on the slopes. Above the wall, the slope becomes more severe and the vegetation is more natural. Cattle do not appear to graze this far up the slope.

The substrate is a thin rocky soil. While the vegetation has a high cover of *Succisa pratensis* which would suggest more of a heath-like element, there are no other typical heath species such as *Calluna vulgaris*. Therefore, while recognising that the vegetation is tending towards a more heathy nature, the habitat is considered to be 6210 category for the purposes of monitoring.

Herb content is high within the Stop (75%) and 8 calcareous indicator species were recorded. No negative indicator species or scrub/bracken were recorded. These factors together result in a 'Pass' for Structures and Functions at this Stop.

The indicator species recorded are very similar to those in Stop 1 with the addition of *Campanula rotundifolia*. Other species occurring include *Succisa pratensis* (A), *Trifolium pratense* (O), *Hypericum pulchrum* (R), *Prunella vulgaris* (R), *Senecio jacobea* (R), *Hypochoeris radicata* (R), *Thymus praecox* (R), *Potentilla sterilis* (R), *Achillea millefolium* (R), *Cynosurus cristatus* (R), *Dactylis glomerata* (R), *Anthoxanthum odoratum* (R), and *Teucrium scorodonia* (R) (see relevé 3 for full details).

Outside the Stop, *Antennaria dioica* and *Thymus praecox* occur around exposed rocks. A few small seedlings and saplings of *Prunus spinosa* also occur close to the wall and several more mature shrubs of *Crataegus monogyna* are scattered across the slope. The vegetation averages at 20cm high and very little plant litter occurs (<5% cover).



**Monitoring Stop 3:**

This Stop is located approximately 70m outside the boundary of the SAC. It is included for assessment as it represents good quality calcareous grassland, occurring at a lower altitude than most of the other examples of 6210 grassland assessed for this site. The substrate is limestone soil with a minor degree of outcropping rock. It is grazed by cattle and grazing pressures are light to medium in intensity. Recent cowpats are distributed throughout.

The slope is gentle and faces to the south-west. Where cattle track across the slope, the soil has eroded a little, forming small terraces. Disturbance is not a major factor, however, and vegetation cover is good. Herb content is good (50% cover) and 9 indicator species were recorded. No negative indicator species or scrub/bracken were recorded. These factors together result in a 'Pass' for Structures and Functions at this Stop.

Also occurring within the Stop are *Succisa pratensis*, *Hypochoeris radicata*, *Trifolium pratense*, *Thymus praecox*, *Potentilla erecta*, *Senecio jacobea*, *Bellis perennis*, *Potentilla sterilis*, *Viola* spp., *Achillea millefolium*, *Centaurea nigra*, *Cynosurus cristatus*, and *Dactylis glomerata* (see relevé 4 for full details).

**Monitoring Stop 4:**

This gentle slope faces south-southeast. It supports a stony limestone grassland on a relatively deep soil. This field appears to be managed by mowing and grazing. This field differs from the field directly north of it in that the vegetation here is more uniform and less heathy in nature.

At the time of surveying, the vegetation was approximately 25cm high with very little plant litter recorded (<5% cover) and no soil disturbance noted. Herb content is good (50%) with 7 indicator species recorded. No negative indicator species or scrub/bracken were recorded. These factors together result in a 'Pass' for Structures and Functions at this Stop.

In addition to the indicator species, additional species recorded include *Succisa pratensis*, *Potentilla erecta*, *Centaurea nigra*, *Plantago lanceolata*, *Cerastium fontanum*, *Euphrasia* spp., *Hypochoeris radicata*, *Achillea millefolium*, *Cynosurus cristatus*, *Festuca rubra*, *Agrostis capillaris*, *Anthoxanthum odoratum*, and *Holcus lanatus* (see relevé 5 for full details).

Outside the Stop, around the edges of exposed rocks, additional species noted include *Hieracium pilosella*, *Linum catharticum*, *Festuca ovina*, *Campanula rotundifolia*, *Rhinanthus minor*, and *Hylocomium splendens*. Also occurring in the deeper soil were *Heracleum sphondylium*, *Senecio jacobea*, and *Rumex acetosa*. Occasional, mature, shrubs of *Crataegus monogyna* are scattered in the field, as are fruiting spikes of an unidentified orchid (most likely *Orchis mascula*).

This description is valid for most of this western side of the turlough, before the ground slopes down to the edge of the water.

**Monitoring Stop 5:**

Between Note 4 and the location of Stop 5, this long plateau is mostly grass-dominated. *Pteridium aquilinum* is scattered across the plateau and light grazing by cattle is evident (sward height was 10cm and recent cowpats were observed). The eastern slopes of the plateau are covered in dense scrub of mainly *Corylus avellana* with some *Alnus glutinosa*.

The Stop is located close to the most southern end of the plateau, on a gently sloping area facing south east. Herb content is low (30%) and only 5 indicator species were recorded. No negative indicator species or scrub/bracken were recorded within the Stop, although both occur occasionally across the slope. On the flatter summit areas, cover of *Pteridium aquilinum* rises to 30% in places.

The grasses are dominated by *Cynosurus cristatus*, with some *Festuca rubra*, *Holcus lanatus*, *Dactylis glomerata*, and *Agrostis capillaris* also occurring. In addition to the 5 indicator species, *Prunella vulgaris*, *Plantago lanceolata*, *Trifolium repens*, *Potentilla erecta*, *Succisa pratensis*, and *Cerastium fontanum* also occur (see relevé 6 for full details).

Due to the low herb content and the insufficient number of indicator species, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 6:**

This is a limestone grassland. Good soil cover occurs over rocks which extrude in places and vegetation cover is good. There are signs of some agricultural improvement but the vegetation retains a number of the target indicator species. Vegetation height averages at 25cm and grazing patterns are light. Occasional poach hole from cattle are noticeable but no significant damage has occurred.

Within the Stop, herbs occupy 40% cover. 6 indicator species were recorded, short of the target number of 7. Additional species include *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Holcus lanatus*, *Agrostis capillaris*, *Lolium perenne*, *Succisa pratensis*, *Ranunculus repens*, *Trifolium repens*, *Rumex acetosa*, *Prunella vulgaris*, *Hypochoeris radicata*, *Hylocomium splendens*, and *Senecio jacobea* (see relevé 7 for full details). This latter species is likely to be a serious issue in the near future if it is not managed immediately.

A negative indicator species, *Lolium perenne* occurs. However, it was recorded as being rare (R) and therefore does not result in a 'Fail' for this part of the Structures and Functions assessment. There is no scrub or bracken encroachment and although there are a few scattered mature *Crataegus monogyna* shrubs, there are no seedlings obvious.

Due to the insufficient number of indicator species recorded, this Stop is deemed to 'Fail' its assessment of Structures and Functions. The number of indicator species recorded was only one short of the target of 7, and could, with some flexibility be deemed to 'Pass'. However, this reduction is more than likely a consequence mainly of previous agricultural improvement practices (*Lolium perenne*, *Ranunculus repens*, and *Trifolium repens* all occur). In these circumstances therefore, the Stop is deemed to have 'Failed' its assessment.

**Monitoring Stop 7:**

This is a grassland on a steep to severe slope, facing east. A high stone wall separates this area from the lower ground where Stop 6 is located. Above the wall, on the steeper slopes, grazing patterns appear to be very light. Sheep and rabbit droppings were noted but in very small quantities and very little soil or vegetation disturbance is evident.

The vegetation has a very natural appearance and there are no signs of agricultural improvement, more than likely due to the steep nature of the terrain. While there is a slight heathy element to the vegetation, the habitat is still deemed to be calcareous grassland.

Within the Stop, herb cover is 40% with the calcareous indicator species *Briza media* dominating the grass component. In total, 7 indicator species were recorded with an additional 14 species also occurring such as *Anthoxanthum odoratum*, *Festuca rubra*, *Danthonia decumbens*, *Bellis perennis*, *Potentilla erecta*, *Thymus praecox*, *Viola* spp., *Trifolium pratense*, *Hypericum pulchrum*, *Hypochoeris radicata*, *Carex pulicaris*, and *Polygala serpyllifolia* (see relevé 8 for full details). *Senecio jacobea* is spreading up from the lower fields. Outside the Stop, 2 other indicators, *Galium verum* and *Conopodium majus*, also occur with *Achillea millefolium*.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 8:**

This Stop is located on a steep slope facing east-southeast. Rocky ledges occur in places and scattered mature shrubs of *Crataegus monogyna* occur. On the slopes, there is little evidence of agricultural improvement and grazing patterns are light. On the flatter summit plateau, more semi-improved grassland occurs.

Within the Stop, herb cover is good (50%) and 10 indicator species were recorded. 16 additional species occur, some of which reflect the slight heathy nature of the vegetation in this vicinity. This includes very short (10cm high) *Calluna vulgaris* (R), *Succisa pratensis* (O), *Potentilla erecta* (R), *Carex pulicaris* (O), and *Danthonia decumbens* (R). The overall percentage cover of *Calluna vulgaris* is comparatively low however, and the habitat is still considered to be grassland.

Outside the Stop, additional species across the slopes include *Dactylis glomerata*, *Senecio jacobea* and *Heracleum sphondylium*. Wherever rocky ledges occur, *Antennaria dioica*, *Thymus praecox*, *Potentilla sterilis*, and *Viola* spp. occur.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 9:**

This Monitoring Stop was located on a steeply sloping hillside with frequent rock outcrops. The soil is comparatively organic, tending more towards a peaty soil. Herb content was good (50%) but only 5 indicator species were recorded. There were no negative indicator species and no scrub/bracken. Sward height was between 5-15cm with no bare or disturbed soil observed. The area is lightly grazed by cattle.

In addition to the 5 indicator species, 12 additional species were recorded including *Plantago lanceolata*, *Succisa pratensis*, *Arrhenatherum elatius*, *Agrostis* sp., *Festuca rubra*, *Potentilla erecta*, *Trifolium pratense*, *Senecio jacobaea*, *Achillea millefolium*, *Vaccinium myrtillus*, *Thymus praecox*, and *Lathyrus montanus* (see relevé 10 for full details). The abundance of *Succisa pratensis* and *Potentilla erecta*, in addition to the presence of *Vaccinium myrtillus* and *Lathyrus montanus*, indicates a heathy element to the vegetation.

The insufficient number of indicator species recorded at this Stop results in a 'Fail' for Structures and Functions at this location.

**Monitoring Stop 10:**

This Stop is located in a small area of calcareous grassland which slopes downwards from the summit towards the east. It occurs on the south side of a stone wall and extends along the eastern side of the slope for approximately 100m. The grassland area is no more than 20m wide, extending from the flat, heath-dominated summit down to the heathy grassland below. Across this slope, *Calluna vulgaris* occurs as short (20cm) shrubs. However, cover is low, not exceeding 10% cover overall. Evidence of current or recent grazing on these slopes is not evident.

Within the Stop, herb content is at 40% and 7 indicator species were recorded. In addition, species such as *Succisa pratensis*, *Potentilla erecta*, *Plantago lanceolata*, *Cynosurus cristatus*, *Carex pulicaris*, *Trifolium pratense*, *Achillea millefolium*, *Hypericum pulchrum*, *Thymus praecox*, and *Euphrasia* spp. occur. *Calluna vulgaris* was not recorded within the area of the Stop.

Outside the Stop, additional species include infrequent *Calluna vulgaris*, *Senecio jacobaea*, *Centaurea nigra*, *Juncus effusus*, and *Heracleum sphondylium*. Mature shrubs of *Crataegus monogyna* are scattered throughout but do form dense scrub in any location. Unidentified seeding orchid heads also occur which are most likely to be *Dactylorhiza maculata*.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 11:**

This Monitoring Stop was located on a steeply sloped area which was recently heavily poached by cattle. The vegetation shows an occasional heathy element consisting of *Calluna vulgaris* and *Vaccinium myrtillus*. Grazed shrubs of *Prunus spinosa* and *Crataegus monogyna* are a feature of this slope.

Within the Stop, herb content was good (50%) and 6 indicator species were recorded. Of the 12 additional species recorded (see relevé 14 for full details), the abundance of *Succisa pratensis* and the frequency of *Potentilla erecta*, *Dactylis glomerata*, *Carex pulicaris*, and *Euphrasia* sp., reflects the heathy nature of the soil in this area.

This Stop fails only on its assessment of indicator species (6 of 7 target species were recorded), resulting in an overall 'Fail' on Structures and Functions. With a degree of flexibility, it could be argued that the Stop should be seen to 'Pass' as there are no negative indicators, no scrub or bracken, and the target number of positive indicators was almost met. However, it is more than likely the case that the insufficient number of indicator species is due to the fact that the habitat has more of a heath-like element, perhaps due to insufficient grazing pressures in the past. Heavier grazing appears to exist currently (poach holes are frequent) so this fact may change in the future. However, under the current assessment criteria, the Stop is therefore deemed to 'Fail'.

**Monitoring Stop 12:**

This Stop is located on south westerly-facing terraced slopes with outcropping limestone. The calcareous grassland in this entire area is essentially restricted to the steep slopes, occurring in a mosaic pattern with more heathy grassland and heath itself.

Within the Stop, herb content is good (80%) but only 6 indicator species were recorded. There were no negative indicator species recorded and there was no encroachment by scrub or *Pteridium aquilinum*. There were no signs of any current grazing pressures.

In addition to the 6 indicator species, additional species recorded include *Succisa pratensis* (F), *Centaurea nigra* (F), *Fragaria vesca* (O), *Plantago lanceolata* (O), *Trifolium pratense* (O), *Trifolium repens* (O), *Festuca rubra* (O), *Achillea millefolium* (O), *Euphrasia* sp. (O), *Dactylis glomerata* (R), *Thymus praecox* (R) was present around boulders and *Hypericum* sp. (R) (this comprises relevé 15).

Like Stop 11, this Stop also failed only on the insufficient number of indicator species. Similarly, the Stop is deemed to 'Fail' primarily due to the heathy nature of the vegetation. This may be a consequence of insufficient grazing.

**Monitoring Stop 13:**

This Stop is located on steep, south-facing slopes, in an area of heathy grassland. The upper slopes of the hillside have peaty soils and have frequent *Calluna vulgaris*, *Vaccinium myrtillus* and *Luzula campestris*. The calcareous grassland in this area is essentially restricted to the steep slopes and there are no signs of active grazing.

Within the Stop, herb content is good (60%) but only 4 indicator species were recorded: *Linum catharticum* (F), *Galium verum* (O), *Lotus corniculatus* (O), and *Carex flacca* (O). The abundance, however, of other species such as *Succisa pratensis* (A), *Euphrasia* spp. (F), and *Potentilla erecta* (O), reflect the heathy nature of the habitat. Other species occurring within the Stop include *Centaurea nigra*, *Hypericum* sp., *Festuca rubra*, *Achillea millefolium*, *Trifolium pratense*, *Arrhenatherum elatius*, *Dactylis glomerata*, *Senecio jacobaea*, and *Agrostis* sp. Outside the Stop, *Alchemilla xanthochlora* was also present within this area of the site.

Like Stops 11 and 12, this Stop also failed only on the insufficient number of indicator species. Similarly, Stop 13 is deemed to 'Fail' primarily due to the heathy nature of the vegetation. This may be a consequence of insufficient grazing.



**Monitoring Stop 14:**

This Stop is located on long, low-lying ridge that runs southwards from the edge of the main mountains. The Stop itself is located on the gentle slopes which face eastwards, overlooking the lower, rush-dominated valley described in Note 34. The soil on the ridge is shallow, with rocks and stones protruding in places.

There are signs that some agricultural improvement has occurred in the past through fertiliser application. This has resulted in a grassland more typical of more mesophile situations. The lower edges of the slopes show a significant level of disturbance by cattle trampling. *Juncus effusus* is frequent in those disturbed areas. *Juncus* is also frequent closer to the walls of the fields which subdivide this grassy ridge. Most of the fields on the ridge are grazed to a moderate level.

Within the Stop, herb cover is at 40% but only 4 indicator species were recorded (*Lotus corniculatus*, *Linum catharticum*, *Hieracium pilosella*, and *Galium verum*). Grasses include *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Agrostis canina* and *Festuca ovina*. Other herbs include *Plantago lanceolata*, *Achillea millefolium*, *Euphrasia* spp., *Hypochoeris radicata*, *Ranunculus repens*, *Bellis perennis*, *Alchemilla xanthochlora*, *Trifolium repens*, and *Trifolium pratense* (see relevé 17 for full details)

Outside the Stop, additional species occurring include *Juncus squarrosus*, *Heracleum sphondylium*, and *Cirsium palustre*. Occasional patches occurred which were not as species-rich while other, more rocky areas, supported *Thymus praecox* and *Campanula rotundifolia*. In all, while a number of basic indicator species occur across the slopes, the level of previous agricultural improvement, coupled perhaps with the tendency for the soil in this area to be damp, has reduced the quality of the 6210 habitat.

As a result of an insufficient number of indicator species occurring, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 15:**

This is a gentle slope, facing south. Sheep were grazing on the day of survey. Vegetation height was low at 5cm, suggesting grazing pressures are moderate to heavy in these fields on the slopes. Most of the higher slopes are covered in heath or wet grassland.

The Stop was placed in an area of low grassland which occurred on thin soil on sloping ground. While some indicator species remain, a degree of agricultural improvement appears to have occurred in the past. No bracken or scrub occurs on the upper slopes but bracken shows a degree of encroachment on the lower slopes (see Note 42).

Within the Stop itself, herb content is low (30%) and only 4 indicator species were recorded (*Hieracium pilosella*, *Lotus corniculatus*, *Galium verum*, and *Campanula rotundifolia*). The most frequent grass was *Anthoxanthum odoratum* with occasional occurrences of *Cynosurus cristatus*. Other grasses such as *Agrostis capillaris*, *Festuca ovina*, and *Holcus lanatus* occurred infrequently. Other species occurring within the Stop reflect the semi-improved nature of the pasture e.g. *Trifolium repens*, and *Ranunculus repens*. Also occurring were *Achillea millefolium*, *Succisa pratensis*, *Potentilla erecta*, *Hypochoeris radicata*, and *Euphrasia* spp. (see relevé 19 for full details).

Outside the Stop, *Carex flacca*, an additional indicator species, occurred around exposed rocks. Other species recorded outside the Stop include *Thymus praecox*, *Prunella vulgaris*, *Trifolium pratense*, and *Cerastium fontanum*.

As a result of an insufficient number of indicator species occurring, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 16:**

This Stop is located on steep east-facing slopes which have small, exposed, limestone ledges. The vegetation appears ungrazed, apart from the possibility of grazing by rabbits or hares. The frequency of *Succisa pratensis* in the vegetation composition suggests a heathy nature to the soil.

Within the Stop, herb content is high at 70%. 5 indicator species occur and one of these, the grass *Avenula pubescens*, was quite frequent (*Avenula pubescens* (F), *Conopodium majus* (O), *Lotus corniculatus* (O), *Linum catharticum* (O), and *Campanula rotundifolia* (R)).

In addition to the indicator species, other species occurring include *Anthoxanthum odoratum* (O), *Cynosurus cristatus* (R), *Succisa pratensis* (F), *Potentilla erecta* (O), *Euphrasia* spp. (R), *Trifolium pratense* (R), *Trifolium repens* (R), *Hypochoeris radicata* (R), *Hypericum pulchrum* (R), *Polygala vulgaris* (R) and *Prunella vulgaris* (see relevé 19).

Outside the Stop, in rockier areas, 2 additional indicator species (*Carex flacca* and *Primula veris*) occur in association with *Linum catharticum*, *Campanula rotundifolia*, *Fragaria vesca*, *Thymus praecox*, and *Viola* spp.

As a result of an insufficient number of indicator species occurring, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 17:**

This Stop is located further northwards from Note 46. The base of the hill rises rapidly to low, vegetated, limestone cliffs. The Stop was placed in the grassland at the base of the cliffs.

The grassland habitat is an interesting mosaic of species which are typical of both calcareous grassland and *Nardus* species-rich grassland (EU habitat 6230). A similar number of calcareous indicator species (9) and 6230 indicator species (8) were recorded. However, as the substrate is calcareous the habitat is assessed as calcareous grassland habitat and not as *Nardus* species-rich grassland (6230).

Herb content is very high (80%) with 9 calcareous indicator species recorded (*Galium verum*, *Lotus corniculatus*, *Hieracium pilosella*, *Linum catharticum*, *Conopodium majus*, *Koeleria macrantha*, *Campanula rotundifolia*, *Carex flacca*, and *Carex caryophylla*). No negative indicator species were recorded. While scrub species such as *Corylus avellana*, *Ilex aquifolium*, and *Crataegus monogyna* occur on the limestone cliffs above the Stop, no scrub or bracken occurs on the lower slopes. Light to moderate grazing pressures appear to occur, contributing to the maintenance of a scrub-free grassland.

The 8 species noted which are more typical of *Nardus* species-rich grassland are *Achillea millefolium*, *Potentilla erecta*, *Pedicularis sylvatica*, *Succisa pratensis*, *Festuca ovina*, *Danthonia decumbens*, *Agrostis capillaris*, and *Galium saxatile*. Additional species occurring within the Stop include *Trifolium pratense*, *Trifolium repens*, *Centaurea nigra*, *Plantago lanceolata*, *Euphrasia* spp., *Alchemilla xanthochlora*, *Hypochoeris radicata*, *Cynosurus cristatus*, *Hypericum pulchrum*, *Carex pulicaris*, *Thymus praecox*, and *Polygala vulgaris* (see relevé 21 for full details) Outside the Stop, *Primula veris* also occurred.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 18:**

This Stop is located on gradual to steep slopes which face southwards, overlooking an old abandoned settlement. Limestone rocks and small ledges are exposed which support a calcareous vegetation. While there are few indications of grazing on the steeper parts of the rocky slopes, horses were grazing the gentle slopes and the flatter fields at the top of the slope on the day of survey. A noticeable feature of the vegetation within the Stop (and in the general vicinity of the Stop) was the abundance of *Rhinanthus minor*. This species was less abundant on the higher slopes where vegetation was shorter and grass content was slightly higher.

Within the Stop, herb content is at 40% and 7 indicator species were recorded. Apart from *Avenula pubescens* and *Galium verum* which were recorded as being occasional, the remaining indicator species were present in very low quantities. In addition to the indicator species, additional species occurring included *Cynosurus cristatus*, *Dactylis glomerata*, *Rhinanthus minor*, *Centaurea nigra*, *Succisa pratensis*, *Potentilla erecta*, *Hypochoeris radicata*, *Achillea millefolium*, *Cerastium fontanum*, *Euphrasia* spp., and *Trifolium pratense* (see relevé 23 for full details). Seeding heads of an unidentified orchid (most likely *Orchis mascula*) were scattered across the slopes.

Outside the Stop, on the upper slopes, small flat areas of grassland show a higher grass content, suggesting past improvement. Nonetheless, wherever limestone rock was exposed, *Thymus praecox*, *Fragaria vesca*, *Viola* spp., *Campanula rotundifolia*, and *Alchemilla xanthochlora* occurred. Mature shrubs of *Crataegus monogyna* and *Prunus spinosa* also occurred as scattered individuals. Very few young seedlings were noted.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 19:**

These steep slopes face eastwards. Cattle graze the steep slopes and despite the occasional poach hole which results, vegetation cover is good. At the points where the slope changes, peaty soil occurs and small patches of young *Calluna vulgaris* and *Vaccinium myrtillus* are found with some *Galium saxatile* and *Pteridium aquilinum*. *Calluna* and *Vaccinium* do not exceed 10% cover across the slopes. Further up on the sides of the hill, flatter, grass-dominated ledges show some agricultural improvement and reseeded. These areas are either grazed by cattle or, where machinery can access, mowing has occurred.

The Stop is located on the lower slopes in an area which is representative of the comparatively unimproved sections of the slopes. Within the Stop, Herb content reaches 50% cover but only 5 indicator species were recorded (*Avenula pubescens*, *Carex flacca*, *Linum catharticum*, *Hieracium pilosella*, and *Lotus corniculatus*). Scrub (*Crataegus monogyna*) accounts for <5% cover and no bracken occurred within the Stop. Grazing pressures on these steeper, lower slopes appear to be light.

Within the Stop, grasses are represented by *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Dactylis glomerata*, and *Agrostis capillaris*. The heathy nature of the soil on these slopes is suggested by the frequency of occurrence of *Succisa pratensis* (F), *Potentilla erecta* (O), *Danthonia decumbens* (R) and the presence of the mosses *Rhytidiadelphus loreus* and *Hylocomium splendens* (see relevé 24 for full species list).

Outside the Stop, *Senecio jacobea* and *Achillea millefolium* also occur in the vicinity. Unidentified seeding orchids (most likely *Dactylorhiza maculata*) occur within the Stop and across the slopes. Also scattered across the slopes are mature shrubs of *Corylus avellana* and young *Crataegus monogyna* shrubs, no more than 1m high. Density is low however, and new seedlings are rare.

As a result of an insufficient number of indicator species occurring, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 20:**

This Stop is located on a steep slope facing eastwards. While the habitat is deemed to be calcareous grassland, the vegetation across the slope has a heathy nature. However, while *Calluna vulgaris* is present, it does not exceed 40% of the overall cover and in fact, it does not exceed 20% in most places. There is evidence of light grazing by cattle (cowpats are present) and the sward height averages at 20cm high.

Within the Stop, herb content is good (50%) but only 5 indicator species were recorded (*Lotus corniculatus*, *Campanula rotundifolia*, *Linum catharticum*, *Galium verum*, and *Carex flacca*). Outside the Stop, 2 additional indicator species (*Avenula pubescens* and *Primula veris*) also occur. No scrub species or encroaching *Pteridium aquilinum* was noted.

The heathy element in the vegetation is represented by *Calluna vulgaris*, *Vaccinium myrtillus*, *Succisa pratensis*, *Danthonia decumbens*, *Agrostis capillaris*, *Carex pulicaris*, and *Galium saxatile*. Other grasses occurring are *Anthoxanthum odoratum* (F), *Festuca ovina* (R), and *Cynosurus cristatus* (R). Additional herbs include *Trifolium pratense*, *Ranunculus repens*, *Prunella vulgaris*, *Alchemilla xanthochlora*, *Thymus praecox*, *Fragaria vesca*, and *Bellis perennis* (see relevé 27 for full details). Outside the Stop, *Cirsium palustre*, *Achillea millefolium*, *Polygala serpyllifolia*, and *Viola* spp. also occur.

As a result of an insufficient number of indicator species occurring, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

## **Lough Carra/Mask Complex**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	02/08/2006
Willie Crowley	03/08/2006

**Total Site Area (Ha):** 13608

**Area of Priority Grassland (N2000) (Ha):** Unlikely to exceed 50ha.

**Area of Priority Grassland 2006 (Ha)\*:** 10-20

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Galway	38	MA099, MA100, MA109, MA110,
Mayo	45	MA116, MA117, MA120.

#### **Digital Aerial Photos (Tile Nos.):**

O2206-b, O2206-d, O2207-c, O2270-a, O2270-b, O2270-c, O2270-d, O2271-a, O2271-b, O2271-c, O2271-d, O2332-d, O2333-a, O2333-b, O2333-c, O2333-d, O2334-a, O2334-b, O2334-c, O2334-d, O2335-a, O2335-c, O2394-b, O2394-d, O2395-a, O2395-b, O2395-c, O2395-d, O2396-a, O2396-b, O2396-c, O2396-d, O2461-d, O2462-a, O2462-b, O2462-c, O2462-d, O2463-a, O2463-b, O2463-c, O2463-d, O2464-a, O2464-c, O2529-d, O2530-b, O2530-c, O2530-d, O2531-a, O2531-b, O2531-c, O2531-d, O2532-a, O2532-b, O2532-c, O2532-d, O2533-a, O2533-c, O2596-a, O2596-b, O2596-c, O2596-d, O2597-a, O2597-b, O2597-c, O2597-d, O2598-a, O2598-b, O2598-c, O2598-d, O2599-a, O2599-b, O2599-c, O2599-d, O2666-a, O2666-b, O2667-a, O2667-b, O2668-a, O2668-b, O2668-d, O2669-a, O2669-c, O2737-b, O2738-a.

#### **Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

#### **SAC Site Code:**

001774

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.



## **SITE DESCRIPTION**

This site is dominated by two large lakes, Lough Mask and Lough Carra, and includes the smaller Cloon Lough. On the western side, the site is overlooked by the Partry Mountains, while to the east the landscape is largely low-lying agricultural land. The nearest large town is Ballinrobe which is about 4 km east of Lough Mask. The general geological character of the area is Carboniferous limestones, with some shales and sandstones on the western side of Lough Mask.

The underlying geology results in a great diversity of habitats, which support many scarce and rare plants and animals. Six habitats which are on Annex I of the EU Habitats Directive are listed for this site, including two which are priority habitats - limestone pavement and Cladium fen.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Associated with the pavement are areas of dry calcareous grassland and dry heath. Characteristic species present include Bloody Crane's-bill (*Geranium sanguineum*), Yellow-wort (*Blackstonia perfoliata*), Carlina Thistle (*Carlina vulgaris*), Blue Fleabane (*Erigeron acer*), Wild Madder (*Rubia peregrina*), Rustyback (*Ceterach officinarum*) and Quaking-grass (*Briza media*). Several plant species, notably Spring Gentian (*Gentiana verna*) and Dense-flowered Orchid (*Neotinea maculata*), occur at the northern limit of their distribution. The area is also noted for its diversity of orchid species.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Dry grassland occurs as part of a mosaic with limestone pavement and dry heath and scrub which occurs along much of the shores of Lough Carra and along the eastern shore of Lough Mask. Examples of the habitat are mentioned regularly in the NHA site notes (see for example N65, N66, N82, N107, N158, N233). A specific example on the east shore (Ballygarry area) of Lough Mask is also described by Curtis & O' Criodain (SAC appeal). Typical species of the dry grasslands are *Sesleria albicans*, *Anthoxanthum odoratum*, *Briza media*, *Primula veris*, *Lotus corniculatus*, *Conopodium majus*, *Centaurea nigra*, *Linum catharticum*, *Blackstonia perfoliata*, *Carlina vulgaris*, *Galium verum* and *Thymus praecox*.

Orchid species are well distributed with at least *Anacamptis pyramidalis*, *Orchis mascula*, *Ophrys apifera*, *Dactylorhiza fuchsii*, *Gymnadenia conopsea* and *Neotinea maculata*. The latter species *N. maculata*, has a limited distribution in Ireland being generally associated with the Burren in Co. Clare and rare elsewhere (Webb & Scannell 1983). Another typical Burren species that is found here at the northern end of its range is *Gentiana verna*.

#### *Description based on the 2006 Survey :*

The 2006 survey found that the areas of calcareous grassland occur as a mosaic with limestone pavement, dry heath and scrub which occurs along much of the shores of

Lough Carra and along the eastern shore of Lough Mask. Typical indicator species noted during the 2006 survey include; *Briza media*, *Carex flacca*, *Galium verum*, and *Lotus corniculatus* with less frequently *Anthyllis vulneraria*, *Avenula pubescens*, *Blackstonia perfoliata*, *Campanula rotundifolia*, *Carlina vulgaris*, *Daucus carota*, *Hieracium pilosella*, *Linum catharticum*, *Sanguisorba minor* and *Sesleria albicans*. *Dactylorhiza fuchsii*, *Listera cordata* and *Gymnadenia conopsea* were also recorded. Other species commonly recorded include *Thymus praecox*, *Euphrasia* sp., *Danthonia decumbens*, *Anthoxanthum odoratum*, *Potentilla erecta*, *Schoenus nigricans*, *Parnassia palustris*, *Antennaria dioica*, *Rhinanthus minor*, *Molinia caerulea*, *Achillea millefolium*, *Leucanthemum vulgare*, *Centaurea nigra*, *Carex pulicaris* and *Prunella vulgaris*.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1993 NHA Survey. Lough Carra, Lough Mask and Cloon Lough were all joined into the one site.

## SITE MONITORING AND MANAGEMENT UNITS

The survey of this large extensive site was approached using a combination of information sources involving the NHA notes for the site, geological data, and interpretation of the OSI 2000 aerial photographs. Eight survey areas were selected for the field visit and the areas of calcareous grassland which were surveyed were divided into seven management units.

In total, eight Monitoring Stops were conducted and their locations are depicted on Map 2 (sheets 1 - 8). Seven of these Monitoring Stops were used to assess the Structures and Functions of calcareous grassland within the site and one was included in the assessment of Extent. Only two of the seven Monitoring Stops used to assess the Structures and Functions of the calcareous grassland passed (see Table 1a), resulting in an overall 'Fail' for the Structures and Functions of the site.

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	7
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 3 of 7
Stop 02	1	Pass	Structures and Functions	Sheet 3 of 7
Stop 03	2	Fail	Not used in assessment	Sheet 1 of 7
Stop 04	3	Fail	Extent	Sheet 4 of 7
Stop 05	4	Fail	Structures and Functions	Sheet 3 of 7
Stop 06	5	Fail	Structures and Functions	Sheet 4 of 7
Stop 07	6	Fail	Structures and Functions	Map 2
Stop 08	7	Fail	Structures and Functions	Sheet 4 of 7

The areas of calcareous grassland which were surveyed within this site were divided into seven management units based on existing field boundaries and their geographic locations relative to each other.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Two of the eight Monitoring Stops (Monitoring Stops 4 and 8, and notes 2, 7, 9, 10, 11 and 13) showed signs of fertilisation (120) and agricultural improvement (103) but most of the other areas within the site were suffering from a lack of grazing (149) and abandonment (141) which has reduced the diversity of species in these areas (Monitoring Stops 3, 5, 6, 7 and 8). The encroachment of scrub and Bracken is also a potential problem for the future although the impact of this threat is currently not very high. There was also evidence of feeding of cattle from ring feeders in one area (Monitoring Stop 4 and note 7). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	C
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-2	B
120	Fertilisation	-2	B
141	Grazing: abandonment of pastoral systems	-1	A
149	Grazing: undergrazing	-1	A

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The abandonment of traditional grazing of these sites has resulted in the development of rank grassland (Monitoring Stops 6 and 7) and loss of species diversity (Monitoring Stops 3, 5 and 8). The encroachment of scrub is also an issue although it did not result in a 'Fail' for any of the Monitoring Stops (see note 1 and 5). There was some evidence of agricultural improvement in the site (Monitoring Stops 4 and 8, notes 2, 7, 9, 10, 11 and 13) and the use of ring feeders also needs to be addressed (Monitoring Stop 4 and note 7).

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2. However, as highlighted in the NATURA 2000 explanatory notes the habitat occurs as part of a mosaic with limestone pavement and dry heath and scrub making an accurate estimate of its extent extremely difficult. The habitat is found long much of the shores of Lough Carra and along parts of the eastern shore of Lough Mask.

7ha of the habitat was mapped, but it should be realised that this is likely to be an under-estimation due to the fact that:

- small areas of the habitat occur in a mosaic with limestone pavement, heath and scrub and,
- the entire SAC was not surveyed.

Indeed two areas, which the NATURA 2000 explanatory notes highlighted as supporting habitat 6210, Castlecarra (N158) in the NE of Lough Mask and Ballygarry on the east shore of Lough Mask, were not visited during this survey. However, all the areas surveyed supported only very small areas of the habitat (usually <2ha) so that the overall extent of habitat 6210 in the SAC is unlikely to exceed 10-15ha.

The NATURA 2000 explanatory notes estimated the area of habitat 6210 in the Lough Carra/Mask SAC as not exceeding 50ha. The results of the current survey indicate that this was an over-estimation. However, given the lack of baseline information it is difficult to assess what the precise original extent of calcareous grassland was. Nevertheless, considering that the area where Monitoring Stop 4 was conducted close to Ballycally on Lough Mask no longer supports calcareous grassland (the 1993 NHA survey indicated that this area supported 'a species-rich dry grassland with occasional exposed limestone boulders' - N107), it is obvious that there has been some degree of a loss in extent of habitat 6210 since designation. This area has been agriculturally improved with frequent *Lolium perenne* noted - further evidence of improvement was recorded at Notes 2, 9, 10, and 12 with a lesser degree of improvement (habitat 6210 was still present) noted at Stop 8 and at Notes 7 and 11. Because the loss of extent is estimated to be low, the Extent of calcareous grassland within the site is assessed as Unfavourable - inadequate.

### ***Structure and Functions:***

Three of the six Monitoring Stops which were used to assess the Structures and Functions of habitat 6210 at Lough Carra/Mask Complex SAC, passed the assessment process. The three Stops that failed, failed due to a lack of indicator species - Stop 6 having only four calcareous indicators, Stop 7 having three and Stop 8 having five. Monitoring Stops 6 and 7 also failed due to their low percentage herb cover.

Encroachment by scrub/*Pteridium aquilinum* was not an issue in the areas in which the Monitoring Stops were conducted but it was noted as a threat in several areas of the site

(see note 1 and 5). However the development of rank grassland due to lack of grazing and/or abandonment is believed to be the primary reason behind the failure of Stops 6 and 7 while there may have been a degree of agricultural improvement in the area of Stop 8 as indicated by the presence of *Lolium perenne*. Indeed even in the area adjacent to Stops 1 and 2 (particularly Stop 1), which both passed, there were frequent patches of *Crataegus monogyna* scrub noted as well as frequent patches of rank grassland dominated by *Dactylis glomerata*. Given that three of the six Monitoring Stops failed, the assessment of the Structures and Functions of the habitat at the site are described as Unfavourable - bad.

### ***Future Prospects:***

The Future Prospects for the site will depend on active management of the calcareous grassland within the site - namely a resumption of traditional grazing patterns. This will require an increase in local staff resources and agreement with the landowner. The reinstatement of areas that show signs of agricultural improvement will require additional resources and direct management. The Future Prospects for the calcareous grassland within the site is described as Unfavourable - inadequate.

### ***Conservation Assessment:***

There would appear to have been some loss of calcareous grassland within the site as a result of agricultural improvement, fertilisation and reseeded and for this reason the Extent of calcareous grassland within the site is described as Unfavourable - inadequate. The condition of grassland has also disimproved mainly due to a lack of grazing which has resulted in a loss of species diversity and the development of rank grassland. The Structures and Functions of the site are thus described as Unfavourable - bad. The reinstatement of areas with poor species diversity and rank grassland could be achieved with an appropriate grazing regime but the reinstatement of areas which have been agriculturally improved will require active management. For this reason the Future Prospects of the site are described as Unfavourable - inadequate.

Although the Extent and Future Prospects for the site are described as Unfavourable - inadequate the overall Conservation Status Assessment is described as Unfavourable - bad as the Structures and Functions are assessed as Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
	Extent		

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This area corresponds to the general location of NHA N463. See Photos 1 and 2.

The landscape is characterised by small hills and ridges of outcropping boulders with pockets of alkaline fen/marsh/bog in between them.

In between these boulders are *Calluna vulgaris* and *Pteridium aquilinum* with occasional *Potentilla erecta*, *Teucrium scorodonia*, *Anthoxanthum odoratum* and *Polygala serpyllifolia*. *Blechnum spicant* and *Andromeda polifolia* are present. This area is heavily grazed by sheep. There is occasional patches of *Ulex europaeus* scrub developing.

**Note 2:**

The upper fields in this area have been improved and reseeded with a *Lolium perenne*/*Trifolium repens* and *Trifolium pratense* mix. These fields are closely grazed. Other species present include *Senecio jacobaea*, *Cirsium arvense*, *Cirsium palustre*, *Plantago lanceolata*, *Juncus conglomeratus*, *Crepis* sp., *Plantago major* and *Prunella vulgaris*. See photos 14 and 15.

**Note 3:**

This is an area of ungrazed grassland adjacent to Lough Carra near the location of NHA N66. See photo 30.

The sward is dominated by species such *Schoenus nigricans* (A), *Briza media* (O), *Sesleria albicans* (O), *Campanula rotundifolia* (O), *Lathyrus pratensis* (R), *Potentilla erecta* (F), *Succisa pratensis* (O), *Lotus corniculatus* (O), *Leucanthemum vulgare* (O), *Centaurea nigra* (F), *Linum catharticum* (O), *Carex pulicaris* (R), *Festuca* sp. (O), *Prunella vulgaris* (R), *Trifolium pratense* (R), *Polygala serpyllifolia* (R), *Galium verum* (R) and *Vicia cracca* (R). This data is presented in Quadrat 8.

*Blackstonia perfoliata* was present near the disturbed ground adjacent to an old trackway as was *Hieracium pilosella*. *Gymnadenia conopsea* was occasional as was *Hypericum* sp., *Rhinanthus minor* and *Potentilla anserina*.



## Note 4:

This an area of calcareous grassland on the eastern shore of Lough Carra located on a small promontory backed by scrub with shallow bays/inlets to the north and south. See photos 35 and 36.

Species present include *Centaurea nigra*, *Daucus carota*, *Galium verum*, *Lathyrus pratensis*, *Achillea millefolium*, *Trifolium repens*, *Ranunculus repens*, *Anthoxanthum odoratum*, *Briza media*, *Leucanthemum vulgare*, *Prunella vulgaris*, *Lotus corniculatus*, *Thymus praecox*, *Veronica* sp., *Campanula rotundifolia*, *Bellis perennis*, *Potentilla anserina*, *Rhinanthus minor*, *Potentilla erecta*, *Schoenus nigricans*, *Carex flacca*, *Molinia caerulea* and *Brachypodium* sp.

This area is currently ungrazed and unfenced. Scrub encroachment is not an issue at present but could become one in the absence of grazing.

## Note 5:

This area which had been identified from an aerial photograph is adjacent to the lakeshore and is backed by improved fields which are excluded. This area is dominated by c.40% *Juniperus communis* and 50% *Calluna vulgaris* forming a large area of calcareous heath. Other species present include frequent *Briza media*, *Carex flacca*, and occasional *Galium verum*, *Campanula rotundifolia*, *Thymus praecox*, *Euphrasia* sp., *Anthoxanthum odoratum*, *Danthonia decumbens*, *Viola* sp. and *Potentilla erecta*. See photo 38.

Encroaching *Corylus avellana* scrub and spreading *Pteridium aquilinum* threaten this habitat which is an area of commonage.

## Note 6:

An area of calcareous heath extends to the edge of the large area of *Schoenus nigricans* dominated fen in the centre of this area. Similar species are recorded here as in N05 with the addition of *Schoenus* as you approach the fen. See photos 41 and 42.

Other species of note in this area include *Cotoneaster* which could become a threat to the site and frequent *Juniperus communis* some of which is no longer prostrate or creeping - one bush has formed a small tree c.10' tall. *Gymnadenia conopsea* was present growing in tussocks of *Schoenus nigricans*.

## Note 7:

A thin band of grassland adjacent to the excluded area has been fertilised or improved and *Lolium perenne* was occasional. There are remains of silage bales and ring feeding stations in this area and patches of *Urtica dioica* and *Cirsium arvense* have developed. *Cirsium palustre* is also frequent in this area and *Trifolium repens* is frequent in the sward. See photo 43.

## Note 8:

This area which was identified from aerial photographs as a potential calcareous grassland site was dominated by shattered limestone pavement interspersed with areas of calcareous heath, *Schoenus nigricans* fen and marsh. No grassland was present. Only the section near the tip of the peninsula was surveyed as we were unable to gain access further north up the peninsula. See photo 44.

## Note 9:

This is an area of improved grassland which has been reseeded with *Lolium perenne* and *Trifolium pratense* and *Trifolium repens*. It was recently mown. See photo 46.

## Note 10:

The sward in this area was dominated by *Cynosurus cristatus* and *Lolium perenne*, with occasional *Anthoxanthum odoratum*, *Trifolium repens* and *Trifolium pratense*. *Lotus corniculatus*, *Ranunculus acris*, and *Cerastium fontanum*, *Taraxacum* agg., *Ranunculus repens*, *Holcus lanatus* and *Festuca arundinacea* were also present. *Cirsium palustre* was frequent. This area of grassland merges with an area of *Schoenus nigricans* fen and *Phragmites australis* marsh adjacent to the lake margin. See photo 47.

## Note 11:

This semi-improved field is currently grazed by sheep and cattle. The sward is dominated by *Lolium perenne*, *Trifolium pratense*, with occasional *Potentilla anserina*, *Filipendula ulmaria*, *Trifolium repens*, *Centaurea nigra*, *Achillea millefolium*, *Cerastium fontanum*, and more rarely *Leucanthemum vulgare* and *Vicia cracca*.

## Note 12:

This is an area of wet/seasonally flooded grassland near the end of the peninsula. *Carex* sp. are abundant and *Potentilla anserina*, *Hydrocotyle vulgaris*, *Schoenus nigricans*, *Plantago maritima* and *Prunella vulgaris* were frequent. *Schoenus nigricans*, *Linum catharticum*, *Molinia caerulea*, and a yellow sedge species were occasional. See photo 48.

This area was closely grazed.

## Note 13:

This is an area of grassland with frequent outcropping limestone boulders located adjacent to a track. It is currently grazed by sheep and cattle. Depressions in this grassland have species indicative of wet grassland (*Potentilla anserina* is abundant).

Areas of drier ground have frequent *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Achillea millefolium*, and occasional *Nardus stricta*, *Lolium perenne*, *Festuca arundinacea*, *Galium verum*, *Trifolium repens*, *Trifolium pratense*, *Agrostis capillaris*, *Prunella vulgaris*, *Potentilla erecta* and *Sesleria albicans*. *Cirsium palustre* is abundant.

There is occasional *Crataegus monogyna* bushes in this area. See photo 49.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located in an area with occasional outcropping limestone boulders. There are frequent patches of *Crataegus monogyna* scrub in this area. Eight indicator species and *Gymnadenia conopsea* were recorded in a herb rich sward (60%) with no negative indicators or scrub encroachment resulting in a 'Pass' for this Monitoring Stop. See photos 3 - 6.

The area of grassland surrounding the Monitoring Stop has become quite rank with frequent *Dactylis glomerata* and occasional *Avenula pubescens* and *Leucanthemum vulgare*.

Additional species recorded within the Monitoring Stop include *Anthoxanthum odoratum* (F), *Dactylis glomerata* (O), *Festuca* sp. (O), *Centaurea nigra* (O), *Leucanthemum vulgare* (F), *Thymus praecox* (O), *Trifolium pratense* (O), *Polygala vulgaris* (O), *Prunella vulgaris* (O), *Fragaria vesca* (O), *Trifolium repens* (R) and *Centaureum erythraea* (R). The relevé data for this Monitoring Stop is presented in Quadrat 1.

Other species recorded outside the Monitoring Stop include *Centaurea scabiosa*, *Hypericum pulchrum*, *Teucrium scorodonia*, *Pteridium aquilinum*, *Daucus carota*, *Blackstonia perfoliata*, *Anthyllis vulneraria* and *Lotus corniculatus*.

This land is currently ungrazed and encroaching *Pteridium aquilinum* and *Crataegus monogyna* threaten this site.

### Monitoring Stop 2:

This Monitoring Stop was located close to the shoreline on thin soils in a species rich area with many of the indicator species not found in Monitoring Stop 1 present. Eleven indicator species were recorded in a herb rich sward (40%) with no negative indicators or scrub encroachment resulting in a 'Pass' for this Monitoring Stop. *Gymnadenia conopsea* was frequent within the site (although rare within the Monitoring Stop). See photos 7, 8 and 9.

Additional species present within the Monitoring Stop include *Centaureum erythraea* (R), *Trifolium pratense* (R), *Pteridium aquilinum* (R), *Carex pulicaris* (O), *Anthoxanthum odoratum* (F), *Potentilla erecta* (O), *Anagallis tenella* (R), *Danthonia decumbens* (R), *Thymus praecox* (R), *Plantago maritima* (R), *Polygala vulgaris* (R), *Achillea millefolium* (R), *Prunella vulgaris* (R) and *Rhinanthus minor* (R). The relevé data for this Monitoring Stop is presented in Quadrat 2.

A small excavated area was located near the Monitoring Stop but has been mostly revegetated indicating that this is not a recent activity.

**Monitoring Stop 3:**

This Monitoring Stop (see P012 and P013) was located at the end of a peninsula near the ford to Church Island. Outcropping limestone boulders are a feature of this area. A gravelled track, which is becoming grassed over has been constructed from the end of the tarred road to allow anglers access to the lake at this point. The grassland along the edges of this track has some *Lolium perenne* present. Only six indicator species were recorded in a herb rich sward (65%) with no negative indicators or scrub encroachment.

This would usually result in a 'Fail' for this Monitoring Stop. However, because *Schoenus nigricans* was recorded as frequent, it is thus considered that this Stop should not be assessed under habitat 6210 as the conditions are likely to be too wet for the habitat particularly as *Hydrocotyle vulgaris* (O), *Juncus acutiflorus* (R) were also recorded *Mentha aquatica* (R) within the Stop.

Additional species recorded within the Monitoring Stop include *Leucanthemum vulgare* (O), *Prunella vulgaris* (F), *Potentilla erecta* (O), *Anagallis tenella* (R), *Trifolium pratense* (O), *Trifolium repens* (R), *Lotus corniculatus* (F), *Linum catharticum* (R), *Schoenus nigricans* (F), *Plantago maritima* (F), *Succisa pratensis* (F), *Pinguicula* sp. (R), *Molinia caerulea* (R), *Cerastium fontanum* (R), *Cynosurus cristatus* (O) and *Thymus praecox* (R). There is a rich moss cover present. The relevé data for this Monitoring Stop is presented in Quadrat 3.

This area is likely to be occasional flooded and was tightly grazed by sheep. It grades into an area of fen type vegetation closer to the shoreline.

Other species present outside the Monitoring Stop include *Blackstonia perfoliata*, *Plantago major*, *Daucus carota* and *Polygala* sp.

**Monitoring Stop 4:**

This Monitoring Stop was located in the area previously described in NHA N107 as a 'formerly wooded area which now supports a species rich dry grassland with occasional exposed limestone boulders'. No indicator species were recorded in a herb poor sward (20%) with no scrub encroachment and frequent *Lolium perenne* resulting in a 'Fail' for this Monitoring Stop. See photo 17.

This field has now been improved and reseeded and is currently grazed by cattle.

Grass species present within the Monitoring Stop include *Lolium perenne*, *Holcus lanatus*, *Agrostis* sp., *Poa* sp., *Festuca* sp., with *Veronica chamaedrys*, *Ranunculus acris*, *Taraxacum* agg., *Urtica dioica* and *Plantago lanceolata* present in the sward.

There is evidence of the use of ring feeders in this area. There are three *Pinus sylvestris* trees (remnants of the former woodland) present which are all dead.

Other species present include frequent *Rumex* sp., *Achillea millefolium*, *Geranium molle*, *Cirsium arvense*, *Plantago major*, *Trifolium pratense* and *Prunella vulgaris*.

Occasional limestone outcrops support remnant calcicole species such as *Campanula rotundifolia* and *Galium verum* with *Leucanthemum vulgare* and *Achillea millefolium* also present.

**Monitoring Stop 5:**

This Monitoring Stop was located in a small triangular area backed by *Alnus glutinosa*, *Fraxinus excelsior* and *Betula* woodland with an area of *Schoenus* fen/wet grassland to the west. There is mosaic of outcropping limestone boulders in this area which support calcareous heath with *Calluna vulgaris*. Only six indicator species were recorded in a herb rich sward (60%) with no negative indicators or scrub encroachment resulting in a 'Fail' for this Monitoring Stop. See photos 20 and 21.

An old access track/disturbed area has been revegetated and supports species such as *Antennaria dioica*, *Carlina vulgaris*, *Rhinanthus minor*, *Achillea millefolium*, *Primula veris*, *Dactylorhiza fuchsii*, *Schoenus nigricans* and *Solidago virgaurea*.

Additional species recorded in the Monitoring Stop include *Anthoxanthum odoratum* (O), *Prunella vulgaris* (O), *Trifolium dubium* (R), *Rhinanthus minor* (F), *Centaurea nigra* (O), *Polygala serpyllifolia* (R), *Trifolium pratense* (O), *Achillea millefolium* (O), *Pimpinella saxifraga* (O), *Euphrasia* sp (R), *Festuca rubra* (O), *Danthonia decumbens* (R), *Molinia caerulea* (R), *Calluna vulgaris* (R), *Carex pulicaris* (R), *Plantago maritima* (R), *Plantago lanceolata* (R), *Dactylis glomerata* (R), *Leucanthemum vulgare* (R) and *Schoenus nigricans* (R). The relevé data for this Monitoring Stop is presented in Quadrat 4.

This area is currently ungrazed. There is some *Rubus fruticosus*, *Ilex aquifolium*, *Crataegus monogyna* and *Corylus avellana* seedling sand scrub developing. The adjoining field to the south has been semi-improved.

*Schoenus nigricans* and *Molinia caerulea* increase in abundance closer to the lake margins but are still present in drier areas with *Carlina vulgaris*, *Campanula rotundifolia*, *Primula veris* and *Gymnadenia conopsea* within the site.

**Monitoring Stop 6:**

This Monitoring Stop was located on a small peninsula which is currently for sale. This land is owned by an elderly woman who has left the land unmanaged for the last ten years resulting in a rank grassland. The adjoining residents reported that *Ophrys apifera*, *Gentiana verna*, *Ophrys apifera* and *Platanthera* sp. have been recorded by them within the site. Only four indicator species were recorded in a herb poor sward (30%) with no negative indicators or scrub encroachment resulting in a 'Fail' for this Monitoring Stop. See photos 23, 24 and 25.

Additional species recorded within the Monitoring Stop include *Vicia cracca* (R), *Centaurea nigra* (O), *Achillea millefolium* (R), *Succisa pratensis* (R), *Euphrasia* sp. (R), *Lathyrus pratensis* (R), *Salix* seedlings, *Pimpinella major* (R), *Festuca rubra* (F) and *Dactylis glomerata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 5.

The sward has a high moss cover beneath the sward. Additional species recorded in the general area include *Dactylorhiza fuchsii*, *Potentilla erecta*, *Primula veris*, *Prunella vulgaris*, *Plantago lanceolata*, *Ranunculus acris*, *Anthoxanthum odoratum* and *Heracleum sphondylium*.

**Monitoring Stop 7:**

This Monitoring Stop was located near the location of NHA N82 on the shoreline of Lough Carra. This area was previously described as an area of base-rich grassland in which *Sesleria albicans* is very common, also *Primula veris*, *Conopodium majus*, *Scutellaria galericulata*, *Lathyrus pratensis*, *Thymus praecox*, *Orchis mascula*, *Galium verum* and *Carex panicea*. Only three indicator species were recorded in a herb poor sward (20%) with no negative indicators or scrub encroachment resulting in a 'fail' for this Monitoring Stop. See photo 28.

Lack of grazing has resulted in this grassland becoming rank and encroaching scrub from the adjoining band of *Corylus avellana*/*Prunus spinosa*/*Crataegus monogyna* woodland is an issue. Cattle currently have access to both this area and the woodland but it is not currently grazed enough.

Additional species recorded within the Monitoring Stop include *Centaurea nigra* (F), *Dactylis glomerata* (O), *Pimpinella saxifraga* (F), *Anthoxanthum odoratum* (O), *Plantago lanceolata* (O), *Rhinanthus minor* (O), *Festuca rubra* (F), *Lathyrus pratensis* (O), *Trifolium pratense* (O), *Leucanthemum vulgare* (F) and *Achillea millefolium* (O). The relevé data for this Monitoring Stop is presented in Quadrat 6.

*Hieracium pilosella* and *Thymus praecox* are restricted to the area of thin soils surrounding outcropping limestone.

Outside the Monitoring Stop *Carex flacca* is frequent. *Filipendula ulmaria* is found near the lake, and *Prunus spinosa* and *Crataegus monogyna* seedlings are frequent. *Potentilla erecta*, *Campanula rotundifolia*, *Prunella vulgaris* and *Ranunculus acris* were also present.



**Monitoring Stop 8:**

This Monitoring Stop was located on the shoreline of Lough Carra. Outcropping limestone boulders are a feature of this site which is currently grazed by cattle. Only five indicator species were recorded in a herb rich sward (60%) with no negative indicators or scrub encroachment resulting in a 'Fail' for this Monitoring Stop. See photos 31, 32 and 33.

Additional species recorded within the Monitoring Stop include *Euphrasia* sp. (F), *Centaurea nigra* (F), *Cynosurus cristatus* (F), *Prunella vulgaris* (F), *Trifolium repens* (O), *Succisa pratensis* (O), *Cerastium fontanum* (R) and *Lolium perenne* (R). The relevé data for this Monitoring Stop is presented in Quadrat 7.

This area was reseeded with *Lolium perenne* near the gateway. There are occasional patches of *Calluna vulgaris*.

Outside the Monitoring Stop *Carlina vulgaris*, *Linum catharticum*, *Potentilla erecta*, *Campanula rotundifolia*, *Pinguicula* sp., *Parnassia palustris*, *Antennaria dioica*, *Thymus praecox* (near outcropping boulders), *Listera cordata*, *Dactylorhiza fuchsii*, *Blackstonia perfoliata*, *Schoenus nigricans*, *Gymnadenia conopsea* and *Molinia caerulea* are present.

## **Pilgrim's Road Esker**

### **SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Faith Wilson                07/06/2006  
Willie Crowley

**Total Site Area (Ha):** 69.76

**Area of Priority Grassland (N2000) (Ha):** 17.9.

**Area of Priority Grassland 2006 (Ha)\*:** 5

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                        **Discovery Sheet No:**        **6" Sheets:**  
Offaly                            47                                OF005, OF006.

**Digital Aerial Photos (Tile Nos.):**

O3300-a, O3300-b, O3300-c, O3300-d, O3301-a, O3301-b, O3301-c, O3301-d.

**Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

001776

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Pilgrim's Road Esker is a narrow continuous esker ridge extending 2 km east from Clonmacnoise. The site is adjacent to the River Shannon callows, to the north, and Mongan raised bog, to the south.

The western area includes Bunthulla Hill (north of the road) and Hanging Hill (south of the road). A second lower esker ridge is located to the south of the main esker ridge of Bunthulla Hill adjacent to Pilgrim's road. This area was described by R. Fitzgerald in the 1991 rare plant survey as 'Area D and E'. The central area of calcareous grassland is found below Pilgrim's road on the southern slopes of the esker ridge. This area was described by R. Fitzgerald in the 1991 rare plant survey as 'Area C'. The third area of calcareous grassland is located south of Pilgrim's Road below Hind Street. This area was described by R. Fitzgerald in the 1991 rare plant survey as 'Area A'.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland habitats as follows: The site is important for orchid-rich calcareous grassland, a priority Annex I habitat under the EU Habitats Directive. The most species-rich grasslands occur on Hanging Hill, a small and very steep-sided hill of unstable calcareous soil. Plant species typical of this habitat occur in abundance, including Carlina Thistle (*Carlina vulgaris*), Common Centaury (*Centaurea erythraea*) and Yellow-wort (*Blackstonia perfoliata*), with a range of Orchids, e.g. Pyramidal Orchid (*Anacamptis pyramidalis*), Fragrant Orchid (*Gymnadenia conopsea*) and Common Spotted-orchid (*Dactylorhiza fuchsii*).

The most species-rich vegetation on Bunthulla Hill occurs on the south- and south-west facing slopes, where Spring Sedge (*Carex caryophyllaea*) and Autumn Gentian (*Gentianella amarella*) are abundant among the closed sward. The rest of Bunthulla Hill retains elements of the original flora despite having been semi-improved by means of fertiliser application.

Grassland in the central area consists of similar orchid-rich swards, also with Autumn Gentian, a species that is locally frequent in the centre of Ireland and scarce elsewhere. Wild Carrot (*Daucus carota*) also occurs here. The western extension of this central area contains a young, species-rich flora developing after recent clearance (post-1984) of hazel woodland. Two small areas of Hazel (*Corylus avellana*) woodland occur on the northern side of the central area.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: A large, excellent example of orchid-rich dry calcareous grassland of 24.8 ha, comprising 0.41% of the estimated national total area of this habitat. The three areas included support between them a large population of the protected *Orchis morio* (> 1750 flowering spikes recorded in 1991) as well as several other orchid species (*Anacamptis pyramidalis*, *Gymnadenia conopsea* and *Dactylorhiza fuchsii*). The site is

regarded as being very suitable for the rare *Neotinea intacta*, though this species has not as yet been recorded here. The site holds what is apparently the largest Irish population of *Orchis morio*.

*Description based on the 2006 Survey :*

The 2006 survey found that the best examples of this species-rich grasslands occur on Hanging Hill, a small and very steep-sided hill of unstable calcareous soil, on the south- and south-west facing slopes of Bunthulla Hill, and in the central area of the site below Pilgrim's Road. Plant species typical of this habitat occur in abundance, including *Carlina vulgaris*, *Blackstonia perfoliata*, *Briza media*, *Avenula pubescens*, *Primula veris*, *Carex flacca*, *Carex caryophyllea* and *Galium verum*. The only orchid species recorded during the 2006 survey were *Dactylorhiza fuchsii*, *Dactylorhiza maculata* and *Orchis morio* although *Anacamptis pyramidalis* and *Gymnadenia conopsea* have been previously recorded. Additional species previously recorded in this site but not observed during the present survey include *Centaureum erythraea*, *Gentianella amarella*, *Koeleria macrantha* and *Pimpinella saxifraga*. The remaining grasslands of Bunthulla Hill retain some elements of the original flora (*Conopodium majus* and *Ranunculus bulbosus*) despite having been semi-improved by means of fertiliser application.

The site previously supported a large population of *Orchis morio*, and was thought to contain the largest population in Ireland in 1991 (when over 1,000 individuals were recorded). The 2006 survey found a much smaller number of flowering spikes (c. 40 - 50) but searches for rare plants was not the focus of this study.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was initially surveyed during the Rare Plant Survey in 1991 by R. Fitzgerald due to the presence of *Orchis morio* on the site, when four main areas were identified (Areas A, C, D and E). The 'Clonmacnoise Heritage Zone Project' survey conducted by Trinity College Dublin identified two additional areas of woodland along the esker ridge of conservation value. The NHA Survey in 1993 divided the site into three main sub-sites. These were later joined together to form a single site following a boundary survey in 1999.

## SITE MONITORING AND MANAGEMENT UNITS

Two survey areas were chosen within this site based on the areas surveyed for *Orchis morio* during the Rare Plant Survey in 1991. Four Monitoring Stops were conducted (one in each of the areas which corresponded to the Rare Plant Survey locations) and their locations are depicted on Map 2 (sheets 1 - 2). Each of the Monitoring Stops conducted were used to assess the Structures and Functions of calcareous grassland within the site.

Two of the four Monitoring Stops passed and two failed, resulting in an overall 'Fail' for the Structures and Functions for this site (see Table 1a). Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	3
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 1 of 2
Stop 02	1	Fail	Structures and Functions	Sheet 1 of 2
Stop 03	2	Fail	Structures and Functions	Sheet 2 of 2
Stop 04	3	Fail	Structures and Functions	Sheet 2 of 2

This esker was divided into three management units based on the fragmented nature of each area surveyed and the management issues encountered.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The main threats to the calcareous grassland within the site arise from agricultural improvements (103). These include fertilisation (120) of the slopes of Bunthulla Hill and elsewhere along this esker ridge (See Monitoring Stop 4 and notes 3 and 4). Erosion, poaching and trampling activity by cattle (900) are an issue on both Bunthulla Hill and Hanging Hill (see Monitoring Stops 1 and 2 and notes 1 and 2). There is evidence of the use of ring feeders for stock (171) at the foot of Hanging Hill (see note 1). Rabbits (146) are also contributing to the erosion (900) on the slopes of Bunthulla Hill (see note 3). A lack of grazing (149) threatens the calcareous grassland at Monitoring Stop 3 which is becoming encroached by *Ulex europaeus* (954). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	B
954	Biocœnotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	B
900	Erosion	-1	C
120	Fertilisation	-1	B
146	Grazing: overgrazing by hares, rabbits, small mammals	-1	B
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Several management issues arise as a result of the 2006 study. The application of fertilisers within this site (Monitoring Stop 4 and notes 3 and 4) needs urgent attention. Some of the areas of the site are threatened by encroachment by scrub such as below Monitoring Stop 1 and in the vicinity of Monitoring Stop 3, while other areas of the site have become rank (note 4). The erosion on the slopes of Bunthulla and Hanging Hill by cattle (and to a lesser extent rabbits) also needs to be addressed (notes 1, 2 and 3 and Monitoring Stop 2).

## **CONSERVATION STATUS**

### ***Extent:***

The extent the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and GPS points taken using a Garmin e-trex venture) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

2.9ha of the habitat was mapped in areas that were visited during the survey with a further 1.6ha of the habitat thought likely to occur in the NE of the site in an area not visited during the survey. This leads to an overall estimate of 4.5ha (6% of the site) of the habitat within the SAC. The NATURA 2000 estimate for the extent of habitat 6210 at the site was 17.9ha, which indicates that there has been a dramatic reduction in extent with a loss of 13.4ha or 75% of the extent estimated in NATURA 2000.

Although the extent may have been over-estimated in the NATURA 2000 form, it is clear from the 2006 survey that there has been a significant loss in extent of the habitat with the species-rich calcareous grassland now being essentially restricted to the steeper slopes of Hanging and Bunthulla hills. The Extent of calcareous grassland within the site is thus described as Unfavourable - bad.

### ***Structure and Functions:***

Three of the four Monitoring Stops used to assess the Structures and Functions of habitat 6210 at Pilgrim's Road Esker failed. Stops 2 and 3 failed as a result of a low herb: grass ratio while Stop 3 also failed because of a degree of scrub encroachment. Stop 4 failed due to an excessive cover of *Lolium perenne*.

The low herb cover at Stop 2 may be in part due to the high levels of disturbance in the area with large areas of bare soils and gravels noted on the steep slope as well as a track from cattle traversing the slope, resulting in large patches adjacent to the track being covered in thistle and ragwort. On the positive side, the Stops that failed still supported a high number of indicator species with Stop 2 supporting 10 and Stop 3 supporting 11. This would indicate that under the correct management regime the habitat could be easily recoverable.

Given that three of the four Monitoring Stops failed, the Structures and Functions of the habitat at the site are described as being Unfavourable - bad.

### ***Future Prospects:***

The Future Prospects for the site depend on a reduction in fertiliser application and a cessation of agricultural improvement. However even the areas which show signs of agricultural improvement retained several calcareous grassland indicator species and may therefore be recoverable with appropriate management.

A balance needs to be found between ensuring that the slopes are grazed sufficiently to prevent the development of rank grassland coupled with preventing poaching and erosion damage by cattle and other stock.



The development of scrub near Monitoring Stop 3 could be easily managed by hand cutting and removal followed by hard grazing. As the site is in private ownership the implementation of all of these measures will depend on agreement with the landowner and NPWS resources.

The Future Prospects for the calcareous grassland within the site are thus described as Unfavourable - inadequate.

***Conservation Assessment:***

The area of calcareous grassland within the site has reduced in Extent since the site was first designated and it is now restricted to the steeper slopes of Hanging Hill and Bunthulla Hill.

The condition of grassland has also reduced in quality with Monitoring Stops failing as a result of poor herb cover, encroachment by scrub and reseeding with *Lolium perenne*.

However, given that areas which show signs of agricultural improvement still retained several indicator species, it may be possible to restore these areas to good calcareous grassland. The control of scrub encroachment should be easily managed and the erosion issues could also be managed.

Given that both Extent and Structures and Functions are described as Unfavourable - bad, the overall Conservation Status Assessment for the site is described as Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

Note 1:

Hanging Hill is a small isolated esker mound located on the south side of the road at the western end of the site. This mound is characterised by thin loamy soils on its slopes, which have become badly poached by cattle. A ring feeder is located at the southern foot of the ridge and this area has now become rank.

Abundant *Dactylis glomerata* and *Centaurea* sp. are found on the summit of the mound, whereas the slopes support a good diversity of calcareous grassland indicator species. These include *Briza media*, *Lotus corniculatus*, *Primula veris*, *Avenula pubescens*, *Cynosurus cristatus*, *Galium verum*, *Daucus carota*, *Leucanthemum vulgare*, *Rosa pimpinellifolia*, *Agrimonia eupatoria*, *Anthoxanthum odoratum*, *Carex flacca*, *Carex caryophylla*, *Linum catharticum*, *Thymus praecox*, *Hieracium pilosella*, *Festuca rubra*, *Hypericum* sp., *Ranunculus bulbosus*, *Trifolium dubium* and an unidentified orchid species.

The ranker area at the base of the slopes were dominated by *Festuca arundinacea*, *Ranunculus repens* and others.

## Note 2:

This is an area of orchid rich grassland located on the steep slopes of the main esker ridge of Bunthulla Hill. Areas of improved grassland are found at the base of the slope, while *Cirsium vulgare*, *Senecio vulgaris* and *Cerastium fontanum* is abundant on the summit of the ridge where the grassland has become rank. *Conopodium majus* is still present in these areas.

This section of the site was surveyed by R. Fitzgerald during the 1991 rare plant survey, when it contained a large population of *Orchis morio* (See accompanying notes). This area corresponds to her 'Area E' in the rare plant survey.

Several flowering stems of *Orchis morio* were recorded in this area, and many may have been overlooked as they had just gone over.

The presence of several entrances to a rabbit warren were noted in this area and there are some small areas of exposed soil and gravels. The western promontory of this site shows signs of terracing but the grassland is typically intact in these terraced areas.

The EPA funded study on the 'Insects of Calcareous Grasslands' has a malaise trap and pitfall traps located on the southern slopes of this section of the site.

Further east along the south facing slopes of the esker ridge is an extensive area of exposed soils and gravels. This can be clearly seen on the aerial photograph from 2000. This erosion is possible compounded by the presence of several rabbit warrens in the area and a well worn animal track which traverses the slope. There are large areas dominated by *Senecio jacobaea* and *Cirsium* sp. along the margins of this track.

The areas of scrub on the flanks of the esker in this area appear to have also increased in size since 2000.

## Note 3:

This note relates to the north facing slopes of the esker ridge overlooking the River Shannon which are located to the north of monitoring stop 2. This area is still within 'Areas C and D' as described by R. Fitzgerald in 1991. See Photo 25 and 26.

This area is dominated by neutral or agriculturally improved grassland with *Anthoxanthum odoratum*, *Plantago lanceolata* and *Ranunculus bulbosus*. Other species present include *Luzula campestris*, *Bellis perennis*, *Senecio vulgaris*, *Cirsium vulgare*, *Cirsium arvense*, *Veronica chamaedrys*, *Rumex acetosella*, *Cerastium fontanum*, *Cynosurus cristatus*, *Trifolium repens* and rarely *Conopodium majus*. The calcareous species rich grassland is now essentially restricted to the steep south facing slope and western and north-western promontory of the esker ridge.

## Note 4:

This note is located on the south facing slopes of the fourth field east of the nose of the esker. The slopes are dominated by grasses such as *Anthoxanthum odoratum*, *Dactylis glomerata*, *Festuca rubra*, *Holcus lanatus*, *Lolium perenne* and occasional *Avenula pubescens*. There is frequent *Ranunculus bulbosus*, *Cerastium fontanum*, *Conopodium majus*, *Rumex acetosella*, *Senecio jacobaea*, *Luzula campestris* and *Trifolium repens*.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located on the steeply sloped north west face of the esker ridge at the western end of the site. See photos 1, 9, 11, 12, 13, 14, 15, 16 and 17. These slopes are terraced and show some evidence of trampling damage by cattle - poaching, with some areas of bare ground. Twelve indicator species were recorded in a herb rich sward (40%) with no negative indicators and scrub encroachment of less than 5% resulting in a 'Pass' for this 'Stop'.

This Monitoring Stop is located within the area mapped as 'Area E' by R. Fitzgerald during the rare plant survey in 1991. >1000 flowering spikes of *Orchis morio* were recorded in 1991 but c.20 were observed during the present survey.

This area had a good diversity of calcareous indicator species as listed above plus the following species were also recorded - *Cynosurus cristatus*, *Agrimonia eupatoria*, *Trifolium pratense*, *Trifolium repens*, *Bellis perennis*, *Carlina vulgaris*, *Anthoxanthum odoratum*, *Leucanthemum vulgare*, *Achillea millefolium*, *Thymus praecox*, *Luzula campestris* and occasional *Cirsium* sp.

Several flowering spikes of *Orchis morio* were recorded within the quadrat.

There are several small *Crataegus monogyna* saplings present but these are occasional and do not currently pose a threat.

### Monitoring Stop 2:

This Monitoring Stop is located on the southerly facing slopes of the esker ridge just to the east of the main area of disturbed ground described in Note 1. See photos 21, 22, 23, 24, 33 and 34. Ten indicator species were recorded in a herb poor sward (30%) with no negative indicators or scrub encroachment resulting in a 'Fail' for this 'Stop'.

This Monitoring Stop is located within the area mapped as 'Area D' by R. Fitzgerald during the rare plant survey in 1991, when >200 flowering spikes of *Orchis morio* were recorded on the southern slopes. It was not refound during the present survey in this part of the site.

Other species recorded include *Achillea millefolium*, *Leucanthemum vulgare*, *Holcus lanatus*, *Cynosurus cristatus*, *Medicago lupulina*, *Bellis perennis*, *Thymus praecox*, *Festuca rubra*, *Plantago lanceolata*, *Myosotis ramosissima*, *Polygala vulgaris* and *Geranium molle*. There are occasional *Crataegus monogyna* seedlings present.

This Monitoring Stop is located to the east of Monitoring Stop 1 and is separated from it by a fence line. A second fence separates this area of the esker from the lands to the east.

**Monitoring Stop 3:**

This Monitoring Stop was conducted on the south facing slope of the esker below esker ridge road. See photos 41, 42, 43, 44, 45. Eleven indicator species were recorded in a herb poor sward (30%) with no negative indicators and some scrub encroachment (>5 and <10%) resulting in a 'Fail' for this 'Stop'.

The area of calcareous grassland is bounded to the south by a field of pasture/silage with abundant patches of *Cirsium vulgare* and *Urtica dioica*, and to the north by a boundary hedge of *Crataegus monogyna* located adjacent to the road.

This area contained > 500 flowering spikes of *Orchis morio* during the 1991 rare plant survey conducted by R. Fitzgerald, and corresponds to 'Area C' of that study. It was not refound during the present survey.

*Plantago lanceolata*, *Anthoxanthum odoratum*, *Dactylis glomerata*, and *Cynosurus cristatus* were all frequent with occasional *Leucanthemum vulgare*, *Achillea millefolium*, *Trifolium pratense*, *Cerastium fontanum*, *Succisa pratensis*, *Holcus lanatus*, *Brachypodium* sp., *Luzula campestris*, *Anthyllis vulneraria*, and *Polygala* sp.

Some young *Rubus fruticosus* agg. and *Crataegus monogyna* seedlings were present and the site is threatened by encroaching *Ulex europaeus* scrub. The area of calcareous grassland forms only a thin band of c.10m on this slope.

Two field to the west of this Monitoring Stop this thin band of species-rich calcareous grassland is in better condition with *Carlina vulgaris*, *Calluna vulgaris* and *Dactylorhiza fuchsii* present.

**Monitoring Stop 4:**

This Monitoring Stop was conducted on the south-west facing terraces of a small knoll located in the eastern end of the esker ridge. See photos 48, 49, 50, and 51. Seven indicator species were recorded in a herb rich sward (40%) with no scrub encroachment but the excessive cover of *Lolium perenne* resulted in a 'Fail' for this 'Stop'.

Much of the surrounding grassland has been improved and is currently grazed by cattle. There are abundant patches of *Cirsium arvense* in this field. The calcareous grassland is restricted to the terraces on the knoll. This area corresponds to 'Area A' of the rare plant survey conducted in 1991.

The calcareous grassland in this area is dominated by *Ranunculus bulbosus*, with *Avenula pubescens*, *Primula veris*, *Plantago lanceolata*, and frequent *Lolium perenne*, *Trifolium repens* and *Bellis perennis*. *Luzula campestris*, *Centaurea nigra*, *Cynosurus cristatus*, *Rumex acetosella*, *Festuca rubra*, *Achillea millefolium*, *Holcus lanatus*, *Dactylis glomerata* and *Medicago lupulina* were occasional. *Hieracium pilosella*, *Leucanthemum vulgare* and *Cerastium fontanum* were also present.

There is an area of *Crataegus monogyna* scrub at the top of the hill, and a disused gravel pit to the south near the road, and an old pit on the north-west slope of the hill. The upper slopes of this small hill show some signs of terracing. *Orchis morio* was previously recorded here but was not observed during the current survey.

This area is bounded to the south-east by a local road and Mongan Bog and to the north-west a residential dwelling, the Ridge road and an improved silage field.

**Split Hills and Long Hill Esker****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	25/05/2006
Faith Wilson	31/08/2006
Willie Crowley	

**Total Site Area (Ha):** 74.99

**Area of Priority Grassland (N2000) (Ha):** 6.

**Area of Priority Grassland 2006 (Ha)\*:** 2.2

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Westmeath	48	WM032, WM038.

**Digital Aerial Photos (Tile Nos.):**

O3111-c, O3111-d, O3112-c, O3177-a, O3177-b, O3178-a, O3178-b, O3178-c, O3178-d.

**Other Aerial Photographs:**

Number 574, 576, 577 (1992).

**SITE DESIGNATIONS**

**SAC Site Code:**

001831

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.



## **SITE DESCRIPTION**

Split Hills and Long Hill Esker is a 7km long site which crosses the main Galway-Dublin road mid-way between Kilbeggan and Tyrrellspass in Co. Westmeath. It is a very prominent feature on the local landscape.

It is one of the finest and longest wooded eskers in the country. It holds one of the very few woodlands in the area and is a fine geomorphological feature of great scenic value. The trees are particularly well-grown and impressive and much of the woodland has developed naturally on its steep slopes. The presence of a very species-rich ground flora which includes a rare and legally protected plant, at its only known Irish location, makes this site of great botanical and ecological importance.

The site also supports some excellent examples of calcareous grassland which is rich in orchids. The increasing rarity of this habitat (due to agricultural intensification) is recognised in that it is awarded priority status on Annex I of the European Habitats Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the calcareous grassland as follows: Several areas of species-rich calcareous grassland occur, with typical calcicole species such as Yellow-wort (*Blackstonia perfoliata*), Carline Thistle (*Carlina vulgaris*), Mountain Everlasting (*Antennaria dioica*) and Early-purple Orchid (*Orchis mascula*). These occur on unstable, old, and active quarry faces, and on cleared woodland areas. Another protected species, Hemp Nettle (*Galeopsis angustifolia*), occurs on more open ground on the esker.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: A long, linear site over half of which is covered with deciduous woodland. Areas of bog, scrub, improved grassland, quarries and dry calcareous grassland occur in roughly equal quantity.

Examination of an aerial photograph suggested that all of the dry grassland found on the site appeared to be suitable to support an orchid flora of several common species or a population of a rarer species (such as *Orchis morio*). In the national context, the site supports only a small area of this habitat (6 ha or 0.1% of the estimated national area total). Much of this habitat is scattered throughout the site, separated by stands of other vegetation, but several larger blocks of dry grassland are found, notably in the western half of the site.

No rare orchid species are known from the habitat, but in all likelihood *Orchis morio* is present on the site, as yet unrecorded - further survey for this species is recommended. *Orchis mascula* has, however, been recorded from this habitat on the site (*Neottia nidus-avis* and a *Dactylorhiza* orchid, probably *D. fuchsii*, have also been reported from the site, but from woodland). The rare and protected *Galeopsis angustifolia* has been recorded from the edge of the esker - possibly on a more bare area of this habitat or in a

quarry.

*Description based on the 2006 Survey :*

During the 2006 survey, the best example of calcareous grassland was seen to occur in the central part of the site, on Map 2, Sheet 2. While parts of the esker in this location were seen to be threatened by scrub and bracken, good species-rich grassland also occurred on more open slopes. A good range of typical indicator species were recorded along with additional species which occurred on the deeper, more enriched base of the esker. The abundance of *Orchis mascula* was a feature at the time of survey.

Revegetating slopes on the northern side of this esker also offer the potential for the future re-establishment of 6210 habitat. There is also the potential for good grassland habitat to become re-established on the property of NPWS where a scrub removal programme on this part of the site has been initiated (see location of Stops 11 and 12, Map 2, Sheet 3).

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed as part of the 1993 NHA Survey. Additional areas of this esker system which are located outside the SAC were surveyed during the Westmeath Esker Survey 2005. This was a study to establish the extent and location of eskers and associated habitats in Co. Westmeath. The survey was funded by Westmeath County Council/The Heritage Council and was conducted by M. Tubridy and R. Meehan.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

A summary of the results of the assessments undertaken at the Monitoring Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevés were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

12 Monitoring Stops were conducted at Split Hills and Long Hill Esker and their locations are depicted on Map 2 (Sheets 1 to 3). The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that one Stop, Monitoring Stop 7, was not included in the assessment of Structures and Functions. Digital 1995 aerial photographs became available subsequent to the field survey and when these were examined, it was seen that open grassland with some scattered scrub habitat occurred in this location at that time. During the 2006 survey, only rank, grass-dominated vegetation remained amongst close scrub. Therefore, it is assumed that as these changes occurred subsequent to the initial site survey and designation, a loss of habitat has occurred in the interim. This Stop is therefore included in the assessment of Extent and not Structures and Functions.

Of the remaining 11 Monitoring Stops assessed for Structures and Functions, 6 failed the assessment. This results in an significant overall 'Fail' for Structures and Functions at this site.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

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<b>Number of Management Units:</b>	5
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	6
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 3 of 4
Stop 02	1	Pass	Structures and Functions	Sheet 3 of 4
Stop 03	2	Fail	Structures and Functions	Sheet 3 of 4
Stop 04	2	Fail	Structures and Functions	Sheet 3 of 4
Stop 05	3	Pass	Structures and Functions	Sheet 3 of 4
Stop 06	3	Pass	Structures and Functions	Sheet 3 of 4
Stop 07	4	Fail	Extent	Sheet 2 of 4
Stop 08	4	Fail	Structures and Functions	Sheet 2 of 4
Stop 09	4	Pass	Structures and Functions	Sheet 2 of 4
Stop 10	4	Fail	Structures and Functions	Sheet 2 of 4
Stop 11	5	Pass	Structures and Functions	Sheet 4 of 4
Stop 12	5	Fail	Structures and Functions	Sheet 4 of 4

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 5 separate management units.

Stops 1 and 2 comprise Management Unit 1. This is located on north east-facing slopes of the esker which had previously been quarried. Revegetating plant communities occur amongst more stable areas of 6210 habitat. There are no indications of any management features in this Unit.

Stops 2 and 3 comprise Management Unit 2. This is located on the south west-facing slopes of the esker, in an area of inadequate management. Vegetation is becoming rank and scrub is spreading.

Management Unit 3 contains Stops 5 and 6. The slopes on this part of the esker also face south west but they are more open and extensive than those in Management Unit 2. Some management by grazing animals is evident in Unit 3.

Stops 7, 8, 9, and 10 comprise Management Unit 4 which occurs on a small, low-lying section of the esker. There is no obvious management of these slopes and scrub encroachment is a serious issue.

Management Unit 5 is located on the part of the esker which is bisected by the Dublin to Galway road. This area is managed by NPWS who have commenced a programme of scrub control. Stops 11 and 12 occur in this Management Unit.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

A number of threats are impacting on the 6210 habitat on this site. The absence of regular grazing patterns has led to a serious problem of undergrazing (149) over a significant portion of the esker. The areas in the vicinity of Stops 3, 4, 7, 8, and 12 all show the consequences of undergrazing, where the encroachment by scrub species (954) has caused the deterioration of 6210 habitat. Significant loss of grassland habitat is thought to have occurred on the low-lying esker presented on Map 2, Sheet 1. Where grazing levels (140) are sufficient such as on the slopes where Stops 5 and 6 are located, good quality grassland occurs.

The removal of scrub (152) is seen to be a positive activity for the re-establishment of 6210 habitat. NPWS have embarked on a programme of scrub removal on the esker slopes by the main Dublin to Galway road (see Stop 12 and Note 10). Some removal has occurred and another phase of removal is planned. A stile has been erected by NPWS to facilitate public access onto that section of the esker (690) and a display board provides information on the management plans in place to remove the scrub.

Quarrying for sand and gravel (301) has had a significant impact on several parts of the site. An active quarry operates in the north western sector. Access to this area was not possible on the day of surveying. Extraction also once occurred on the north-facing slopes where Stops 1 and 2 are situated. These slopes are now showing the early stages of revegetation (990) but a significant degree of slippage and erosion (900) continues to exist.

Roads (502), from minor tracks to major national routes, traverse the esker at various locations. The main Dublin to Galway road cuts through the esker by Stops 11 and 12 (Map 2, Sheet 3). Minor, local roads cut through in other areas such as west of Stops 1 and 2 (Map 2, Sheet 2) and west of Note 7 (Map 2, Sheet 1). These roads have resulted in a degree of erosion and disturbance (900) but revegetating processes (990) are underway at most locations.

Electricity lines traverse the esker (511) at Note 4 (Map 2, Sheet 2). Recent maintenance activities beneath the power lines have resulted in the removal of a wide swathe of the scrub and woodland that cover the esker slopes (168).

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
502	Communication networks: routes, autoroutes	-2	B
511	Energy transport: electricity lines	-1	C
900	Erosion	-1	C

168	General Forestry management: felling of native or mixed woodland	-1	C
140	Grazing	1	C
149	Grazing: undergrazing	-1	A
690	Other leisure & tourism impacts not referred to above	0	C
990	Other natural processes	2	B
152	Restructuring agricultural land holding: removal of scrub	2	B
301	Sand & gravel extraction: quarries	-2	A

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The most urgent management requirement at this site is the control of scrub and Bracken. While a programme of scrub removal has been initiated at a small part of the esker along the Dublin to Galway road (see Stops 11 and 12 and Notes 9 and 10), it was seen that excessive cover at other locations in the site resulted in the failure of the Structures and Functions at Stops 3, 4, 8, and 12. Scrub and Bracken was also noted to be an issue at Notes 3, 6, and 7.

The expansion of scrub is often a consequence of the abandonment of grazing patterns. It was evident that undergrazing is a significant management issue at this site, particularly for the low-lying esker presented in Map 2, Sheet 1 and around Stops 3 and 4 (Map 2, Sheet 2). More suitable grazing regimes are required at the locations mentioned, but this would need to follow an initial, more proactive programme of scrub removal. Where grazing levels are seen to be closer to the optimum (the slopes where Stops 5 and 6 are located), the quality of the grassland is good. These levels of management should be maintained and should also be carefully monitored to ensure that the spread of scrub downslope from the summit does not pose a problem in the future.

It is recommended that the natural regeneration processes occurring in the old excavation site at Stops 1 and 2, and at Note 9 be monitored. With the right management programme, these areas can potentially add to the extent of the 6210 habitat in the future. Erosion and further slippage of these slopes would need to be prevented.

The most pressing threat from outside the SAC is the expansion of quarrying activities. An active quarry already exists within the site at the north western end of the esker. As access to this was not possible on the day of surveying, it was not possible to assess the condition or the management issues pertaining to this area. Illegal quarrying is also known to have occurred recently on other parts of the site. This type of activity needs constant monitoring, particularly given the pressure to provide road building material for the upgrade of the national routes in the vicinity of this SAC.

## **CONSERVATION STATUS**

### ***Extent:***

The Extent the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

2.2ha (3% of the SAC) of the habitat was mapped within the SAC along with a further 1.0ha classed as recolonising bare ground, which also had some elements of calcareous grassland. This includes the southwest-facing esker slopes which had not been included in the MPSU Conservation Plan. The NATURA 2000 explanatory notes (which probably include the exposed quarried areas now classed as recolonising bare ground) estimate that 6ha of habitat 6210 occur within this site, indicating a loss 2.8ha (or 47% of the original Extent) since the site was designated.

This loss in Extent is likely to be due to abandonment, resulting in scrub encroachment into former areas of habitat 6210. This scrub encroachment is particularly evident towards the north of the site, in the area where Monitoring Stops 7, 8, 9 and 10 were conducted. Although the Extent may have been over-estimated in the NATURA 2000 form, it is obvious from aerial photographs that there has been a significant loss in Extent of species-rich calcareous grassland at Split Hills and Long Hill Esker, resulting in a Conservation Assessment of Unfavourable - bad for Extent.

### ***Structure and Functions:***

The Structures and Functions of the 6210 habitat were assessed at only 11 of the 12 Monitoring Stops. Stop 7 was excluded from this assessment as an analysis of the raw data, in conjunction with newly available digital aerial photographs from 1995, indicated that grassland habitat had been lost at this location. Stop 7 was therefore included in the assessment of Extent instead.

For those Stops which passed the Structures and Functions assessment, species diversity was seen to be good, with the numbers of recorded indicator species ranging from 7 to 14. Stops 5 and 6 (Map 2, Sheet 2) recorded the highest numbers, at 13 and 14 respectively. Herb content was also high at these two Stops, 60% and 70%.

Of the 5 remaining Stops which failed the Structures and Functions assessment, 4 failed as a result of scrub or Bracken encroachment (Stops 3, 4, 8, and 12). The failure of Stops 3 and 4 is unfortunate as this section of the esker has the potential to support good quality 6210 grassland (see Note 2).

Stop 10 failed because of an insufficient cover of herbs (20%) and an insufficient number of indicator species (3). This north-facing slope was particularly rank and grass-dominated. While mature scrub species were present, a complete lack of grazing appears to be the main reason for the deterioration in grassland quality at that location.

Overall, the Structures and Functions were seen to be best on the esker in Map 2, Sheet 2.



The highest failure rate occurred on the north western sector in Map 2, Sheet 1, where extensive loss of open grassland habitat has occurred and where remaining grassland quality is poor.

As there is almost a 50% failure rate in the assessment at this site, the Structures and Functions are described as being Unfavourable - bad..

***Future Prospects:***

The Future Prospects for the 6210 habitat at this SAC will be depend on whether or not suitable management regimes are put in place to control the spread of scrub and Bracken. Encroachment is seen as a major issue, particularly in the north western end of the site (Map 2, Sheet 1) where considerable loss of habitat appears to have occurred since 1995. Bracken and rank grassland has filled in the open grassland on this low esker and scrub species are spreading. Given that very little management has appeared to operate on this part of the site, it is unlikely that this will change in the near future. The very small areas of grassland remaining along this part of the esker will be lost. The fact that this part of the esker adjoins an active quarry to the west and one immediately to the south, may suggest that plans to attempt to excavate this esker in the future are a significant factor is this lack of management.

The Future Prospects for the central part of the site (the esker on Map 2, Sheet 2) are marginally better. Management practices are insufficient on the slopes where Stops 3 and 4 are located and encroachment is an issue. However, the long open slopes where Stops 5 and 6 are located, support good quality 6210 habitat. Orchids were frequent around Stop 6 and indicator species were high throughout. A good community also occurred at the base of the esker where soils were deeper and where additional species added to the overall diversity. Management on these slopes appears to be adequate and should be monitored carefully.

For the south eastern end of the site (Map 2, Sheet 3), a management programme has been initiated by NPWS, landowners of this section of the esker. A programme of scrub removal has begun which will open new areas for grassland development. The high numbers of indicator species recorded in that vicinity suggest that re-establishment of good 6210 habitat should progress well.

Overall, taking into account the loss of habitat which has already occurred over a large portion of the site due to a lack of management, the potential for maintaining current extent and increasing future extent by correctly managing revegetating areas, the Future Prospects for the habitat at this site are described as being Unfavourable - inadequate.

***Conservation Assessment:***

While this site was surveyed during the 1993 NHA survey, NHA Notes which specifically identify areas of orchid-rich grassland are not available. Any NHA notes recorded are generic descriptions of the habitats and the specific species which occur. The NATURA 2000 description also does not contribute much detail, deducing much of its information on the occurrence of the habitat from aerial photographs. The NATURA 2000 description also indicates that the species listed occur mainly in old, disused, and active quarries or

woodlands and it recommends further survey to determine whether specific orchids occur or not.

During the 2006 survey, the best example of calcareous grassland was seen to occur in the central part of the site, on Map 2, Sheet 2. While parts of the esker in this location were seen to be encroached by scrub and bracken, good species-rich grassland also occurred on more open slopes. Revegetating slopes on the northern side of this esker also offer the potential for the future re-establishment of 6210 habitat. There is also the potential for good grassland habitat to become re-established on the property of NPWS. NPWS have initiated a scrub removal programme on this part of the site (see location of Stops 11 and 12, Map 2, Sheet 3).

The most threatened area of 6210 habitat in the SAC is at the north western end of the site, on Map 2, Sheet 1. It is clear from a comparison of 1995 and 2000 photographs, taken in conjunction with the 2006 survey results, that a considerable loss of grassland habitat has occurred there. Current management appears to be non-existent and the very small strips of remaining grassland are certain to be lost. A constant threat also exists at this location from the potential encroachment of quarrying activities located outside the SAC.

In general therefore, taking into account the loss in habitat extent which has already occurred, the poor condition of the Structures and Functions of the 6210 habitat, and the unsure nature of the Future Prospects for the site, the overall Conservation Assessment is described as being Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
		Extent	<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This area was described in the 1993 NHA notes as still being actively quarried at that time. Today, the sides of the esker show various stages of re-vegetation but patches of active scree still occur.

**Note 2:**

This area is located close to Monitoring Stop 4. It is an area of only 3m wide, occurring between the top of the esker which has scrub on it and a small track towards the base of the esker.

It is an area which shows lower vegetation amongst generally taller grassier habitat. In this lower vegetation, good calcareous indicators occur such as *Antennaria dioica*, *Carex flacca*, *Origanum vulgare*, *Carlina vulgaris*, *Hieracium pilosella*, *Lotus corniculatus* and *Galium verum*. Also present were *Plantago lanceolata*, *Polygala vulgaris*, *Hypochoeris radicata*, *Centaurea nigra* and *Fragaria vesca*.

The base of the esker below the track (an area measuring approximately 2m wide), is dominated by *Molinia caerulea* which grades into *Rubus fruticosus* and *Crataegus monogyna*.

**Note 3:**

*Cotoneaster* occurs here. On the thin soils of an esker, this species has the potential to become a serious problem if not managed now.

**Note 4:**

The bottom 5m of the esker slopes are grass-dominated with frequent *Dactylis glomerata*, *Festuca rubra*, *Anthoxanthum odoratum* and *Holcus lanatus*. Herbs occurring in this deeper soil include *Lathyrus pratensis*, *Trifolium repens*, *Ajuga reptans*, *Conopodium majus*, *Ranunculus bulbosus*, *Luzula campestris*, *Origanum vulgare*, *Prunella vulgaris*, *Potentilla sterilis*, *Veronica chamaedrys* and *Hyacinthoides non-scriptus*. Stems of *Pteridium aquilinum* are scattered throughout but do not become dense in any one location.

**Note 5:**

In this area, the esker slopes down into a dip in the landscape before rising again to the summit described in Note 6. Scrub and woodland dominates these slopes.

On the day of surveying, it was noted that a wide swathe was cut through the scrub woodland both on the esker slopes and in the low-lying hollow, following the line of the electricity pylons which cut across the SAC. The dead trees and scrub species have been left in place.

## Note 6:

When viewed from OSI aerial photographs (2000) and 1992 aerial photographs, this area of scrub woodland has open areas of grassland. The MPSU conservation plan for this site suggests the presence of orchid-rich calcareous grassland in these open areas.

On the day of survey, however, it was noted that this scrub has spread and that no open areas of grassland remain in this section of the site.

## Note 7:

The grassland in this area was described in the 1993 NHA survey as an example of 'unimproved dry grassland which occurs particularly where the soil is shallow and base-rich and/or in association with disturbed areas near quarries'.

Most of the low, gentle, esker slopes in this area are encroached with scrub and bracken. No recent management of any kind is evident. On one or two of the steeper slopes, thin stony soil holds calcareous grassland indicators (see relevé 7). The relevé was recorded close to malaise and pitfall traps of the 2006 EPA funded study on the 'Insects of Calcareous Grasslands'.

## Note 8:

These notes describe grassland with a calcareous nature which occurs along the edge of a trackway. It occurs in a strip measuring no more than 1.5m at its widest point. It was highlighted in the MPSU conservation plan as orchid-rich grassland (6210). However, based on the fact that it is no more than a trackway verge, it is not now considered to qualify for this category.

Good calcareous indicators occur in the thin soil e.g. *Galium verum*, *Brachypodium sylvaticum*, *Primula veris*, *Lotus corniculatus*, *Briza media*, *Hieracium pilosella*, *Briza media*, *Carex flacca*, *Carex caryophylla*, *Leontodon hispidus*, *Conopodium majus*, *Carlina vulgaris* and *Sanguisorba minor*.

Other species occurring include *Anthoxanthum odoratum*, *Dactylis glomerata*, *Thymus praecox*, *Bellis perennis*, *Veronica chamaedrys*, *Luzula campestris*, *Plantago lanceolata*, *Agrimonia eupatoria*, *Polygala serpyllifolia*, *Alchemilla xanthochlora*, *Hypochoeris radicata*, *Centaurea nigra*, *Leucanthemum vulgare*, *Hypericum pulchrum*, *Pteridium aquilinum* and *Ajuga reptans*.

## Note 9:

This note describes an area of revegetating esker. Scrub was removed from this location as part of the NPWS management plan for this site.

Approximately 80% of the surface of the slope is still bare, with species such as *Carlina vulgaris*, *Hieracium pilosella*, *Origanum vulgare*, *Leontodon hispidus*, *Blackstonia perfoliata*, *Linum catharticum*, *Carex flacca*, and *Hypericum pulchrum* recolonising open ground. Also occurring in patches are *Tussilago farfara*, *Fragaria vesca*, *Leucanthemum vulgare*, *Centaurea nigra*, and *Rubus fruticosus* agg. (See relevé 9 for full details).

Scattered across this slope are >20 plants of the Red Data Book species *Erigeron acer*. This species is found growing in the gravely, rocky substrate in association with *Hieracium pilosella*, *Carlina vulgaris*, *Carex flacca* and *Origanum vulgare*.

## Note 10:

This is a wide, open slope which faces east/southeast towards the entrance gate from the main road. Vegetation is generally low with occasional taller grasses such as *Dactylis glomerata* and *Avenula pubescens* occurring closer to the roadside fence. A scrub woodland of birch and hazel occurs on the northern perimeter.

The ground vegetation in the open grassland includes indicator species such as *Origanum vulgare*, *Brachypodium sylvaticum*, *Carlina vulgaris*, *Leontodon hispidus*, *Hieracium pilosella*, *Carex flacca*, *Linum catharticum*, *Anthoxanthum odoratum*, *Succisa pratensis*, *Alchemilla xanthochlora*, *Euphrasia* spp., *Plantago lanceolata*, *Prunella vulgaris*, *Potentilla reptans* and *Holcus lanatus*.

The presence of *Epilobium angustifolium* towards the top of the top marks the area from where scrub has been removed.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop occurs in Management Unit 1, on the sides of the esker along the edge of the road. This area was described in the 1993 NHA notes as still being actively quarried at that time. Today, the sides of the esker are currently at various stages of revegetation but patches of active scree still occur. In general, vegetation height on the slopes is low and dominated by *Carex* spp.

Within the Stop, herb content is very high at 80% and 8 indicator species occur. No negative indicator species occurred and there was very little scrub/bracken present (<5%). *Listera ovata* occurred within the Stop.

Additional species occurring within the Stop include *Festuca ovina* and *Centaurea nigra* (see relev  1 for full details). Outside the Stop, other species noted include *Primula veris*, *Antennaria dioica*, *Blackstonia perfoliata*, *Leucanthemum vulgare*, *Achillea millefolium*, *Anthoxanthum odoratum*, and seedlings of *Heracleum sphondylium*.

The orchid *Listera ovata* is locally frequent across the slopes while seedlings of *Quercus* sp., *Sorbus aucuparia*, *Corylus avellana*, and *Ilex aquifolium* are scattered. A small clump of mature *Sorbus hibernica* occurs in one location on the slopes.

As all four habitat attributes reach the targets set for these criteria, this Monitoring Stop is deemed to 'Pass' its assessment for Structures and Functions.

### Monitoring Stop 2:

Stop 2 is located in an area of good ground cover where vegetation height is low (5-10cm high). Moss cover is also good. Within the Stop, herb content is good (60%) and 7 indicator species were recorded. Very little Bracken occurred (<5%) and no negative indicator species were recorded.

Additional species at Stop 2 include *Polygala vulgaris*, *Brachypodium sylvaticum*, *Festuca ovina*, *Anthoxanthum odoratum*, and *Centaurea nigra*. Seedlings of *Sorbus aucuparia* are also present.

As all four habitat attributes reach the targets set for these criteria, this Stop is deemed to 'Pass' its assessment for 'Structures and Functions'.

**Monitoring Stop 3:**

This Monitoring Stop is located on the south western slope of this section of esker. The slope is gentle to gradual and the Stop is positioned close to the summit.

The grassland in this vicinity shows signs of being unmanaged over the recent years. Mature *Crataegus monogyna* and *Prunus spinosa* scrub occurs on the bottom of the slope while young seedlings of these species are encroaching upslope with *Rubus fruticosus*. Grass dominates and the rank vegetation is high and tussocky.

Within the Monitoring Stop, grasses dominate and herb content is low (30%). 6 indicator species were recorded and these were present in relatively low frequencies. No negative indicator species occur and Bracken/scrub is recorded at 10% cover. However, over a broader area of 5m x 5m, scrub encroachment is estimated at 30%, becoming more dense towards the eastern end of the Management Unit. Seedlings of oak, *Cotoneaster*, privet, hazel, blackthorn and bramble are scattered throughout.

Also occurring within the Stop are *Anthoxanthum odoratum*, *Festuca rubra*, *Centaurea nigra*, *Hypochoeris radicata*, *Polygala vulgaris*, and *Brachypodium sylvaticum* (see relevé 2 for full details).

As this Stop did not meet the targets set for herb content and numbers of indicator species, and an excessive cover of scrub/Bracken was recorded, it is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 4:**

This Monitoring Stop is in the same Management Unit as Stop 3. The slope appears unmanaged and vegetation is tall with encroaching scrub. A small, old revegetating quarry occurs at the base of the slope close to the Stop.

Within the Stop, herb content was good at 40%. However, only 6 indicator species were recorded and Bracken cover was excessive at 10%. No other negative indicator species occurred.

Additional species occurring within the Stop are *Centaurea nigra*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Rosa canina*, *Crataegus* seedlings, and *Hypericum perforatum* (see relevé 3 for full details).

Outside the Stop, additional species noted include *Brachypodium sylvaticum*, *Carex flacca*, *Dactylis glomerata*, *Veronica chamaedrys*, and *Holcus lanatus*. *Rubus fruticosus* is encroaching from the base of the slope.

As this Stop failed to reach the target number of indicator species and as the scrub/Bracken cover was excessive, it is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 5:**

This Monitoring Stop is located on the long, open, slope of the esker facing to the south west. It is further east along the site from Monitoring Stop 4. Scrub dominates the summit and the early stages of encroachment are noticeable as young saplings are progressing down the slopes. A few scattered mature examples of *Crataegus monogyna* and one large oak tree occur. The Stop is located approximately 10m from the ridge line and 10m from the base of the slope.

Within the Stop, herbs occupy 60% cover and 13 indicator species occur. *Briza media* and *Carex flacca*, in particular, are abundant. No negative indicator species occur and the cover of scrub/Bracken is low (<5%).

Additional species occurring at this Stop include *Leucanthemum vulgare*, *Polygala vulgare*, *Bellis perennis*, *Hypericum perforatum*, *Trifolium repens*, *Luzula campestris*, *Plantago lanceolata*, *Festuca rubra*, *Anthoxanthum odoratum*, and *Dactylis glomerata* (see relevé 4 for full details).

Outside Stop 5, additional species occurring include *Senecio jacobaea*, *Conopodium majus*, and *Ajuga reptans*. This latter species, which was in flower, is especially noticeable across these slopes of the esker.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 6:**

This Monitoring Stop is located approximately 10m from the summit of the esker which is dominated by scrub. Young seedlings of *Crataegus monogyna* are encroaching down the slope and *Pteridium aquilinum* is also scattered throughout. The soil on this steeply sloping area of the esker is shallow, with scattered, small, exposed limestone rocks. A small rabbit warren occurred west of the Monitoring Stop.

Within the Stop, herbs occupy 70% of the vegetation cover and 8 indicator species were recorded. The abundance of *Antennaria dioica* is a particular feature at this location on the esker. No negative indicator species occurred and Bracken occupies <5% cover.

In addition to the recorded indicators, other species occurring within Monitoring Stop 6 include *Anthoxanthum odoratum*, *Brachypodium sylvatica*, *Achillea millefolium*, *Potentilla sterilis*, *Polygala serpyllifolia*, *Luzula campestris*, *Hypericum perforatum*, *Trifolium repens*, and a seedling of *Prunus spinosa*.

Outside Stop 6, additional species occurring include *Hypochoeris radicata*, *Potentilla sterilis*, *Hyacinthoides non-scriptus*, *Alchemilla* sp., *Potentilla erecta*, *Anemone nemorosa*, *Primula vulgaris*, and seedlings of *Ilex aquifolium*.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.



**Monitoring Stop 7:**

This Monitoring Stop is located on the flat, narrow, summit of a low-lying esker. Calcareous grassland has been replaced by tall, rank grassland dominated by grass species. Away from the summit, while the slopes of the esker are also tending towards a rank nature, indicator species are more common.

Within the Monitoring Stop, herbs occupy only 5% of the vegetation cover and only 1 indicator species was recorded (*Lotus corniculatus*). No negative indicator species occurred and less than 5% bracken cover was noted.

The grasses within Monitoring Stop 7 are dominated by *Molinia caerulea* with frequent *Dactylis glomerata*, *Festuca rubra*, and *Anthoxanthum odoratum* also occurring. Young seedlings of *Pteridium aquilinum* are scattered, as are ripening seed heads of *Hyacinthoides non-scriptus*. Herb species occurring include *Rumex acetosa*, *Poa pratensis*, *Rubus fruticosus*, *Vicia sepium*, *Taraxacum officinale* agg., *Veronica chamaedrys*, and *Plantago lanceolata*.

Due to the loss of indicator species and the low content of herbs, the Structures and Functions of the grassland are not assessed. Instead, the Stop is included in the assessment of Extent.

**Monitoring Stop 8:**

The sides of this esker are becoming overgrown with tall, rank vegetation remaining in the small open areas between mature and young scrub of *Crataegus monogyna* and *Prunus spinosa*. Encroachment by scrub, which is becoming impenetrable in places, is seen to be a serious issue in this area of the esker.

Grasses dominate the vegetation in Monitoring Stop 8, with just 40% herb cover remaining. Only 5 indicator species were recorded. No negative indicator species occur and within the Stop, young seedlings of *Crataegus monogyna* and *Prunus spinosa* occupied 10% cover.

Additional species within Stop 8 include *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Brachypodium sylvaticum*, *Achillea millefolium*, *Potentilla anserina*, *Trifolium repens*, *Plantago lanceolata*, *Trifolium pratense*, *Cerastium fontanum*, *Taraxacum officinale*, and *Pteridium aquilinum*.

Outside the Stop, *Carlina vulgaris*, *Polygala serpyllifolia*, *Prunella vulgaris*, *Agrimonia eupatoria*, *Bellis perennis*, and *Ajuga reptans* also occur. Seedlings of *Quercus* sp. were scattered throughout.

Due to the insufficient number of indicator species and the excessive cover of scrub saplings, this Stop is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 9:**

This Monitoring Stop is located at the end (or nose) of the esker, facing east southeast. The River Brosna cuts through the esker at this point, with the remainder of the esker continuing in a south easterly direction on the far bank of the river.

Stop 9 is located in an open area at the end of the esker, where there is a break in the scrub. The soil is shallow in this location and small limestone rocks and stones are exposed in places.

Within the Stop, herb cover is good (60%) and 11 indicator species were recorded. There are no negative indicator species and very little bracken or scrub seedlings occur (<5%).

In addition to the indicator species, *Anthoxanthum odoratum* and *Hypochoeris radicata* also occur in the Stop. The orchid *Dactylorhiza maculata* is frequent, both within the Monitoring Stop and across this open area.

Outside the area of the Stop, additional species include *Holcus lanatus*, *Ajuga reptans*, *Rubus fruticosus* agg., and seedlings of *Corylus avellana* and *Quercus* sp. A fox's den was noted on the side slopes, close to Monitoring Stop 1.

Monitoring Stop 9 is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 10:**

The north-facing slopes of the esker are rank and overgrown. Moss hummocks are frequent and grasses dominate the vegetation. Young seedlings and saplings of scrub species are spreading.

Within the Stop, herb content is low at 20% and only 3 indicator species were recorded. Very little bracken or scrub occurred within the Stop (<5%).

Vegetation in the Stop is dominated by the grasses *Anthoxanthum odoratum*, *Festuca rubra*, and *Avenula pubescens*. In addition to the indicator species, other herbs include *Centaurea nigra*, *Plantago lanceolata*, *Taraxacum officinale* agg., *Veronica chamaedrys*, *Alchemilla xanthochlora*, *Trifolium repens*, and isolated spikes of *Dactylorhiza maculata*. Outside the Stop, *Carlina vulgaris* was also noted.

Due to the low cover of herbs and the insufficient number of indicator species, this Stop is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 11:**

The Dublin/Galway road cuts through the esker at this point. The dissected esker slopes gently away from the road to the summit which is wooded. The slopes show the results of previous disturbance from the road construction activities with revegetating communities occurring close to the road edge. The Monitoring Stop is located just inside the fence line which runs along the edge of the slope. The vegetation is low in this area and a small area of good calcareous grassland occurs.

Within the Stop, herb content is good (60%) and 9 indicator species were recorded. No negative indicators occur and scrub/Bracken cover is low (<5%). An additional 13 species also occur, including seedlings of *Fraxinus excelsior* and *Hedera helix* (see relevé 8 for full details).

Monitoring Stop 11 is deemed to 'Pass' the assessment of its Structures and Functions.

**Monitoring Stop 12:**

Monitoring Stop 12 is located in a mossy area of grassland amongst scrub, less than 10m from Monitoring Stop 11. This scrub is thick along the summit of the esker but attempts have been made to clear areas by NPWS. Further scrub management is planned in this area by NPWS. If this occurs, then the prospects for the grassland component of this section of esker are good and its quality should improve.

The vegetation in the area of Monitoring Stop 12 is tall (30cm) and while herb content is good (60%), only 2 indicator species were recorded. No negative indicator species were recorded but scrub seedlings (*Fraxinus excelsior* and *Corylus avellana*) accounted for 20% of cover. 11 additional species also occur, including *Hedera helix* and *Rubus fruticosus* agg.

Due to the insufficient number of indicator species present and the excessive cover of scrub seedlings and saplings, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

## **East Burren Complex**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Faith Wilson	28/09/2006
Willie Crowley	29/09/2006

**Total Site Area (Ha):** 18673

**Area of Priority Grassland (N2000) (Ha):** 1000ha (500 ha orchid rich calcareous grassland and 500 ha for other dry calcareous grassland).

**Area of Priority Grassland 2006 (Ha)\*:** 900-1,300

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Clare	51	CL003, CL006, CL007, CL009, CL010,
Galway	52	CL011, CL016, CL017, CL018,
		GA112, GA121, GA122, GA128,
		GA133.

#### **Digital Aerial Photos (Tile Nos.):**

O3624-c, O3624-d, O3682-a, O3682-b, O3682-c, O3682-d, O3683-a, O3683-c, O3740-a, O3740-b, O3740-c, O3740-d, O3741-a, O3741-b, O3741-c, O3741-d, O3742-c, O3742-d, O3797-d, O3798-a, O3798-b, O3798-c, O3798-d, O3799-a, O3799-b, O3799-c, O3799-d, O3800-a, O3800-b, O3800-c, O3800-d, O3801-a, O3801-c, O3855-b, O3855-d, O3856-a, O3856-b, O3856-c, O3856-d, O3857-a, O3857-b, O3857-c, O3857-d, O3858-a, O3858-b, O3858-c, O3858-d, O3859-a, O3859-b, O3859-c, O3859-d, O3912-b, O3912-c, O3912-d, O3913-a, O3913-b, O3913-c, O3913-d, O3914-a, O3914-b, O3914-c, O3914-d, O3915-a, O3915-b, O3915-c, O3915-d, O3916-a, O3969-a, O3969-b, O3969-c, O3969-d, O3970-a, O3970-b, O3970-c, O3970-d, O3971-a, O3971-b, O3971-c, O3971-d, O3972-a, O3972-b, O3972-c, O3972-d, O4028-a, O4028-b, O4028-c, O4028-d, O4029-a, O4029-b, O4029-c, O4029-d, O4030-a, O4030-b, O4030-c, O4030-d, O4031-a, O4031-b, O4087-a, O4087-b, O4087-d, O4088-a, O4088-b, O4088-c, O4088-d

#### **Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

**SAC Site Code:**

001926

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This large site incorporates all of the high ground in the east Burren, and extends south-eastwards to include a complex of calcareous wetlands. The area encompasses a complete range of limestone habitats that include limestone pavement and associated calcareous grasslands and heath, scrub and woodland together with a network of calcareous lakes and turloughs. The site exhibits some of the best and most extensive areas of oligotrophic limestone wetlands to be found in the Burren and in Europe.

The limestone pavement includes smooth blocky and shattered types. The bare pavement is interspersed with species-rich calcareous vegetation communities. Typical grassland species found include Blue Moor-Grass (*Sesleria albicans*), Mountain Everlasting (*Antennaria dioica*), Bloody Cranesbill (*Geranium sanguineum*) and Wild Thyme (*Thymus praecox*). Limestone Heath is well developed in part of the uplands where Heather (*Calluna vulgaris*) and Bell Heather (*Erica cinerea*) are common along with St. John's-wort (*Hypericum* spp.) and Tormentil (*Potentilla erecta*). Two rare plant species which are common to this habitat include the Hoary Rock-rose (*Helianthemum canum*) and Pyramidal Bugle (*Ajuga pyramidalis*); both species are listed in the Red Data Book. To the south-east around the western shores of Lough Bunny an interesting heath community with Bearberry (*Arctostaphylos uva-ursi*) occurs at one of its few inland lowland locations in the Burren.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: The bare pavement is interspersed with species-rich calcareous vegetation communities. Typical grassland species found include Blue Moor-Grass (*Sesleria albicans*), Mountain Everlasting (*Antennaria dioica*), Bloody Cranesbill (*Geranium sanguineum*) and Wild Thyme (*Thymus praecox*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the orchid rich calcareous grassland as follows: This habitat occurs throughout the site as part of a mosaic with limestone pavement and various types of heath and scrub. It should be noted that the Burren grasslands are exceptionally diverse and that there is a continuum from calcareous grassland to calcareous heaths. The various grasslands and heaths have been studied by N. McGough (1984). Typical grass species are *Sesleria albicans*, *Anthoxanthum odoratum* and *Briza media*. Orchid species are often frequent, including *Anacamptis pyramidalis*, *Coeloglossum viride*, *Dactylorhiza fuchsii*, *D. maculata*, *D. traunsteineri*, *Gymnadenia conopsea*, *Ophrys apifera*, *Orchis insectifera*, *Platanthera chlorantha* and *Neotinea maculata*. The latter species, *N. maculata*, has a limited distribution in Ireland being generally associated with the Burren in Co. Clare and rare elsewhere (Webb & Scannell 1983).

#### *Description based on the 2006 Survey :*

The 2006 survey found that the areas of calcareous grassland within the site were often

restricted to the areas of shallower soils. A good diversity of indicator species were recorded including *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Galium verum*, *Linum catharticum*, *Lotus corniculatus*, *Geranium sanguineum*, *Sesleria albicans* and less frequently *Anthyllis vulneraria*, *Carlina vulgaris*, *Blackstonia perfoliata*, *Daucus carota*, *Gentianella campestris*, *Hieracium pilosella*, *Sanguisorba minor*, *Antennaria dioica*, *Asperula cynanchica* and *Dryas octopetala*. The gone over seed heads of orchid species were recorded in several of the monitoring stops but were not identified to species level. *Spiranthes spiralis* was recorded in two of the Monitoring Stops.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This is a large complex site in which the calcareous grassland forms part of a mosaic with alpine and sub-alpine heath, *Juniperus communis* formations on calcareous heaths of grasslands, limestone pavement and scrub as described by Ivimey-Cook and Proctor (1963).

This site was identified as an ASI in 1972. It was surveyed during the 1993 NHA Survey. Most of the site notes relate to boundary information with only a handful of general habitat notes relating to calcareous grassland within the site. The boundary of the site was amended in 1998 to include two new sites for the slow worm (*Anguis fragilis*) following a site visit by NPWS research staff and several detailed notes on the habitats present were taken.

An extensive satellite mapping project of the Burren was conducted by Parr et. al. - 'A GIS baseline survey of habitat types and vegetation composition in the Karst region of the Burren, County Clare' in 2006. This project was funded by the Irish Government under the National Development Plan 2000-2006, Dept. Agriculture Research Stimulus Fund (RSF 117). The GIS data from this project was used in determining the extent of calcareous grassland within the site.



## SITE MONITORING AND MANAGEMENT UNITS

This is a large complex site in which the calcareous grassland forms part of a mosaic with alpine and sub-alpine heath, *Juniperus communis* formations on calcareous heaths of grasslands, limestone pavement and scrub. Given the lack of NHA notes within the site boundary the aerial photographs (OSI 2000 series) of the site were studied and eight survey areas that appeared to be predominantly grassland (versus heath/outcropping limestone pavement) were selected for field survey (See Map 1).

Each of these areas was visited and sixteen Monitoring Stops were conducted in total (See Map 2 (sheets 1 - 8)). This site was divided into twelve management units. Of the sixteen Monitoring Stops conducted two were used to assess the Extent of calcareous grassland within the site. The remaining fourteen Monitoring Stops were used to assess the Structures and Functions of the calcareous grassland within the site. Only seven of the fourteen stops used to assess Structures and Functions passed, resulting in an overall failure of the Structures and Functions of the site. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. A summary of the Monitoring Stops and Management Units is presented in Table 1 below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	12
<b>Number of Monitoring Stops:</b>	16
<b>Number of Stops That Pass:</b>	7
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Extent	Sheet 1 of 8
Stop 02	1	Fail	Structures and Functions	Sheet 1 of 8
Stop 03	1	Pass	Structures and Functions	Sheet 1 of 8
Stop 04	1	Pass	Structures and Functions	Sheet 1 of 8
Stop 05	2	Pass	Structures and Functions	Sheet 2 of 8
Stop 06	3	Fail	Extent	Sheet 3 of 8
Stop 07	4	Fail	Structures and Functions	Sheet 3 of 8
Stop 08	5	Pass	Structures and Functions	Sheet 4 of 8
Stop 09	5	Fail	Structures and Functions	Sheet 4 of 8
Stop 10	6	Pass	Structures and Functions	Sheet 5 of 8
Stop 11	7	Pass	Structures and Functions	Sheet 6 of 8
Stop 12	8	Fail	Structures and Functions	Sheet 6 of 8
Stop 13	9	Fail	Structures and Functions	Sheet 6 of 8
Stop 14	10	Pass	Structures and Functions	Sheet 7 of 8
Stop 15	11	Pass	Structures and Functions	Sheet 7 of 8
Stop 16	12	Fail	Structures and Functions	Sheet 8 of 8

The areas of calcareous grassland which were surveyed and monitored during the 2006

survey were divided into twelve management units based on the existing field boundaries.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The main threat to the calcareous grassland within the site arise from a lack of grazing (149) which has allowed grassland to become rank (Monitoring Stops 2, 7 and 13). Another serious threat to the habitat is abandonment of traditional grazing practices (149). Encroachment by *Pteridium aquilinum* (954) also threatens the diversity of species within the site (see Monitoring Stops 12 and 13). There was some localised areas of agricultural improvement (103) - typically fertilisation applications (120) and minor reseeded (Monitoring Stops 1 and 6) and the use of ring feeders (171) for cattle were noted (Monitoring Stop 6). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	B
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-1	A
120	Fertilisation	-1	A
141	Grazing: abandonment of pastoral systems	-1	A
149	Grazing: undergrazing	-1	A

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Many of the areas visited would benefit from hard grazing to restore species diversity and ensure that *Pteridium aquilinum* is adequately trampled to reduce its spread (Monitoring Stops 2, 3, 7, 9, 12, 13 and 16). The localised applications of fertiliser and reseeded activity (Monitoring Stops 1 and 6) also need to be addressed.

## **CONSERVATION STATUS**

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and is not accurately mapable from aerial photographs. This is because of its patchy distribution across the SAC where it forms a mosaic with, and is not easily distinguishable from calcareous heath and limestone pavement. Indeed the NATURA 2000 explanatory notes argue that 'while floristic differences can be recognised between these habitats, it is somewhat of an ecological nonsense to try to artificially separate these into separate habitats for the purpose of management etc.'

However, in order to have some estimate as to the extent of the habitat, the following can be considered. During this survey eight relatively small survey areas (40ha) were chosen for site visits in order to:

- a) Establish whether calcareous grassland was present and
- b) Evaluate the condition (structure and function) of the grassland where present.

These survey areas were chosen, after analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2, as they were thought to be the most likely, within the SAC, to contain the habitat type 6210. Although elements of habitat 6210 were found in every survey area, the extent varied greatly (<1ha to 19ha). Overall the amount of habitat 6210 present within the survey areas was estimated to be ca. 60ha (or 19% of the survey areas).

This can be considered to be the minimum amount of habitat 6210 that is present within the SAC. However, from analysis of the aerial photographs and considering that all of the eight survey areas surveyed contained the habitat 6210, it can be reasoned that there are other large areas of the habitat within this SAC and that the actual extent of the habitat is likely to be much higher than the 60ha recorded above.

In order to estimate the maximum possible extent of the habitat it can be imagined that the extent of the habitat within the survey areas is a true reflection of the extent of the habitat within the whole SAC. However because the mosaic of limestone pavement, calcareous heath and calcareous grassland does not extend over the whole SAC, areas such as the wetlands (between Lough Bunney and Inchiquin Lough) in the south-east of the site need to be excluded when estimating the maximum extent of habitat 6210 in this manner. Thus the extent of the mosaic of pavement and calcareous heath and grassland was crudely digitised and estimated to be 12,500ha. Hence, the maximum possible extent of habitat 6210 within the SAC can be estimated to be 2,375ha (19% of 12500ha). However, it needs to be recognised that the survey areas were chosen specifically because they were considered likely to contain habitat 6210 and are thus are not a true reflection of the mosaic of habitats. Indeed from an analysis of the aerial photos combined with notes taken during the ground survey it is recognised that limestone pavement is by far the dominant habitat (particularly around Mullaghmore, Tulla, Turlough Hill and Slievecarran) in the mosaic so that the 2,375ha is certainly an over-estimation. The actual extent of habitat 6210 is likely to be somewhere mid-way between the minimum (60ha or 0.3% of the SAC) and maximum

(2,375ha or 12.7% of the SAC) extent estimates. It is thus estimated that ca. 5-7% of the SAC supports habitat 6210, which is equal to ca. 900-1,300ha.

This is higher than the 500ha estimate given in the NATURA 2000 Explanatory Notes. However the Explanatory Notes also refer an additional 500ha of other dry calcareous grassland (in addition to the 500ha of orchid-rich dry calcareous grassland) and during the current project this 500ha is also likely to have been termed habitat 6210 so that the NATURA 2000 estimate can be considered to be 1,000ha, which is within the range estimated during the current survey.

Two of the Monitoring Stops conducted (Monitoring Stops 1 and 6) were used to assess Extent. Both of these areas had been reseeded with *Lolium perenne*. An additional improved area was noted (Note 6) close to Monitoring Stop 9. Given the lack of baseline information it is difficult to assess whether or not these areas were previously calcareous grassland. However they would probably have been excluded for the site boundary if they were agriculturally improved at the time of the NHA Survey and therefore they are seen as a loss of Extent. Due to the uncertain nature of the data available, while also considering both the revised original extent and the assumed loss in extent since the site was designated, the Extent of calcareous grassland within the site is thus described as Unfavourable - inadequate.

#### ***Structure and Functions:***

Seven of the fourteen Monitoring Stops used to assess Structures and Functions failed the assessment process, resulting in an overall 'Fail' for the Structures and Functions of the site. Many of the areas visited had become rank (Monitoring Stops 2, 7 and 13) or encroached by *Pteridium aquilinum* (Monitoring Stops 12 and 13) although a good variety of indicator species were still noted indicating that these areas had previously been species-rich calcareous grassland. A lack of calcareous indicator species resulted in a 'Fail' for six Monitoring Stops (Monitoring Stops 2, 3, 7, 12, 13 and 16). Monitoring Stop 9 failed due to poor herb cover. The Structures and Functions of calcareous grassland within the site is thus described as Unfavourable - bad.

#### ***Future Prospects:***

The Future Prospects for the calcareous grassland within the site will depend on management agreements between NPWS and local landowners particularly in relation to grazing. The recently funded Burren LIFE project (which is ongoing in 2006) is resulting in useful dialogues and exchanges between ecologists and local farmers and is well received within the local community. This project is resulting in active management of habitats on the ground.

However given the lack of NPWS resources, the increase in part-time farming in Ireland, the move away from traditional farming practices such as 'winterages' in the Burren and the known encroachment of many areas by *Corylus avellana* scrub, the Future Prospects for the site are described as Unfavourable - inadequate.

#### ***Conservation Assessment:***

Overall, the areas of calcareous grassland surveyed within the site were in poor condition.

Although a good diversity of calcareous indicator species were recorded, on a Stop by Stop basis, the main threats to the habitat arise from a lack of grazing which is resulting in encroachment by *Pteridium aquilinum* and allowing the development of rank grassland.

The Extent of the calcareous grassland within the site is typically restricted to small linear strips of grassland between areas of exposed limestone pavement, shattered pavement, and areas of calcareous heath and scrub, forming a continuum of habitats in a rich mosaic.

If the traditional grazing practices of 'winterages' are maintained in the Burren, the Future Prospects for the site are good. However the spread of *Corylus avellana* continues to be a difficult and costly management issue. If farmers are increasingly farming on a part time basis, this traditional practice of winterage is unlikely to continue. Given that the majority of the site is in private ownership the future of its management cannot be assured.

The overall Conservation Status Assessment for the site is thus described as Unfavourable - bad as the Extent and the Structures and Functions are described as Unfavourable - bad (see Table 3). The Future Prospects of the site are described as Unfavourable - inadequate.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
	Extent		

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

On the upper slopes of this field which have regular outcropping limestone boulders. Several indicator species were present such as *Lotus corniculatus*, *Galium verum*, *Dryas octopetala*, *Campanula rotundifolia*, *Carex flacca*, *Briza media*, *Succisa pratensis*, *Calluna vulgaris*, *Pimpinella saxifraga* and *Sesleria albicans*. *Cotoneaster* is present on these slopes. Other species recorded include *Solidago virgaurea*, *Pteridium aquilinum* and *Ulex europaeus*.

**Note 2:**

The lower slopes in this area have frequent *Pteridium aquilinum*, some *Cotoneaster* and occasional *Crataegus monogyna* shrubs. *Rosa pimpinellifolia* is increasing in abundance on these lower slopes. This area is quite heathy with some *Molinia caerulea*, *Calluna vulgaris* and *Erica cinerea*.

**Note 3:**

The slopes below the track have become encroached by *Pteridium aquilinum*, *Rubus fruticosus* agg. and occasional *Crataegus monogyna*.

**Note 4:**

The slopes of the hill between the track and the shattered limestone areas are very encroached by *Cotoneaster* which is forming large spreading clumps up to 4m wide. *Cotoneaster* is also present on the lower slopes of the hillside below the road.

**Note 5:**

The grassland between outcropping rocks has higher species diversity with *Galium verum*, *Carlina vulgaris*, *Succisa pratensis*, *Campanula rotundifolia*, *Hieracium pilosella*, *Sesleria albicans*, *Teucrium scorodonia*, *Rosa pimpinellifolia*, frequent *Pteridium aquilinum*, *Sanguisorba minor*, *Solidago virgaurea*, *Lotus corniculatus*, *Carex flacca*, *Briza media*, occasional *Crataegus monogyna* bushes (1.5m high), *Linum catharticum*, *Achillea millefolium*, *Thymus praecox*, *Centaurea nigra* and *Centaurea scabiosa*.

**Note 6:**

This area has been improved with some *Lolium perenne*, frequent *Veronica chamaedrys*, *Plantago lanceolata*, *Rumex* sp., *Ranunculus repens*, *Potentilla anserina*, *Cerastium* sp., *Achillea millefolium*, *Dactylis glomerata*, *Plantago major* and *Pteridium aquilinum*. This area shows up as a brownish patch on the aerial photograph (OSI 2000). Cattle have access from this area to Note 5 and Monitoring Stop 7.

## Note 7:

This is an area of neutral grassland which is located on a flat area at the base of the slope. The sward is dominated by *Cynosurus cristatus* with occasional *Briza media*, *Cerastium fontanum*, *Ranunculus repens*, *Trifolium repens*, *Achillea millefolium*, *Trifolium pratense*, *Carex flacca*, *Plantago lanceolata*, *Odontites verna*, *Festuca rubra*, *Prunella vulgaris*, *Hypochoeris radicata*, *Taraxacum* agg. and *Potentilla anserina*. This area possibly received a spread of slurry.

## Note 8:

This adjoining field to where Monitoring Stop 12 was conducted has frequent outcropping rocks and is similarly vegetated with the addition of *Vicia cracca*, *Carex flacca*, *Parnassia palustris*, *Dactylis glomerata*, *Leucanthemum vulgare*, *Campanula rotundifolia*, *Geranium sanguineum*, seeding/fruiting orchids, an increased abundance of *Rhinanthus minor*, *Linum catharticum*, *Galium verum* and *Molinia caerulea*. *Pteridium aquilinum* is an issue in these fields.



## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was conducted in a semi-improved field. The sward was composed of *Cynosurus cristatus*, *Festuca rubra*, *Dactylis glomerata*, *Lolium perenne*, *Agrostis stolonifera*, *Trifolium repens*, *Trifolium pratense*, *Ranunculus repens*, *Odontites verna*, *Ranunculus acris*, *Plantago lanceolata*, *Taraxacum* sp., *Cerastium fontanum* and *Achillea millefolium*.

The presence of *Lolium perenne* indicated that this area had been reseeded and no indicator species were recorded and this resulted in a 'Fail' for this Monitoring Stop. The herb: grass ratio was high at 60% but this was due to the abundance of *Trifolium* in the sward. There was frequent *Cirsium vulgare*, occasional *Rosa pimpinellifolia* and some *Pteridium aquilinum*. Previously grazed by cattle but currently ungrazed. *Vicia cracca*, *Rubus fruticosus* agg. and *Rhinanthus minor* were also present but not frequent.

### Monitoring Stop 2:

This Monitoring Stop was located in an area of grassland on a slope between areas of outcropping limestone. This area has become quite rank and only three indicator species were recorded although the herb: grass ratio was still quite high at 40%. The lack of indicator species resulted in a 'Fail' for this Monitoring Stop. Spreading *Cotoneaster* is a feature of this slope and will need to be controlled. This area is currently ungrazed with a sward height of 10 - 20cm.

Additional species recorded within the Monitoring Stop include *Dactylis glomerata* (O), *Cynosurus cristatus* (F), *Plantago lanceolata* (F), *Trifolium repens* (F), *Odontites verna* (R), *Rhinanthus minor* (R), *Senecio jacobaea* (R), *Pimpinella saxifraga* (R), *Hypochoeris radicata* (R), *Agrostis capillaris* (R), *Prunella vulgaris* (R), *Trifolium pratense* (R) and *Anthoxanthum odoratum* (R). The relevé data for this Monitoring Stop is presented in Quadrat 1.

This area needs hard grazing to recover - there was a good diversity of species present the interstitial areas of shattered limestone. Outside the Monitoring Stop *Succisa pratensis*, occasional clumps of *Cotoneaster* and *Solidago virgaurea* were recorded.

**Monitoring Stop 3:**

This Monitoring Stop was located in an area of grassland on the shoulder of the hill in a somewhat deeper soil which has produced a calcareous-neutral soil. This area is currently grazed by cattle and a well worn track leads up the gully of the hillside to this area. The herb: grass ratio was good at 40% and 7 indicator species were recorded resulting in a 'Pass' for this Monitoring Stop. The sward height was 5 - 10 with some areas of bare ground and a low litter level.

Additional species recorded within the Monitoring Stop included *Succisa pratensis*, *Plantago lanceolata*, *Trifolium repens*, *Rosa pimpinellifolia*, *Hieracium* sp., *Agrostis capillaris*, *Achillea millefolium*, *Centaurea nigra*, *Rhinanthus minor*, *Prunella vulgaris*, *Cynosurus cristatus* and *Danthonia decumbens*.

**Monitoring Stop 4:**

This Monitoring Stop was located on a sloped area between the flatter shoulders of the hillside. The ground here still has deep soils (c. 10cm deep) which show some signs of poaching by cattle. There is frequent outcropping limestone rocks on this slope and occasional clumps of *Salix* sp. The Stop had a good herb: grass ratio (60%) and 8 indicator species were recorded. There was no negative indicators or scrub encroachment and the area was orchid rich. This resulted in a 'Pass' for this Monitoring Stop. The current grazing regime would appear to be suitable.

Additional species recorded within the Monitoring Stop include *Lathyrus montanus* (R), *Calluna vulgaris* (O), *Succisa pratensis* (F), several fruiting/seeding orchids (R), *Agrostis capillaris* (R), *Achillea millefolium* (R), *Potentilla erecta* (O), *Trifolium repens* (R), *Parnassia palustris* (R), *Festuca rubra* (O), *Viola* sp. (R), *Euphrasia* sp. (R), *Centaurea nigra* (R), *Danthonia decumbens* (R), *Thymus praecox* (R) and *Plantago lanceolata* (O). The relevé data for this Monitoring Stop is presented in Quadrat 2.

Outside the Monitoring Stop *Solidago virgaurea*, *Pteridium aquilinum*, *Salix* sp. and *Carlina vulgaris* were recorded.

**Monitoring Stop 5:**

This Monitoring Stop was located on the lower slopes adjacent to the road. There are some signs of disturbance closer to the road - frequent areas disturbed/bare ground and there is some poaching. Overall this area was in good condition with a high herb: grass ratio of 50%, 11 indicator species were present, and encroachment by *Pteridium aquilinum* was low (2% within the stop). This resulted in a 'Pass' for this Monitoring Stop. The area had been recently grazed resulting in a short sward of 5cm with some litter.

Additional species recorded within the Monitoring Stop include *Rosa pimpinellifolia* (O), *Achillea millefolium* (O), *Succisa pratensis* (F), *Centaurea nigra* (O), *Plantago lanceolata* (R), *Trifolium repens* (O), *Ranunculus repens* (R), *Agrostis capillaris* (R), *Dactylis glomerata* (R), *Cynosurus cristatus* (O), *Pteridium aquilinum* (R), *Rhinanthus minor* (R), *Pimpinella saxifraga* (R), *Plantago maritima* (O), *Vicia cracca* (R), *Trifolium pratense* (O), *Euphrasia* sp. (R), *Festuca rubra* (O), *Calluna vulgaris* (R), *Potentilla erecta* (R), *Hypochoeris radicata* (R) and *Taraxacum* sp. (R). The relevé data for this Monitoring Stop is presented in Quadrat 3.

Additional species recorded outside the Monitoring Stop include *Leucanthemum vulgare*, *Potentilla anserina*, *Sesleria albicans*, *Blackstonia perfoliata*, fruiting/seeding orchids and *Solidago virgaurea*.

**Monitoring Stop 6:**

This Monitoring Stop was located in an improved field with five ring feeders. The sward is dominated by *Lolium perenne* with frequent *Holcus lanatus*, *Poa annua*, *Plantago major*, *Taraxacum* agg., *Potentilla anserina*, *Trifolium repens* and *Rumex obtusifolius*. No indicator species were recorded and due to the low herb: grass ratio and abundance of negative indicators this resulted in a 'Fail' for this Monitoring Stop. This Stop is included in the assessment of Extent and not Structures and Functions.

**Monitoring Stop 7:**

This Monitoring Stop was located in a field below outcropping limestone. The sward still has a few calcareous indicators (5) and good herb: grass ratio (60%) but has become rank and is dominated by *Cynosurus cristatus* (D) and *Dactylis glomerata* (F). This has resulted in a 'Fail' for this Monitoring Stop.

Other species present include *Achillea millefolium* (O), *Plantago lanceolata* (O), *Leucanthemum vulgare* (O), *Trifolium repens* (F), *Pimpinella saxifraga* (R), *Holcus lanatus* (O), *Trifolium pratense* (O), *Prunella vulgaris* (R), *Agrostis stolonifera* (R), *Plantago lanceolata* (O), *Bellis perennis* (R) and *Festuca rubra* (O).

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**Monitoring Stop 8:**

This Monitoring Stop was located on the lower slopes of Slieveaughtmama Hill. This land is in commonage (6 farmers) and animals have access to all the slopes and from these slopes up on to the areas of shattered limestone and pavement. There is some encroachment by *Pteridium aquilinum* on the lower slopes. The area is becoming quite heath dominated - *Calluna vulgaris* and *Juniperus communis* were present.

Twelve indicator species were recorded within the Monitoring Stop which had some small encroachment by *Pteridium aquilinum*. A single fruiting/seeding orchid was present within the Stop. This Monitoring Stop 'Passed'. The area was moderately grazed with <5% litter, some bare ground and a sward height of 2 - 5 cm.

Additional species recorded within the Monitoring Stop include *Solidago virgaurea* (R), *Succisa pratensis* (O), *Calluna vulgaris* (F), *Danthonia decumbens* (O), *Molinia caerulea* (R), *Erica cinerea* (R), *Hypericum* sp. (R), *Euphrasia* sp. (R), *Festuca rubra* (O), *Thymus praecox* (R), *Centaurium erythraea* (R), *Pteridium aquilinum* (R), *Plantago maritima* (R), *Plantago lanceolata* (R), *Juniperus communis* (R) and *Potentilla erecta* (O). The relevé data for this monitoring Stop is presented in Quadrat 5.

The heath elements (*Calluna*/*Juniperus*/*Dryas*/*Erica*) in this area comprise c.40% of this area.

**Monitoring Stop 9:**

This Monitoring Stop was located on the lower slopes of Slieveaughtmama Hill above a track. The lower areas are more grass dominated than higher up the slope. The Stop had a good diversity of indicator species present (9) but 'Failed' on account of the herb: grass ratio of only 30%. Three flowering spikes of *Spiranthes spiralis* were recorded and the sward was moderately grazed.

Additional species recorded in the Monitoring Stop include *Agrostis capillaris* (R), *Lathyrus montanus* (O), *Succisa pratensis* (R), *Calluna vulgaris* (O), *Erica cinerea* (R), *Euphrasia* sp. (R), *Plantago maritima* (R), *Leucanthemum vulgare* (R), *Prunella vulgaris* (R), *Plantago lanceolata* (R), *Cynosurus cristatus* (O), *Festuca rubra* (O), *Potentilla erecta* (R), *Anthoxanthum odoratum* (R), *Trifolium repens* (R) and *Hypochoeris radicata* (R). The relevé data for this Monitoring Stop is presented in Quadrat 6.

*Molinia caerulea* and *Solidago virgaurea* were present outside the Monitoring Stop.

**Monitoring Stop 10:**

This Monitoring Stop was located near the entrance track to Slieve Carran Nature Reserve. Most of this area has frequent outcropping limestone pavement but some small areas of grassland are present. The herb: grass ratio was high at 60% and thirteen indicator species were recorded. The current grazing regime appears suitable with a sward height of 5cm and no bare ground or litter. This Monitoring Stop 'Passed'.

Additional species recorded within the Monitoring Stop include *Succisa pratensis* (O), *Plantago lanceolata* (R), *Centaurea nigra* (R), *Rosa pimpinellifolia* (R), *Euphrasia* sp. (R), *Potentilla erecta* (O), *Rhinanthus minor* (O), *Thymus praecox* (R), *Hypochoeris radicata* (R), *Plantago maritima* (R), *Hypericum* sp. (R), *Festuca rubra* (R), *Cynosurus cristatus* (R), *Viola* sp. (R), *Trifolium pratense* (R) and *Achillea millefolium* (R). The relevé data for this Monitoring Stop is presented in Quadrat 7.

Outside the Monitoring Stop *Leucanthemum vulgare*, *Carlina vulgaris*, *Molinia caerulea*, *Pteridium aquilinum*, *Corylus avellana* scrub, *Solidago virgaurea*, *Ranunculus acris*, *Teucrium scorodonia*, *Dryas octopetala* and *Primula* sp. were recorded.

**Monitoring Stop 11:**

This Monitoring Stop was located on thin soils near a large excavated area and is likely to be well developed recolonising bare ground rather than established grassland. There was a good diversity of species present (9 indicator species were recorded and four spikes of *Spiranthes spiralis* were present within the Stop). There was no encroachment by scrub or negative indicator species present. This Monitoring Stop 'Passed'.

Additional species present include *Solidago virgaurea*, *Succisa pratensis*, *Euphrasia* sp., *Trifolium repens*, *Trifolium pratense*, *Thymus praecox*, *Hieracium* sp., *Plantago maritima*, *Cynosurus cristatus*, *Odontites verna*, *Rhinanthus minor*, *Plantago lanceolata* and *Festuca rubra*. This area is well grazed by cattle with a sward height of 2 - 5cm.

**Monitoring Stop 12:**

This Monitoring Stop was conducted in a large field which looked somewhat improved on the 2000 (OSI) aerial photographs - it appeared quite green. Much of this field and the adjoining fields in the vicinity are encroached by *Pteridium aquilinum*. There is occasional *Juniperus communis* in this area. The encroachment by *Pteridium aquilinum* resulted in a loss of species diversity and only four indicator species were recorded. This Monitoring Stop 'Failed'. This field requires hard grazing in order for the species diversity to return.

Additional species recorded within the Monitoring Stop include *Dactylis glomerata*, *Cynosurus cristatus*, *Rosa pimpinellifolia*, *Pteridium aquilinum*, *Trifolium repens*, *Trifolium pratense*, *Hypochoeris radicata*, *Succisa pratensis*, *Centaurea nigra*, *Cerastium fontanum*, *Rhinanthus minor*, *Plantago lanceolata*, *Agrostis capillaris*, *Festuca rubra*, *Potentilla erecta* and *Calluna vulgaris*.

**Monitoring Stop 13:**

This Monitoring Stop was conducted in a field which was also seriously encroached by bracken which contributed to the Stop failing. Only six indicator species were present and a single fruiting/seeding orchid was recorded. This Monitoring Stop 'Failed'.

Additional species recorded within the Monitoring Stop include *Succisa pratensis*, *Dactylis glomerata*, *Cynosurus cristatus*, *Calluna vulgaris*, *Vicia cracca*, *Pteridium aquilinum*, *Solidago virgaurea*, *Molinia caerulea*, *Brachypodium* sp., *Agrostis* sp., *Plantago lanceolata*, *Euphrasia* sp., *Rhinanthus minor*, *Plantago maritima*, *Carex pulicaris*, *Trifolium repens*, *Trifolium pratense*, *Potentilla erecta* and *Danthonia decumbens*. All of these fields need hard grazing to restore species diversity and control the spread of *Pteridium aquilinum*.

Outside the Monitoring Stop *Centaurea scabiosa*, *Daucus carota*, *Linum catharticum*, *Carlina vulgaris*, *Carex flacca*, *Parnassia palustris* and *Sanguisorba minor* were present. *Sesleria albicans* was present around outcropping boulders.

**Monitoring Stop 14:**

This Monitoring Stop was located in a field with occasional outcropping limestone boulders and bedrock. The herb: grass ratio was high at 60% and 8 indicator species were recorded resulting in a 'Pass' for this Monitoring Stop. Two fruiting/seeding orchids were recorded and the current grazing regime seems appropriate resulting in a sward of 5 - 10 cm high with no bare ground or litter recorded.

Additional species recorded within the Monitoring Stop include *Rhinanthus minor*, *Centaurea nigra*, *Dactylis glomerata*, *Plantago lanceolata*, *Trifolium pratense*, *Thymus praecox*, *Cynosurus cristatus*, *Festuca rubra*, *Achillea millefolium*, *Hypochaeris radicata*, *Succisa pratensis*, *Euphrasia* sp. and *Potentilla erecta*. Outside the Monitoring Stop *Pteridium aquilinum*, *Rosa pimpinellifolia*, *Teucrium scorodonia* and *Calluna vulgaris* were present.

**Monitoring Stop 15:**

This Monitoring Stop was located in a field with outcropping bedrock and boulders/rocks. The herb: grass ratio was 50% and 8 indicator species were recorded which resulted in a 'Pass' for this Monitoring Stop. The area had been recently grazed resulting in a sward height of 5 - 10cm with <5% litter and no bare ground.

Additional species recorded within the Monitoring Stop include *Teucrium scorodonia*, *Succisa pratensis*, *Molinia caerulea*, *Potentilla erecta*, *Trifolium repens*, *Trifolium pratense*, *Plantago lanceolata*, *Festuca rubra*, *Thymus praecox*, *Lathyrus pratensis*, *Rosa pimpinellifolia*, *Danthonia decumbens*, *Achillea millefolium*, *Euphrasia* sp. and *Cerastium* sp.

**Monitoring Stop 16:**

This Monitoring Stop was located in a field with frequent outcropping limestone rocks and bedrock all of which is now covered by a thick thatch of rank grassland with a high cover (70%) of moss resulting in a low herb: grass ratio. This area is currently grazed by cattle with a sward height of 5cm and c.10% litter. Only four indicator species were recorded in the Monitoring Stop which resulted in a 'Fail' for this Stop.

Additional species recorded within the stop include *Cynosurus cristatus* (F), *Festuca rubra* (F), *Achillea millefolium* (R), *Thymus praecox* (R), *Succisa pratensis* (O), *Plantago lanceolata* (R), *Trifolium repens* (O), *Trifolium pratense* (R), *Potentilla erecta* (O), *Lathyrus pratensis* (O) and *Holcus lanatus* (O). The relevé data for this Monitoring Stop is presented in Quadrat 8.

The thatch may have built up due to lack of grazing - the outcropping bedrock can still be felt underfoot. There are some areas in this field which are becoming more heathy.

## **Slyne Head Peninsula**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	03/09/2006
Faith Wilson	04/09/2006

**Total Site Area (Ha):** 4028.3

**Area of Priority Grassland (N2000) (Ha):** Area unknown estimated to be 40 - 80 ha.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Galway	44	GA034, GA035, GA038, GA039.

### **Digital Aerial Photos (Tile Nos.):**

O2403-c, O2470-a, O2470-b, O2470-d, O2471-a, O2474-c, O2474-d, O2538-b, O2538-d, O2539-a, O2539-b, O2539-c, O2540-a, O2540-c, O2540-d, O2541-a, O2541-b, O2541-c, O2541-d, O2542-a, O2542-c, O2542-d, O2543-a, O2543-c, O2596-c, O2598-c, O2605-b, O2605-d, O2606-c, O2606-d, O2609-a, O2609-b, O2610-a, O2610-b, O2610-c, O2610-d, O2665-b, O2665-d, O2666-a, O2666-b, O2666-c, O2666-d, O2667-a, O2667-b, O2667-d, O2668-a, O2668-b, O2668-c, O2668-d, O2669-c, O2675-b, O2675-d, O2676-a, O2676-b, O2676-c, O2677-a, O2680-c, O2734-d, O2735-c, O2735-d, O2736-d, O2737-b, O2737-c, O2737-d, O2738-a, O2738-b, O2738-c, O2738-d, O2745-a, O2745-c, O2745-d, O2748-b, O2748-d, O2749-a, O2749-c, O2802-a, O2802-b, O2802-c, O2802-d, O2803-a, O2803-b, O2803-c, O2803-d, O2804-a, O2804-b, O2804-c, O2804-d, O2805-a, O2805-b, O2805-c, O2805-d, O2806-a, O2806-b, O2806-c, O2806-d, O2807-a, O2807-c, O2809-b, O2809-d, O2810-a, O2812-b, O2812-d, O2813-a, O2813-c, O2815-a, O2815-b, O2815-c, O2815-d, O2816-a, O2816-b, O2816-c, O2816-d, O2817-a, O2817-c, O2861-a, O2861-b, O2861-c, O2861-d, O2862-c, O2870-b, O2871-a, O2871-b, O2871-c, O2871-d, O2872-a, O2872-b, O2872-c, O2872-d, O2873-a, O2873-b, O2873-c, O2873-d, O2874-a, O2874-b, O2874-c, O2874-d, O2875-a, O2875-b, O2875-c, O2875-d, O2876-a, O2876-b, O2876-c, O2876-d, O2877-a, O2877-b, O2877-c, O2881-a, O2881-b, O2881-c, O2881-d, O2882-b, O2882-c, O2882-d, O2883-a, O2883-b, O2883-c, O2884-a, O2928-d, O2929-a, O2929-b, O2929-c, O2929-d, O2930-a, O2930-b, O2930-c, O2930-d, O2942-a, O2942-b, O2942-d, O2943-a, O2943-b, O2943-c, O2943-d, O2944-a, O2944-b, O2944-c, O2944-d, O2945-a, O2945-c, O2950-a, O2950-b, O2950-d, O2951-a, O2953-c, O2998-b, O2998-d, O2999-a, O2999-b, O2999-c, O2999-d, O3000-a, O3000-b, O3000-c, O3000-d, O3011-b, O3011-d, O3012-a, O3012-b, O3012-c, O3012-d, O3013-a, O3013-b, O3013-d, O3014-a, O3014-b, O3014-c, O3014-d,



O3015-a, O3015-b, O3015-c, O3015-d, O3016-a, O3016-b, O3016-c, O3016-d, O3017-c, O3017-d, O3020-a, O3020-b, O3020-c, O3020-d, O3021-b, O3021-c, O3021-d, O3022-a, O3022-b, O3022-c, O3023-a, O3023-b, O3023-d, O3024-c, O3080-a, O3081-b, O3081-d, O3082-b, O3083-b, O3083-d, O3084-a, O3084-b, O3084-c, O3084-d, O3085-a, O3085-b, O3085-c, O3088-a, O3088-b, O3088-d, O3089-a, O3091-b, O3091-d, O3092-a, O3092-c, O3092-d, O3149-a, O3149-b, O3149-c, O3149-d, O3150-a, O3150-b, O3150-c, O3150-d, O3151-a, O3151-c, O3151-d, O3152-c, O3154-a, O3154-b, O3154-c, O3154-d, O3157-b, O3157-d, O3158-a, O3158-b, O3158-d, O3159-a, O3159-c, O3215-b, O3215-d, O3216-a, O3216-b, O3216-c, O3216-d, O3217-a, O3217-b, O3217-c, O3217-d, O3218-a, O3218-b, O3218-c, O3218-d, O3219-a, O3219-b, O3219-c, O3219-d, O3220-a, O3220-b, O3220-c, O3223-b, O3223-d, O3224-a, O3224-b, O3224-c, O3225-a, O3280-b, O3280-d, O3281-a, O3281-b, O3281-c, O3281-d, O3282-a, O3282-b, O3282-c, O3282-d, O3344-b, O3345-a, O3345-b, O3345-c, O3345-d, O3347-d, O3358-d, O3407-c, O3407-d, O3408-a, O3408-b, O3408-c, O3408-d, O3409-a, O3409-b, O3409-c, O3409-d, O3410-a, O3410-b, O3410-c, O3410-d, O3411-a, O3469-a, O3469-b, O3469-d, O3470-a, O3470-b, O3470-c, O3470-d, O3470a, -a, O3470a, -b, O3470a, -c, O3470-a, O3471-a, O3471-c, O3472-c, O3519-a, O3519-b, O3519-c, O3519-d, O3520-a, O3520-b, O3520-c, O3520-d, O3521-a, O3521-b, O3521-c, O3521-d, O3522-a, O3522-c, O3569-a, O3569-b, O3569-d, O3570-a, O3570-b, O3570-c, O3570-d, O3571-a, O3571-b, O3571-c, O3571-d, O3572-a, O3572-b, O3572-c, O3572-d, O3619-a, O3619-b, O3619-c, O3619-d, O3620-a, O3620-b, O3620-c, O3620-d, O3621-a, O3621-b, O3621-c, O3621-d, O3624-a, O3624-b, O3624-d, O3625-a, O3625-b, O3625-c, O3625-d, O3626-a, O3626-b, O3626-c, O3627-a, O3627-b, O3675-a, O3675-b, O3675-c, O3675-d, O3676-a, O3676-b, O3676-c, O3676-d, O3677-a, O3677-b, O3677-c, O3677-d, O3682-b, O3682-d, O3683-a, O3683-c, O3684-a, O3684-b, O3733-a, O3733-b, O3733-d, O3734-a, O3734-b, O3734-c, O3734-d, O3735-a, O3735-b, O3735-c, O3735-d, O3740-b, O3741-a, O3741-b, O3741-c, O3741-d, O3742-c, O3742-d, O3743-b, O3743-c, O3743-d, O3744-a, O3744-c, O3791-a, O3791-b, O3791-c, O3791-d, O3792-c, O3792-d, O3799-b, O3800-a, O3800-b, O3800-c, O3800-d, O3801-a, O3801-b, O3801-c, O3801-d, O3802-a, O3802-c, O3849-a, O3849-b, O3849-c, O3858-b, O3858-d, O3859-a, O3859-b, O3859-c, O3859-d, O3915-b, O3916-a, O3972-b, O7035-a, O7035-b, O7035-c, O7035-d, O7036-b, O7036-d, O7039-a, O7039-b, O7039-c, O7039-d, O7041-a, O7041-b, O7041-d, O7042-b.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS****SAC Site Code:**

002074

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

This site comprises the peninsula west of Ballyconneely, Co. Galway. It extends northwards to Errislannan Point to include the shallow waters of Mannin Bay. The peninsula is low-lying and undulating, reaching a maximum height of only 64 m (Doon Hill). The underlying rock is predominantly gneiss, except for schist along the northern shores of Mannin Bay, a granite ridge along the western edge of the peninsula and a conspicuous basalt exposure which forms Doon Hill.

The peninsula is fringed with rocky shores and sandy beaches, with some extensive areas of machair and several brackish lakes and lagoons. Inland, the site is a maze of small fields, supporting a mosaic of habitats dominated by grassland and heath, interspersed with numerous lakes and associated swamp, marsh and fen. An important feature of the site is the influence of windblown calcareous sand on these habitats.

The site is a candidate SAC selected for lagoon, machair and orchid-rich grassland, all priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for other habitats listed on Annex I of the directive: lowland hay meadows, alkaline fen, Molinia meadows, large shallow inlets and bays, perennial vegetation of stony banks, drift line vegetation, reefs, shifting dunes, Marram dunes, Atlantic saltmarsh, Mediterranean saltmarsh, lowland oligotrophic lakes, hard-water lakes, Juniper scrub, and dry heaths. In addition, the site is also selected as a candidate SAC for the liverwort, Petalwort and Slender Naiad, both plants listed on Annex II of the E.U. Habitats Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland habitat as follows: Much of the inland peninsula consists of small fields which contain a complex mosaic of habitats ranging from dry grassland, hay meadow and heath through to wet grassland and marsh. The heath occurs mainly in areas of outcropping rock and is dominated by Western Gorse (*Ulex gallii*), Bell Heather (*Erica cinerea*), Cross-leaved Heath (*Erica tetralix*) and St. Dabeoc's Heath (*Daboecia cantabrica*). Juniper (*Juniperus communis*) is also a frequent component of the heath communities here. The dry grassland supports vegetation rich in orchid species, including Early Purple Orchid (*Orchis mascula*), the two Butterfly orchids (*Platanthera bifolia* and *P. chlorantha*) and the Red Data Book species Green-winged Orchid (*Orchis morio*). Two further Red Data Book species, Pyramidal Bugle (*Ajuga pyramidalis*) and Pale Dog-violet (*Viola lactea*), occur amongst the heath/grassland mosaic.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This habitat occurs as part of a mosaic with juniper scrub formations, dry heath and exposed rock. It grades into coastal habitats and soils are likely to have a higher than normal sand fraction. Parts are semi-improved for pasture through seldom intensively and may still retain a good species diversity. The NHA survey team and

Dr. T. Curtis have recorded a wide array of grassland species including the following orchids: *Orchis morio*, *Orchis mascula*, *Dactylorhiza fuchsii*, *Platanthera bifolia*, *Platanthera chlorantha*. Although the data available is from limited sampling, it is clear that the grassland at this site is a good example of the habitat. The Red Data species *Ajuga pyramidalis* is common in the grassland and heath habitats.

*Description based on the 2006 Survey :*

During the 2006 survey, 6210 habitat was seen to be limited in extent. The underlying geology and soil is acidic and therefore the only calcareous influence derives from wind-blown sand. Nonetheless, 13 calcareous indicator species were recorded: *Antennaria dioica*, *Anthyllis vulneraria*, *Briza media*, *Campanula rotundifolia*, *Carex flacca*, *Daucus carota*, *Galium verum*, *Hieracium pilosella*, *Koeleria macrantha*, *Linum catharticum*, *Lotus corniculatus*, *Asperula cynanchica*, and *Sesleria albicans*. The acidic influence from the underlying substrate also produced a more heath-like element in the vegetation with species such as *Succisa pratensis*, *Agrostis capillaris*, *Pedicularis sylvatica*, *Polygala serpyllifolia*, and *Potentilla erecta* being frequent at many locations.

The 6210 habitat was seen to have a patchy distribution in the site. It is more likely to occur in the zone immediately inland from the sandy machairs, where wind-blown sand is deposited in the organic soil of the land which occurs at a more elevated situation than the coastal plains.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed by T. Curtis in 1990 during the rare plant survey and subsequently during the 1995 NHA Survey. A MPSU management plan is available for this site.

## SITE MONITORING AND MANAGEMENT UNITS

Four Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that Structures and Functions were assessed at all 4 Monitoring Stops. Table 1a shows that all 4 Stops passed the assessment of Structures and Functions, resulting in an overall Pass for the assessment of this attribute at Slyne Head.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	3
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	4
<b>Result of Assessment:</b>	Pass

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Sheet 1 of 2
Stop 02	2	Pass	Structures and Functions	Sheet 2 of 2
Stop 03	3	Pass	Structures and Functions	Sheet 2 of 2
Stop 04	3	Pass	Structures and Functions	Sheet 2 of 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 3 separate management units.

Stop 1 is located in Management Unit 1. This area is characterised by gently rising rocky ground which overlooks the lower-lying machair plain at the edge of the shoreline. Grazing pressures are moderate to light and ample evidence of rabbit grazing was noted.

Stop 2 is located in Management Unit 2. This area is located close to the edge of a roadway and cattle were grazing on the day of survey. The Stop is located on elevated ground overlooking a flat machair plain.

Stops 3 and 4 are located in Management Unit 3 in an area directly north of Aillebrack Lough. Most of the fields in this general area are unimproved or semi-improved and low rocky walls act as field boundaries. Grazing pressures are light to medium.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

In general, while a number of pressures are impacting on the coastal machair habitats and some of the heath habitats, there do not appear to be too many significant threats impacting on the 6210 habitat at this site. Agricultural improvement (103) was noted at only 2 locations, Notes 8 and 17, and these involved some light fertiliser application (120). No large scale reseeding, coupled with fertiliser application, was noted.

Grazing (140) by cattle and sheep was noted to occur over most of the site but pressures do not appear to be either excessive or insufficient to maintain the 6210 habitats surveyed. Rabbits were also seen as major contributors to the grazing regimes, particularly in the more coastal locations of Stops 1 and 2. The issue of scrub or Bracken encroachment (954) was also noted as a potential threat at only one location, Stop 4, where Bracken was seen to occupy 5% both within and outside the Stop.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
103	Cultivation: agricultural improvement	-1	C
120	Fertilisation	-1	C
140	Grazing	1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Current management in the area of the 4 Stops appears to be sufficient to maintain the quality of the grassland habitat which was recorded at these locations. Grazing pressures should be closely monitored and the application of fertilisers should be managed so as not to lose habitat extent or quality. Where Bracken was noted (Stop 4), the spread of this species should be carefully monitored and grazing levels adjusted to manage this species.

The distribution of the habitat is patchy on this site, and due to time constraints during the field survey, not all possible areas of occurrence could be visited. Therefore, any changes in management practices anywhere on the site, particularly in the zone inland from the sandy machair plains, should be assessed to determine its impact on any currently undetected 6210 grassland.

## CONSERVATION STATUS

### ***Extent:***

The exact area of the habitat type 6210 within this site is unknown as it has not been mapped and is not accurately mapable from aerial photographs. This is because of its patchy distribution as it forms a mosaic with, and is not easily distinguishable from, heath and machair.

Thus, the area of the habitat can only be crudely estimated. The SAC in total extends across 4028ha, of which ca. 1450ha encompasses the water at Mannin Bay. The extent of habitat 6210 is estimated to occur over a maximum of 5% of the remainder of the SAC (2578ha), which is equal to approximately 130ha.

The NATURA 2000 Explanatory Notes acknowledge that the habitat is not mapable from aerial photographs and crudely estimate that it occurs across up to 2% (or 80ha) of the SAC. The NATURA 2000 Notes also acknowledge that parts of the SAC "are semi-improved for pasture, though seldom intensively". Thus as no large areas of intensively improved grasslands were noted during the current survey, it is surmised that there has been no loss in extent of the habitat at Slyne Head. The difference in area estimates is likely to be due partly to the crudeness of the estimates and partly to the increased level of fieldwork carried out at the site during the current project. It should be realised, however, that the calcareous grassland here is not the typical habitat 6210 type. The underlying geology is not calcareous and the habitat occurs only on windblown sand, in the zone immediately inland from the sandy machairs. In this zone, wind-blown sand is deposited on the more organic soil of the land which occurs at a more elevated situation than the coastal plains. Further inland, wet and dry heath with wet grassland habitat predominates and calcareous grassland was not noted as occurring.

The extent of habitat 6210 within the site is described, as Favourable as there would not appear to be any loss of extent within the site since designation.

### ***Structure and Functions:***

All 4 Monitoring Stops passed the assessment of the Structures and Functions. Herb content was high at all Stops, ranging from 50% at Stop 2 to 80% at Stop 3. The influence of the windblown sand on the acid substrate was evident in that 3 Stops recorded the target number of 7 indicator species, with Stop 1 recording 8 species. A heath-like element in the vegetation was distinctly apparent in some locations, but this is understandable given the acidic substrate. No negative indicator species were noted at any of the Stops while Bracken was recorded in small quantities at only one location, Stop 4.

Moderate to tight grazing pressures were suggested at each Stop, with sward height ranging from 5 to 15cm and with very little plant litter being recorded (no more than 5% cover). In general, the overall impression was that good calcareous grassland occurred. The timing of the survey late in the season is more than likely the reason why no orchids were recorded.

Due to the fact that all four Stops passed the assessment, the Structures and Functions are described as being Favourable.

**Future Prospects:**

The distribution of the 6210 habitat at this site is scattered in the zone immediately inland from the sandy machairs where wind-blown sand contributes a calcareous influence to the normally acidic substrate. The 6210 habitat was seen to occur where the land begins to rise up as rocky hillocks away from the coastal plains.

Management of such a scattered habitat is normally problematic. However, it was seen during the field survey that potential threats from agricultural improvements or from encroachment of scrub or Bracken were not significantly high. The condition of the surveyed grassland was seen to be good, with all 4 Stops passing the assessment of Structures and Functions. In addition, grazing pressures were also seen to be suitable for the continued maintenance of habitat quality.

The Future Prospects for the 6210 habitat at this site can therefore be described as Favourable. This positive outlook would be threatened, however, if current management practices were to change. Any disturbance to the adjacent machair plains could also negatively impact on the 6210 habitat and this situation should be avoided.

**Conservation Assessment:**

Previous to the current survey, there was little data available on the 6210 habitat occurring at this site. The 1995 NHA survey refers to several areas of 'rough' or 'coastal grassland' and while a Rare Plant record for *Orchis morio* was recorded in the general area of Stop 1, the precise location could not be refound. Target areas for survey were thus chosen using relevant NHA notes and an examination of OSI 2000 aerial photographs to estimate potential areas of occurrence.

The distribution of the 6210 habitat was seen to be scattered in the zone immediately inland from the sandy machair plains, where the land rises gently in rocky hillocks to overlook the low-lying coastal areas. These areas are significantly affected by wind-blown sand which is deposited on the acidic substrates, thereby introducing a calcareous influence to the underlying soils. The result is pockets of calcareous grassland occurring in a mosaic with more acidic heath and wet grassland habitats.

The condition of the surveyed 6210 areas was seen to be good, with the Structures and Functions being described as Favourable. The Future Prospects for the site are also seen to be Favourable. Current management practices appear to be sustaining the pockets of wind-blown grassland and agricultural improvement does not appear to pose a significant threat.

For these reasons, the overall Conservation Assessment for the 6210 habitat at this site are described as being Favourable.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Favourable</i>
Future Prospects			



Structure and Function			
Extent			

## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

Note 1:

This is a coastal grassland habitat (machair) occurring on wind-blown sand, located on a flat area of coastline close to the sea. The area is accessible by a small roadway and on the day of survey, a number of locals were walking or practicing golf swings across the flat plain.

The sandy plain rises gently away from the sea towards the nearby roadway. Rocky outcrops occur as the land rises. Sheep and rabbit droppings are scattered throughout. Vegetation is low, no more than 3cm high.

*Cynosuros cristatus* dominates the grass component of the vegetation on the machair plain. *Festuca rubra* and *Sesleria albicans* also occur. The herb component included 7 calcareous indicators *Lotus corniculatus* (R), *Galium verum* (O), *Hieracium pilosella* (R), *Linum catharticum* (O), *Asperula cynanchica* (R), *Carex flacca* (O), *Sesleria albicans* (R). Other species occurring include *Thymus praecox* (F), *Plantago lanceolata* (O), *Centaureum erythraea* (R), *Plantago coronopus* (R), *Trifolium repens* (O), and the orchid *Spiranthes spiralis* (R).

Around the rocky outcrops closer to the roadway, *Lolium perenne* (R), *Leucanthemum vulgare* (R), and *Achillea millefolium* (R) also occur.

Note 2:

This area is similar to that described in Note 1 except that here, further away from the shoreline, there is a higher organic content in the sandy soil. Species recorded include 8 indicator species *Sesleria albicans* (O), *Linum catharticum* (O), *Lotus corniculatus* (O), *Briza media* (R), *Carex flacca* (O), *Asperula cynanchica* (R), *Hieracium pilosella* (R), and *Koeleria macrantha* (R). Additional species include *Cynosuros cristatus* (F), *Plantago lanceolata* (F), *Trifolium repens* (O), *Achillea millefolium* (O), *Prunella vulgaris* (R), *Cerastium fontanum* (R), and *Leontodon autumnalis* (R).

Note 3:

The area south of the road is a wet heath on rocky granite outcrops. North of the road, the soil has a higher sand component and supports a drier, more coastal grassland vegetation.

## Note 4:

This is a coastal grassland habitat with some heath elements located close to the shore. Species recorded include the calcareous indicators *Carex flacca*, *Lotus corniculatus*, *Galium verum*, *Primula* spp., and *Anthyllis vulneraria*. Also occurring are *Festuca rubra*, *Festuca ovina*, *Cynosuros cristatus*, *Erica cinerea*, *Armeria maritima*, *Plantago maritima*, *Plantago lanceolata*, *Plantago coronopus*, *Succisa pratensis*, *Prunella vulgaris*, *Thymus praecox*, *Leucanthemum vulgare*, *Centaureum erythraea*, *Leontodon taraxacoides*, *Ranunculus repens*, *Rumex acetosa*, and *Geranium molle*.

This area has outcropping rock and vegetation patterns similar to that described in Note 3. *Rosa pimpinellifolia* also occurs here. Current grazing is evident in this field.

See photos 25 and 26.

## Note 5:

A mosaic of wet and dry heath is the dominant vegetation type in this area. Wind-blown sand is evident in some places.

## Note 6:

Machair extends northwards from this roadway. The rising ground to the south supports a mosaic of wet and dry heath on outcropping granite.

## Note 7:

This is a dry, semi-improved grassland dominated by *Cynosuros cristatus* with some *Dactylis glomerata*. The soil contains a minor proportion of wind-blown sand.

## Note 8:

This is an agriculturally improved field on soil which has a minor proportion of wind-blown sand.

## Note 9:

Wet grassland occurs in low-lying hollows.

## Note 10:

This area has a mosaic of wet and dry heath on outcropping granite.

## Note 11:

This is a heath habitat dominated by *Erica cinerea* and *Molinia caerulea*.

## Note 12:

This note describes rocky outcrops of granite in an area of wind-blown sand. The area is currently being grazed by cattle and there are also frequent rabbit droppings scattered across the rock outcrops. With the increased calcareous influence from the wind-blown sand, 7 indicator species occur around the edges of the rock. These include *Koeleria macrantha* (R), *Linum catharticum* (F), *Carex flacca* (F), *Anthyllis vulneraria* (O), *Lotus corniculatus* (F), *Daucus carota* (R), and *Galium verum* (R). Additional species include *Cynosuros cristatus* (F), *Holcus lanatus* (R), *Festuca rubra* (O), *Thymus praecox* (F), *Leucanthemum vulgare* (O), *Plantago lanceolata* (O), *Succisa pratensis* (R), *Prunella vulgaris* (R), *Euphrasia* spp. (O), *Centaureum erythraea* (O), *Bellis perennis* (R), *Trifolium repens* (O), *Cerastium fontanum* (R), *Centaurea nigra* (R), and *Leontodon taraxacoides* (R).

Between the rocky outcrops, low-lying areas are damper with *Filipendula ulmaria*, *Potentilla anserina*, *Ranunculus acris*, *Ranunculus repens*, *Succisa pratensis*, *Juncus articulatus*, *Iris pseudacorus*, *Prunella vulgaris*, *Agrimonia eupatoria*, *Ranunculus flammula*, *Angelica sylvestris*, and *Hydrocotyle vulgaris*. A *Phragmites* reed bed occurs at the interface between the machair and the rockier landscape where this note describes.

See photo 23.

## Note 13:

This vegetation is similar in nature to that described in Stop 3 i.e. outcropping granite rock with calcareous indicator species occurring where wind-blown sand accumulates around rocks.

## Note 14:

This is an area of rocky granite outcrops north of Aillebrack Lough. The deeper soils between the outcrops have been semi-improved. These grassland patches are dominated mainly by *Centaurea nigra* with some *Heracleum sphondylium*, *Cirsium arvense*, *Succisa pratensis*, and *Agrimonia eupatoria*. In damper areas, *Filipendula ulmaria* occurs.

Around the base of some of the rocks, shallow organic soil, which contains wind-blown sand, supports some of the calcareous indicator species such as *Daucus carota* (R), *Lotus corniculatus* (O), *Galium verum* (R), *Carex flacca* (O), *Danthonia decumbens* (R), *Hieracium pilosella* (O), *Linum catharticum* (R), and *Anthyllis vulneraria* (O). Other species occurring include *Leucanthemum vulgare* (R), *Dactylis glomerata* (O), *Holcus lanatus* (O), *Cynosuros cristatus* (O), *Festuca rubra* (O), *Agrostis stolonifera* (R), *Plantago lanceolata* (F), *Prunella vulgaris* (O), *Achillea millefolium* (O), *Trifolium repens* (O), *Plantago maritima* (R), and *Leontodon autumnalis* (R).

Adjacent fields contain similar habitats and vegetation but with the addition of *Ulex gallii*, *Erica cinerea*, *Calluna vulgaris*, and *Molinia caerulea*.

See photo 12.

## Note 15:

The outcropping rock in this area has been covered by a heath-type vegetation which includes species such as *Potentilla erecta* (F), *Erica cinerea* (O), *Agrostis capillaris* (O), and *Calluna vulgaris* (O). Other species occurring include *Cynosuros cristatus* (O), *Festuca ovina* (O), *Festuca rubra* (O), *Lotus corniculatus* (O), *Anthyllis vulneraria* (O), *Carex flacca* (R), *Trifolium pratense* (O), *Holcus lanatus* (O), *Euphrasia* spp. (O), *Thymus praecox* (R), and *Polygala serpyllifolia* (R).

## Note 16:

This is a grass-dominated, heathy area with outcropping rock. The vegetation is dominated by *Cynosuros cristatus* with some *Dactylis glomerata* and *Festuca rubra*. Herbs present include *Lotus corniculatus*, *Daucus carota*, *Leucanthemum vulgare*, *Plantago lanceolata*, *Succisa pratensis*, *Trifolium pratense*, *Taraxacum* agg., *Salix repens*, *Ulex*, *Erica cinerea*, *Prunella vulgaris*, and *Lathyrus pratensis*. In more low-lying areas where soil is damp, *Filipendula ulmaria* and *Iris pseudacorus* occur. See photos 27 and 28.

## Note 17:

An effort has been made to improve some of the fields in this area.

## Note 18:

In this area, a mosaic of heath and wet grassland covers the hilly landscape.

## Note 19:

This semi-improved grassland area is located on the peninsula, behind a row of holiday homes. The grassland is more of a mesotrophic type with patches of *Erica cinerea* heath occurring. Overall, the sward here appears improved to a degree and is currently grazed. Where granite rock outcrops, the thin soil supports a more species-rich vegetation. Across this area, the species recorded include *Cynosuros cristatus*, *Festuca rubra*, *Holcus lanatus*, *Gentianella campestris*, *Thymus praecox*, *Carex flacca*, *Lotus corniculatus*, *Hieracium pilosella*, *Galium verum*, *Daucus carota*, *Agrostis* spp., *Plantago lanceolata*, *Trifolium repens*, *Senecio jacobaea*, *Ranunculus repens*, *Euphrasia* spp., *Rumex acetosa*, *Cirsium arvense*, and *Cerastium fontanum*. See photo 36 and 37..

## Note 20:

The grassland on the seaward side of this road is a sandy coastal type, not considered to be 6210 habitat. Patches of wet grassland also occur.

## Note 21:

The main habitat type in this region of the site is wet heath on rocky outcropping granite. Wet grassland occurs between the rocky outcrops.

## Note 22:

An area of burnt and disturbed heath was noticed in this area.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Stop is located close to the sandy plains described in Notes 1 and 2. The ground rises steadily from the roadway and numerous rocky outcrops of granite protrude. The Stop is placed on rising ground where the organic content of the soil is seen to be higher than on the sandy plain and where the sand component is deemed to be low. Soil is shallow where the rocks are close to the surface. The vegetation is low (5cm) and the area shows evidence of grazing by rabbits.

Herb content within the Stop is good (60%) and the calcareous influence of the wind-blown sand is reflected in the occurrence of 8 indicator species. No negative indicator species were recorded and there is no *Pteridium aquilinum* or scrub species present. On this basis, this Stop is deemed to 'Pass' its assessment of Structures and Functions.

Other species recorded within the Stop include *Cynosuros cristatus*, *Festuca rubra*, *Agrostis stolonifera*, *Polygala serpyllifolia*, *Leucanthemum vulgare*, *Thymus praecox*, *Plantago lanceolata*, *Plantago coronopus*, *Trifolium repens*, *Bellis perennis*, *Centaureum erythraea*, *Anagallis tenella*, and *Prunella vulgaris* (see releve 2 for full details). Outside the Stop, *Potentilla anserina* occurs in damp areas between outcropping crops.

**Monitoring Stop 2:**

The outflow from Truska Lough to the east of Stop 2 meanders and filters through this area of hilly ground. Lower-lying areas on this side of the road are damp with wet grassland vegetation. However, wherever the ground rises above the moisture levels, drier calcareous grassland occurs in small patches. Stop 2 is located on one of these low, rocky, hillocks. The lower plain to the north-west, is a low-lying machair habitat which continues to the sea. The area is currently being grazed by cattle and there are also frequent rabbit droppings scattered across the rock outcrops.

With the increased calcareous influence from the wind-blown sand, 7 indicator species occur around the edges of the rock. Herb cover is also good (50%) and no negative indicators or bracken/scrub species occur. These factors together result in a 'Pass' for Structures and Functions at this Stop.

Additional species within the Stop include *Cynosuros cristatus* (O), *Holcus lanatus* (R), *Festuca rubra* (O), *Thymus praecox* (F), *Leucanthemum vulgare* (O), *Plantago lanceolata* (O), *Succisa pratensis* (R), *Prunella vulgaris* (R), *Euphrasia* spp. (O), *Centaurea erythraea* (O), *Bellis perennis* (R), *Trifolium repens* (O), *Cerastium fontanum* (R), *Centaurea nigra* (R), and *Leontodon taraxacoides* (R).

Between the rocky outcrops, low-lying areas are damper with *Filipendula ulmaria*, *Potentilla anserina*, *Ranunculus acris*, *Ranunculus repens*, *Succisa pratensis*, *Juncus articulatus*, *Iris pseudacorus*, *Prunella vulgaris*, *Agrimonia eupatoria*, *Ranunculus flammula*, *Angelica sylvestris*, and *Hydrocotyle vulgaris*. A *Phragmites* reed bed occurs at the interface between the machair and the rockier landscape where this note describes.

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**Monitoring Stop 3:**

Stop 3 and Stop 4 are located within the same Management Unit in an area directly north of Aillebrack Lough. Most of the fields in this general area are unimproved or semi-improved and low rocky walls act as field boundaries. Grazing pressures are light to medium. The ground is rocky and hilly with damp grassland or wetland in more low-lying areas.

Where rock outcrops, the thin soil has some wind-blown sand. This encourages the presence of calcareous species and within the Stop, 7 indicator species were recorded. Herb cover is high (80%) and no negative indicators or bracken/scrub species occur within the Stop. These factors together result in a 'Pass' at this Stop for Structures and Functions.

Also occurring within the Stop are additional species such as *Festuca rubra*, *Festuca ovina*, *Holcus lanatus*, *Dactylis glomerata*, *Danthonia decumbens*, *Succisa pratensis*, *Thymus praecox*, *Leucanthemum vulgare*, *Rhinanthus minor*, *Trifolium repens*, *Potentilla erecta*, *Plantago lanceolata*, *Prunella vulgaris*, *Centaurea nigra*, and *Gentianella campestris* (see releve 4 for full details). In the vicinity, *Ulex gallii* is scattered with *Erica cinerea* with some rocky outcrops being almost fully vegetated with these species.

Damper areas between the hillocks support a wet grassland vegetation which includes *Centaurea nigra*, *Filipendula ulmaria*, and *Rubus fruticosus* agg.

**Monitoring Stop 4:**

Stop 4 is located on an area of outcropping granite rock where the thin soil contains a degree of wind-blown sand. The vegetation contains calcareous indicators around the rocks but there is a distinct heathy element to the flora. There is some evidence of light grazing but no recent signs.

Within the Stop, herb content is high (60%) and 7 indicator species were recorded. No negative indicators and very little bracken/scrub occur within the Stop. These factors together result in a 'Pass' for Structures and Functions at this Stop.

In addition to the 7 indicators, 15 additional species were recorded which included *Festuca rubra*, *Cynosurus cristatus*, *Succisa pratensis*, *Danthonia decumbens*, *Plantago lanceolata*, *Rhinanthus minor*, *Potentilla erecta*, *Thymus praecox*, *Euphrasia* spp., *Prunella vulgaris*, *Viola* spp., and *Gentianella campestris*, *Ulex galii* and *Erica cinerea* are scattered.

Outside the Stop, *Rosa pimpinellifolia* is frequent. Other species also occurring in the vicinity include *Centaurea nigra*, *Leucanthemum vulgare*, *Solidago virgaurea*, *Daucus carota*, *Molinia caerulea*, *Polygala serpyllifolia*, and *Ranunculus repens*.



**Glenloughaun Esker****SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 26/06/2006

**Total Site Area (Ha):** 5.63

**Area of Priority Grassland (N2000) (Ha):** 7.

**Area of Priority Grassland 2006 (Ha)\*:** 1.0

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:** Galway

**Discovery Sheet No:** 46

**6" Sheets:** GA087.

**Digital Aerial Photos (Tile Nos.):**  
O3358-d.

**Other Aerial Photographs:**  
None.

**SITE DESIGNATIONS**

**SAC Site Code:**  
002213

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Situated approximately 5 km south-west of Ballinasloe, this small site comprises a fine example of dry, mostly unimproved, orchid-rich calcareous grassland on an esker ridge. This type of grassland is listed on Annex I of the EU Habitats Directive. A feature of the site is the somewhat unusual mixture of calcicole and calcifuge species. Leaching of the base-rich substrate of the esker is likely to have given rise to soil conditions suitable for colonisation by calcifuge plants.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Species typical of dry calcareous grassland which are present include Quaking Grass (*Briza media*), Bird's-foot Trefoil (*Lotus corniculatus*), Yellow-wort (*Blackstonia perfoliata*), Eyebright (*Euphrasia* sp.), Wild Thyme (*Thymus praecox*), Cowslip (*Primula veris*), Common Centaury (*Centaureum erythraea*), Knapweed (*Centaurea nigra*), Kidney Vetch (*Anthyllis vulneraria*), Fairy Flax (*Linum catharticum*) and Spring Sedge (*Carex caryophylla*).

The calcifuge component is represented by such species as Ling (*Calluna vulgaris*), Tormentil (*Potentilla erecta*), Devil's-bit Scabious (*Succisa vulgaris*), Heath Milkwort (*Polygala serpyllifolia*), Heath Grass (*Danthonia decumbens*) and Lousewort (*Pedicularis sylvatica*).

Of particular interest is the occurrence of a large population of Green-winged Orchid (*Orchis morio*), a scarce orchid of calcareous grassland which is listed in the Red Data Book. Early Purple Orchid (*Orchis mascula*) also occurs.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Dry unimproved calcareous grassland is the main habitat at this small esker site. A feature of the site is the unusual mixture of calcicole and calcifuge species. Species typical of dry grassland which are present include *Briza media*, *Lotus corniculatus*, *Blackstonia perfoliata*, *Euphrasia* sp., *Thymus praecox*, *Primula veris*, *Centaureum erythraea*, *Centaurea nigra*, *Anthyllis vulneraria*, *Linum catharticum*, *Carex caryophylla*, *Gentianella campestris* and possibly *Centaurea scabiosa*. Several of these species are diagnostic species of the habitat according to the Manual. The orchid interest lies in the occurrence of a large population of *Orchis morio* (60+ spikes). *Orchis mascula* was also recorded.

As already noted, a feature of this site is the mixture of calcicole and calcifuge species, with species such as *Calluna vulgaris*, *Potentilla erecta*, *Succisa vulgaris*, *Polygala serpyllifolia*, *Danthonia decumbens* and *Pedicularis sylvatica* occurring amongst the more typical species of dry grassland. Leaching of the base-rich substrate of the esker is likely to have given rise to soil conditions suitable for colonisation by calcifuge species.

While parts of the site have been partly improved through fertilisation resulting in

lower plant diversity, overall the grassland has an excellent species diversity and a very significant population of the scarce *Orchis morio* (Red Data species). It is very typical of the habitat and is probably one of the best remaining examples in the country.

*Description based on the 2006 Survey :*

During the 2006 survey, the grassland at Glenloughaun Esker was seen to be restricted mainly to the upper slopes of the esker. The lower slopes and parts of the middle slopes were seen to be affected by the encroachment of bracken. Scrub encroachment was seen to be less extensive than bracken encroachment. Although some 6210 grassland has been lost to the spread of scrub species, this issue needs to be monitored.

Where open calcareous grassland still occurs, the quality of this habitat is quite good. A good range of indicator species was recorded which included *Avenula pubescens*, *Briza media*, *Carex caryophyllea*, *Carex flacca*, *Antennaria dioica*, *Anthyllis vulneraria*, *Carlina vulgaris*, *Conopodium majus*, *Daucus carota*, *Galium verum*, *Hieracium pilosella*, *Linum catharticum*, *Lotus corniculatus*, *Ranunculus bulbosus*, and *Sanguisorba minor*. A range of other herbs and grasses were also recorded including *Plantago lanceolata*, *Anthoxanthum odoratum*, *Succisa pratensis*, *Potentilla erecta*, *Carex pulicaris*, *Festuca rubra*, *Prunella vulgaris*, *Achillea millefolium*, *Hypericum pulchrum*, *Hypochoeris radicata*, *Leucanthemum vulgare*, *Rhinanthus minor*, *Thymus praecox*, and *Polygala serpyllifolia*. A heath-like element occurred in places with short *Calluna vulgaris* (5-10cm high), frequent *Succisa pratensis*, and occasional *Potentilla erecta*, *Carex pulicaris*, and *Polygala serpyllifolia*.

The orchid-richness of the calcareous grassland at Glenloughaun is of particular note. During the survey, frequent spikes of *Platanthera chlorantha* and *Dactylorhiza fuchsii* were distributed throughout most of the site, even where bracken encroachment was occurring. Information from the local Conservation Ranger also indicated that orchid counts recorded in May of 2006 show that good orchid populations occur on the esker. Over 30 spikes of *Orchis morio* were recorded this year in the northernmost field of the esker, close to the summit of the slope. Frequent spikes of *Orchis mascula* were also recorded at that time.

The smaller, eastern polygon of the SAC shows some change in status since the 1997 survey. The application of fertiliser has changed the species composition recorded at that time (see NHA Note 6) to one more suggestive of semi-improved conditions (see Stop 8, 2006 survey). Although a number of calcareous indicator species remain, these species have a wider ecological tolerance than most of the more typical 6210 indicator species.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was visited by Colman O'Criodan and Jim Moore in 1997 when *Orchis morio* was recorded in good populations from the northern part of the esker. This data forms part of the Rare Plants Survey. The entire site was subsequently surveyed by Mike Wyse Jackson later in 1997 at which time the boundaries to the site were proposed and additional species were recorded.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

A summary of the results of the assessments undertaken at each of the Monitoring Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Eight Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

8 Stops were assessed during the 2006 survey and it can be seen from Table 1b that 3 of these Stops were not included in the final assessment of Structures and Functions. Stops 2, 5, and 7 were deemed to occur in areas of dense bracken, i.e. where bracken cover exceeded 50% (Fossitt, 2000). These Stops were considered instead under the assessment of Extent.

Of the remaining 5 Stops which were assessed for Structures and Functions, 3 were seen to Pass. The 2 Stops which failed the assessment did so on the basis of either excessive bracken cover with a corresponding lack of indicator species (Stop 10) or because fertiliser application had changed the species composition in the field (Stop 8).

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	4
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	2
Stop 02	1	Fail	Extent	2
Stop 03	1	Fail	Structures and Functions	2
Stop 04	2	Pass	Structures and Functions	2
Stop 05	2	Fail	Extent	2
Stop 06	3	Pass	Structures and Functions	2
Stop 07	3	Fail	Extent	2
Stop 08	4	Fail	Structures and Functions	2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 4 separate management units.

Stops 1, 2, and 3 are assigned to Management Unit 1. The grassland habitat covered by these 3 Stops are similar in species composition, bracken and scrub encroachment, and grazing management practices. Horses have been grazing this area this year. This unit is also separated from the adjacent Management Unit 2 by an impenetrable hedgerow, so access by grazing animals to the next unit is difficult.

Stops 4 and 5 are placed in Management Unit 2. This represents a single large field which is bounded to the east by a hedgerow at the top of the esker slope and is bounded by the river along the western boundary. There is open access along the river's edge to the base of the slopes and cattle appear to graze this area.

Management Unit 3 contains Stops 6 and 7. The esker here is accessed through a small gap in the hedgerow. The esker slopes are steep with shallow soil. A track runs the length of the esker to a small, disused quarry at the end of the esker.

Stop 8 is the only Stop in Management Unit 4. This unit is managed by sheep grazing and shows indications of fertiliser application over the years.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below. The activities noted on site include undergrazing (149), grazing (140), and the application of fertiliser (120).

The main threat to this site is the spread of bracken (954) across the shallow soils on the slopes of the esker. According to Fossitt (2000), the habitat category 'Dense Bracken' (HD1) occurs when bracken cover exceeds 50%. This has occurred at a number of locations on the esker such as at Stops 2, 5, and 7 and at Notes 1, 5, and 6. The spread of bracken is most likely a consequence of the reduced grazing pressures (149) which have been noted over recent years (local Conservation Ranger, pers com). Dense bracken also occurs along the boundary and adjacent to the SAC (see Note 4), acting as a source of encroachment in these areas.

Another consequence of undergrazing has been the spread of scrub species such as *Crataegus monogyna* and *Prunus spinosa*. While this spread has not occurred to the same extent as the spread of bracken, it is estimated that 0.5ha of 6210 habitat have been lost to scrub encroachment (see section on Extent below). This issue had been highlighted in the 1997 survey as a potential threat.

A degree of fertilising (120) appears to have occurred in the smaller SAC polygon to the east of the main part of the site. This polygon consists of a single field which is now semi-improved ('little-improved species-rich dry grassland' was originally described from this location in 1997). The soil is deeper than on the main SAC polygon and while some indicator species occur (see Stop 8), these species have a wider ecological amplitude than other calcareous indicators more typical of the esker slopes. The species composition in the field is also typical of more semi-improved situations.

A light level of grazing (140) was noted on the slopes of the main esker. Heavier levels occur on the grassland in the smaller polygon to the east of the esker. Overgrazing is not an issue at this site.

Outside the boundary to the SAC, in the area between the main SAC polygon and the smaller SAC polygon to the east, examination of 2000 aerial photographs indicates that hedgerow removal was taking place at that time (these hedgerows are visible on 1995 aerial photographs). During the 2006 survey, it was noted that additional lines of hedgerow immediately north and east of the smaller SAC polygon had been removed since 2000. This is clearly visible on the recently available 2006 aerial photographs. During the 2006 survey, it was noted that the area had been reseeded and fertilised (see Note 8). The trend to agriculturally improve the area surrounding the SAC, particularly the smaller polygon, poses a threat to the integrity of the site as a whole.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
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954	Biocœnotic evolution: invasion by a species	-1	A
120	Fertilisation	0	C
140	Grazing	1	C
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The main management issue at Glenloughaun Esker is insufficient grazing pressures. Horses currently graze the open area between the 2 polygons of the SAC. Information from the local Conservation Ranger indicates that these horses have been grazing parts of the northern end of the esker itself in the last 2 years, thereby slightly improving grazing pressures which had declined over the years. Sward height over most of the site at the time of surveying (26th June 2006) ranged from 20cm to 40cm, suggesting that current grazing levels remain light. Significant bracken encroachment has also occurred in the area of Note 5, where bracken currently forms dense patches. Urgent management is required in such areas to prevent further spread.

However, in addition to increasing grazing pressures, remedial action is also required to remove the bracken which has since formed dense patches on the esker slopes. The re-establishment of good calcareous grassland is likely to be successful as areas which recorded dense bracken (Stops 2 and 5 in particular) were seen to retain some indicator species (7 and 4 species respectively) and were also seen to record orchids such as *Dactylorhiza fuchsii* and *Listera ovata*.

Current levels of fertiliser application in the smaller SAC polygon to the east appear not to be heavy. Nonetheless, consistent application since the site was first described in 1997 has resulted in a change to the species composition in this field. Current records (see Stop 8) reflect a more enriched situation, with a concurrent loss of more calcareous species. Sheep graze this polygon and levels appear to be at a medium level. Much of the land surrounding this field is managed as agriculturally improved pasture. On examination of 1995, 2000, and 2006 aerial photographs, it is clear that extensive hedgerow clearance has occurred in the vicinity of this side of the SAC since 1995. Pressure to agriculturally improve the grassland in this particular polygon, isolated as it is from the main SAC habitat, must therefore be high. To prevent further loss of calcareous species from this polygon, fertiliser application levels need to be reassessed and managed accordingly. Bracken also needs urgent control measures, particularly in the lower lying area in the southern end of this field.



## CONSERVATION STATUS

### ***Extent:***

The Extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

Only one hectare of the habitat was mapped within the SAC though elements of the habitat were found amongst the areas mapped as dense bracken (1.7ha) and as semi-improved grassland (0.5ha).

The NATURA 2000 estimate for habitat 6210 at Glenloughaun SAC is 7ha (or "85% of the site"). This is likely to have been both a miscalculation and an overestimation. The entire site is currently only 5.6ha in extent and while it was larger in the past, it would appear from the NHA map of 1997 that the extent of the SAC stretched to only 7ha at the time. Thus the estimate of habitat 6210 should have been 6ha (85% of 7ha). Furthermore, the NHA notes indicate a number of areas within the site that would not have been considered as habitat 6210 at the time. These are:

1. The field (0.6ha) at the top of the esker in the north of the site, which was already "somewhat improved through fertilisation" and was included in the SAC partly because "it provides a site boundary that is both marked on the map and visible on the ground". This field has subsequently been excluded from the site.
2. An area (ca. 0.1ha) of dry broadleaved woodland with some tall Ash trees in the north of the site. Looking at the 1995 ortho-rectified aerial photos this area of woodland would appear to have already been surrounded by an area (ca. 0.2ha) of Ulex scrub at that time.
3. An area of hazel scrub where the N-S axis and E-W axis of the esker slopes meet. From analysis of the 1995 aerial photos this area is estimated as having been 0.5ha.
4. The isolated eastern lobe of the site was described as having "areas of dense bracken found at the base of the hill particularly at its southern end". These are estimated to have amounted to 0.2ha at the time of the 1995 aerial photograph.

Furthermore, areas (0.3ha) along the base of the slope in the N-S axis of the esker were described during this survey as wet grassland and it is likely that these were wet grassland in 1995 too. From analysis of the 1995 aerial photo it is apparent that areas of hedgerow and scrub emanating from hedgerow were also present at the time and are estimated to have been approximately 0.5ha in extent.

The areas described above amount to a total of 2.4ha so that a more accurate estimate for the extent of habitat 6210 when initially surveyed on Glenloughaun in 1997 would be 4.6ha. This indicates that 3.6ha (almost 80% of the original extent) of habitat 6210 has been lost in the last nine years. This has been due to:

1. Bracken encroachment. This was noted as a threat in 1997, but no large areas (apart from the south of the eastern lobe) of dense bracken were described at the time, nor are there any visible on the 1995 aerial photo (though the photo is of particularly bad quality). Considering that the current survey has mapped 1.7ha of dense bracken and comparing the aerial photos from the 2000 and the 2005 series it is clear that bracken encroachment is a major problem on the site and it is estimated that ca. 1.5ha of habitat has been lost to as a result of such encroachment in the last nine years. It should, however, be realised that this loss is not irreversible as many of the calcareous indicator species including some of the orchids are still present in amongst the dense bracken.

2. Scrub encroachment. This was also noted as a problem in 1997 and it is estimated that over 0.5ha of habitat 6210 has been lost to scrub encroachment in the last nine years. This is happening especially close to the unmanaged hedgerows and in the southernmost field along the north-south orientated axis of the esker.

3. Agricultural improvements. The field (0.2ha) in the isolated eastern polygon of the site has been fertilised since the 1997 survey with a resultant loss in many of the indicator species described from there in 1997. Furthermore, the two fields (0.8ha) directly north of Stop 06 have been excluded from the SAC and are no longer considered as habitat 6210. The field (0.2ha) below the eastern nose of the esker also shows some signs of fertiliser application giving a total of approximately 1.2ha of habitat 6210 lost to agricultural improvements since 1997.

Thus it can be estimated that the extent of habitat 6210 at Glenloughaun SAC is approximately 1ha and that this represents a decline in extent of 3.6ha (close to 80% of the original extent) since the site was first surveyed in 1997. Thus the conservation status of the extent can be considered Unfavourable - bad. The results of the next section (Structure and Functions), however, show that much of this loss in extent is reversible as many of the areas surveyed were shown to still support some calcareous indicator species.

### ***Structure and Functions:***

8 Stops were assessed during the 2006 survey. Of these, 3 Stops were not included in the final assessment of Structures and Functions. Stops 2, 5, and 7 were deemed to occur in areas of dense bracken, i.e. where bracken cover exceeded 50% (Fossitt, 2000). These Stops were considered instead under the assessment of Extent.

The Structures and Functions of 5 Stops were therefore assessed. Of these, Stops 1, 4, and 6 passed. A good range of indicator species were recorded at Stops 1 and 6, with Stop 1 recording the highest total of 12 indicators. While Stop 4 only recorded 6 indicator species, 1 short of the target number of 7, it was deemed to Pass based on the frequency of orchids within the Stop. This concession to Pass can be made when a Stop displays 'Indicators of local distinctiveness' such as a notable presence of orchids.

Stop 3 failed as bracken cover was too high at 10% and an insufficient number (5) of indicator species occurred. This Stop, however, showed a high herb content (80% cover) and it also recorded a high number of orchids (*Dactylorhiza fuchsii* was frequent and *Platanthera chlorantha* was occasional). If control mechanisms were put in place, and

given that 5 indicator species did occur, it is reasonable to assume that the grassland in this area could be successfully recovered.

The second Stop to Fail was Stop 8. When originally surveyed in 1997, this field was described in NHA Note 6 as a "Small hill with areas of both unimproved and little-improved species-rich dry grassland. Many of the species found on the rest of the esker are also found here". It was also suggested that "This area would benefit from some management to control the spread of Bracken and to limit the input of fertilizers". During the 2006 survey, it was noted that this field has been agriculturally improved via fertiliser application. The suite of species recorded now reflects a more enriched situation. While 5 indicator species were recorded, these particular species are typical of a wider ecological amplitude than the 6 calcareous indicator species originally recorded. A loss of grassland quality has occurred in this area of the site.

As only 3 of the 5 Stops which were assessed for Structures and Functions were seen to Pass, resulting in a failure rate of 40%, the Structures and Functions of the calcareous grassland at Glenloughaun Esker are described as being Unfavourable - bad.

#### ***Future Prospects:***

The most significant current management issue at Glenloughaun Esker is one of insufficient grazing. Areas of dense bracken occur, mostly along the base of the esker slopes. The initial stages of scrub and bracken encroachment is also occurring from the top of the esker slopes and from unmanaged hedgerows. As there is little current evidence to suggest that this encroachment will be controlled in the near future, the Future Prospects for the remaining open grassland areas are not good.

However, it is clear from the results of the Monitoring Stops that even where bracken cover exceeds 50% (Stops 2, and 5 in particular), there was also a good cover of herbs and a reasonable number of indicator species still occurring in the understorey. Orchids were also seen to remain in the vegetation composition. This would suggest that if the current management issue of bracken encroachment were to be addressed, the Future Prospects for the site would be seen to be good and that quality calcareous grassland could be re-established.

Information from the local Conservation Ranger states that up to 30 individual spikes of *Orchis morio* were recorded on 15th May 2006 from the field where Stop 3 was located. These orchids were noted growing close to the top of the slope. Additional records of *Dactylorhiza fuchsii*, *Orchis mascula*, and *Platanthera chlorantha* collected by the Conservation Ranger indicate that orchid populations at Glenloughaun are in a healthy state.

However, agricultural improvement in the form of fertiliser application has reduced the quality of the grassland in the eastern polygon of this site. The Future Prospects for this particular polygon are not good as a significant level of agricultural improvement has occurred in the fields surrounding this smaller polygon (hedgerows have been removed and reseeded with *Lolium perenne* has occurred).

Due to the fact that areas of grassland have been lost to bracken encroachment (resulting in a loss in Extent) and that the assessment of the grassland's current Structures and Functions were seen to Fail because of current encroachment issues mainly, the overall Future Prospects for the 6210 habitat within the site are described as being Unfavourable. However, as much of the site is still considered to be orchid-rich, much of the grassland could be recovered if immediate management protocols were put in place, the Structures and Functions can be fully described as being Unfavourable - inadequate.

### **Conservation Assessment:**

Glenloughaun Esker has seen an estimated loss of 6210 habitat of 3.6ha, or 80% of the estimated original extent. This loss is mainly attributed to bracken encroachment (1.5ha), with additional losses due to agricultural improvement (0.2ha) and scrub encroachment (0.5ha). The spread of bracken and scrub is more than likely a direct result of insufficient grazing pressures.

Of the 6210 habitat estimated to remain on site, this is concentrated mainly on the upper and middle slopes of the main esker. The quality of this open grassland is seen to be relatively good, with a representative range of calcareous indicator species occurring. The orchid-rich nature of the esker is notable, with good populations of *Platanthera chlorantha*, *Dactylorhiza fuchsii*, *Orchis mascula*, *Listera ovata*, and the notable species, *Orchis morio*, all being recorded on site this year. Even in areas of bracken encroachment, orchids and indicator species generally remain, albeit in smaller percentages. It is reasonable to expect, therefore, that good quality 6210 habitat could be re-established if immediate control measures were to be put in place.

However, the overall Conservation Assessment of the site is described as being Unfavourable - bad (see Table 3). This is due mainly to the loss in Extent of habitat (Unfavourable - bad), the failure of Structures and Functions because of bracken encroachment (Unfavourable - bad), and the Unfavourable - inadequate assessment of the site's Future Prospects.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
	Future Prospects	Structure and Function	
		Extent	<i>Unfavourable - bad</i>

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is the access point to the esker. 5 horses were grazing in the vicinity outside the SAC on the day of survey. Access onto the esker is possible for the horses. The Local Conservation Ranger indicated that while horses had been grazing the esker this year, grazing pressures had been light in recent years.

The sides of the esker in this area are steep and current grazing is light. Large patches of *Pteridium aquilinum* occur across the slope and only small areas of open grassland remain. At the base of the slope, bracken is dense and scrub is spreading from the hedgerow. Wherever open patches occur, *Dactylorhiza fuchsii* is abundant. Amongst the bracken, species such as *Anthoxanthum odoratum*, *Potentilla erecta*, *Succisa pratensis*, *Lotus corniculatus*, *Plantago lanceolata*, *Hypochoeris radicata*, and *Prunella vulgaris* occur.

**Note 2:**

The vegetation at the base of the esker is representative of a damp or wet grassland on a deeper soil. Species such as *Juncus effusus*, *Juncus bulbosus*, *Filipendula ulmaria*, *Rumex obtusifolius*, *Heracleum sphondylium*, *Ranunculus repens*, *Cirsium arvense*, *Cirsium palustre*, and *Anthoxanthum odoratum* occur. Cattle trails traverse this area, tracking up across the sides of the esker.

**Note 3:**

This note refers to the area at the top of the esker slopes. Overall, the soil and vegetation is disturbed to a minor degree but one small area of excavation occurs which is 2m X 1m in size. This disturbance reveals the sandy soil of the esker. Ground cover is still good across the slopes however, with indicator species such as *Briza media*, *Linum catharticum*, *Galium verum*, *Lotus corniculatus*, *Hieracium pilosella*, *Koeleria macrantha*, *Ranunculus bulbosus* occurring. Orchids are also present, including *Listera ovata*, and frequent *Dactylorhiza fuchsii*.

**Note 4:**

This note is located just outside the boundary of the SAC. It is recorded so as to indicate the degree to which bracken acts as a source of encroachment from the area adjacent to the SAC. The area of this Note is located on a low-lying hillock which is mainly dominated by bracken. Between the bracken, calcareous indicator species remaining for the present include *Galium verum*, *Linum catharticum*, *Hieracium pilosella*, *Ranunculus bulbosus*, *Briza media*, and *Lotus corniculatus*. Additional species occurring include *Anthoxanthum odoratum*, *Dactylis glomerata*, *Holcus lanatus*, *Bellis perennis*, *Plantago lanceolata*, *Polygala serpyllifolia*, and *Succisa pratensis*. *Dactylorhiza fuchsii* also occurs amongst the bracken.

## Note 5:

Bracken encroachment in this field is a serious issue, approaching 70% cover. Management is urgently required. The sides of the esker are wide and slope down to the edge of a small river. Calcareous indicators occur on the slopes and these include *Avenula pubescens*, *Briza media*, *Lotus corniculatus*, *Ranunculus bulbosus*, *Linum catharticum*, and *Galium verum*. Also present across the slopes are *Cynosurus cristatus*, *Festuca rubra*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Centaurea nigra*, *Succisa pratensis* and *Carex pulicaris*. Oak seedlings are also scattered throughout.

On the flatter bases of the slopes where moisture and nutrients have accumulated, *Rumex acetosa* dominates with *Ranunculus acris*, *Centaurea nigra*, and *Cirsium palustre*. Also occurring are *Holcus lanatus*, *Juncus effusus*, and *Trifolium pratense*. *Dactylorhiza fuchsii* is scattered along these low-lying areas.

## Note 6:

Further eastwards along the esker from Stop 6, the soil and the surface vegetation cover is more stable. A track runs the length of the esker, just below the summit. Towards the nose of the esker, where Stop 7 is located, bracken becomes more frequent in the area below the track. Above the track in this area, soil becomes thin and wide patches of *Anthoxanthum odoratum* and *Anthyllis vulneraria* occur. Grasses appear to dominate the vegetation in this area and no management or grazing appears to occur.

## Note 7:

This note is located outside the SAC boundary. It is a semi-improved field with grasses dominated by *Holcus lanatus*, *Anthoxanthum odoratum*, *Dactylis glomerata*, and *Cynosurus cristatus*. Herbs present include *Rumex acetosa*, *Ranunculus repens*, *Agrimonia eupatoria*, *Cirsium arvense*, *Trifolium repens*, *Centaurea nigra*, *Plantago lanceolata*, *Prunella vulgaris*, and *Cerastium fontanum*. *Dactylorhiza fuchsii* is scattered throughout.

## Note 8:

This field has been reseeded with *Lolium perenne*. Also occurring are *Holcus lanatus*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Juncus effusus*, *Rumex acetosa*, *Cirsium palustre*, and *Trifolium repens*.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

Stop 1 is located in an open area of esker grassland on the west-facing slope. The slope in this area is gradual to steep and there is very little evidence of current grazing. Occasional bare patches of soil occur but it is not a widespread occurrence. Bracken is encroaching upslope from the base of the esker but does not yet occur within the area of the Stop location. The Stop is positioned approximately 5m from the hedge line at the top of the esker and approximately 2m from the bracken at the base of the slope.

The vegetation cover within the Stop is good with herbs occupying 60% of ground cover. 12 indicator species were recorded with the orchid *Platanthera chlorantha* also occurring. No negative indicator species or scrub/Bracken was noted.

In addition to the indicator species, 13 additional species which included *Anthoxanthum odoratum*, *Festuca rubra*, *Danthonia decumbens*, *Hypochoeris radicata*, *Polygala serpyllifolia*, *Plantago lanceolata*, *Potentilla erecta*, *Trifolium repens*, *Achillea millefolium*, *Carex pulicaris*, *Prunella vulgaris*, *Thymus praecox*, *Hypericum pulchrum*, and *Rhinanthus minor* (see relevé 1 for details).

Outside the area of the Stop, the orchids *Platanthera chlorantha* and *Dactylorhiza fuchsii* are occasional with additional species such as *Cynosurus cristatus*, *Holcus lanatus*, *Dactylis glomerata*, *Centaurea nigra*, *Veronica chamaedrys*, *Euphrasia* spp., *Leucanthemum vulgare*, and *Agrimonia eupatoria*. Seedlings of *Crataegus monogyna* and *Prunus spinosa* are scattered throughout.

This Stop is deemed to 'Pass' the assessment of its Structures and Functions.

**Monitoring Stop 2:**

This Stop is located in an area of serious bracken encroachment on the west-facing slopes of the esker. In a 2m x 2m area, bracken occupied 50% cover. In a larger area of 5m x 5m, cover was slightly higher, up to 60%. Urgent management of this species is required here. Small patches of open vegetation remain but the overall impression is that these slopes are dominated by bracken.

Within the Stop, herb cover is low, just reaching the 40% target set for this attribute. While the target number of 7 indicator species were recorded, unlike other slopes in this site, no orchids were noted either within the Stop or in its immediate vicinity. Sward height was high at 30cm.

Additional species within the Stop include *Festuca rubra*, *Cynosurus cristatus*, *Dactylis glomerata*, *Holcus lanatus*, *Plantago lanceolata*, *Potentilla erecta*, *Cerastium fontanum*, *Trifolium repens*, *Centaurea nigra*, *Luzula campestris*, *Carex pulicaris*, *Rumex acetosa*, *Prunella vulgaris*, *Alchemilla xanthochlora*, and *Succisa pratensis* (see relevé 2 for full details).

Outside the Stop, additional species occurring include *Hypochoeris radicata*, *Vicia cracca*, and on the upper slopes of the esker, *Dactylorhiza fuchsii*. Bracken is also frequent on those upper slopes.

Because this Stop is deemed to occur in an area of dense bracken, i.e. where bracken cover exceeded 50% (Fossitt, 2000), its Structures and Functions are not assessed. The Stop is considered instead under the assessment of Extent.



**Monitoring Stop 3:**

This Stop is located close to the northern boundary of the SAC, approximately 2m from the edge of the gorse-dominated hedgerow. The slope is gradual, facing west. Bracken is encroaching from the boundary hedge and from the lower slopes. The upper slopes in this area are currently free from either bracken or scrub.

Within the Stop, herbs were seen to occupy 80% cover but only 5 calcareous indicators were recorded. Of the 5 calcareous indicators recorded, *Galium verum*, *Lotus corniculatus*, *Carex flacca*, and *Briza media* contributed most cover. No negative indicator species occur but *Pteridium aquilinum* is present, occupying 10% of ground cover.

Of the additional species within the Stop, *Succisa pratensis* is most frequent, suggesting a heathy element to the soil. Also occurring are *Potentilla erecta*, *Luzula campestris*, *Carex pulicaris*, *Hypochoeris radicata*, *Prunella vulgaris*, *Festuca rubra*, and *Plantago lanceolata* (see relevé 3 for full details).

Of note in this Stop is the abundance of orchids. *Dactylorhiza fuchsii* is frequent with occasional spikes of *Platanthera chlorantha*. Vegetation height averages at 20cm and very little plant litter occurs. There may have been grazing in recent years but there is little evidence of current grazing patterns.

Due to the high cover of bracken within the Stop, this Stop is deemed to 'Fail' the assessment of its Structures and Functions.

**Monitoring Stop 4:**

Stop 4 is located in the northern end of a large field, on the gently sloping sides of the esker which face south west. A river flows along the base of this side of the esker. The Stop is placed half way down the slope in an area where bracken is seen to be encroaching from the nearby hedge line.

Within the Stop, herb cover is good (50%) and no bracken or negative indicator species were recorded. However, the target of 7 indicator species was not reached (only 6 were recorded). In this instance though the presence of 'Indicators of local distinctiveness' was taken into account. The Stop is deemed to be orchid-rich with *Platanthera chlorantha* being frequent and *Dactylorhiza fuchsii* being occasional. This results in a 'Pass' for this Stop. *Dactylorhiza fuchsii* also occurs in the immediate vicinity of the Stop. It should be noted, however, that outside the area of the Stop, bracken encroachment is an issue and urgent management is required to control its spread.

In addition to the 6 indicator species, other species recorded within the Stop include *Anthoxanthum odoratum*, *Holcus lanatus*, *Danthonia decumbens*, *Carex pulicaris*, *Hypochoeris radicata*, *Trifolium repens*, *Potentilla erecta*, *Succisa pratensis*, and *Prunella vulgaris*.

Outside the Stop, on the lower slopes of the esker, *Centaurea nigra* also occurred. On the upper slopes, closer to the summit, *Dactylorhiza fuchsii* was more abundant with occasional *Polygala serpyllifolia*, *Hieracium pilosella*, *Rhinanthus minor*, and scattered seedlings of birch and gorse. Disturbance from grazing cattle is suggested by the presence of frequent poach holes in the turf.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 5:**

This Stop is located in the same field as Stop 4 but is on the lower, gentle, slopes to the south east. The vicinity of Stop 5 is seriously encroached with bracken. There are few signs of any significant recent grazing activities, although horse droppings were noted in one location in the vicinity. Hoof poach holes were also evident amongst the bracken.

Within the Stop itself, only 4 indicator species were recorded and herbs barely occupy 40% of vegetation cover. While no negative indicator species were recorded, Bracken accounts for 50% of the vegetation cover within the Stop, increasing to 80% in a larger area of 5m x 5m.

Of the additional species within the Stop, *Holcus lanatus* and *Anthoxanthum odoratum* dominate the vegetation with other species such as *Festuca rubra*, *Danthonia decumbens*, *Succisa pratensis*, *Potentilla erecta*, *Carex pulicaris*, and *Plantago lanceolata* also occurring. Single spikes of *Dactylorhiza fuchsii* and *Platanthera chlorantha* occur under the bracken.

Outside the Stop, the lower slopes carry similar vegetation to Stop 5. Scattered amongst the bracken, *Trifolium pratense*, *Cirsium palustre*, *Hypericum pulchrum*, and *Prunella vulgaris* also occur. Bracken becomes more dense towards the river. On the higher slopes, where soil is thinner and bracken is less abundant, *Antennaria dioica*, *Hieracium pilosella*, *Platanthera chlorantha* and *Conopodium majus* were noted.

Because this Stop is deemed to occur in an area of dense bracken, i.e. where bracken cover exceeded 50% (Fossitt, 2000), its Structures and Functions are not assessed. The Stop is considered instead under the assessment of Extent.

**Monitoring Stop 6:**

This part of the esker is steeply sloping and faces south west. The soil is thin and bare patches occur where cattle have contoured the sides, encouraging the formation of terraces in places. The Stop is positioned 2m above a patch of gorse which occurs at the base of the slope. This gorse does not appear to be encroaching upslope as no seedlings were noted.

Within the Stop, herb content is good (60%) and the vegetation is rich in calcareous indicator species. 9 such species were recorded. No negative indicators or scrub/Bracken was recorded.

In addition to the positive indicator species, other species occurring include *Anthoxanthum odoratum*, *Danthonia decumbens*, *Festuca rubra*, *Thymus praecox*, *Plantago lanceolata*, *Polygala vulgaris*, *Centaurea nigra*, and small, stunted individuals of *Calluna vulgaris*.

Sward height is low (10cm) and plant litter is minimal (5%). The extent of bare ground, however, is relatively high at 15%. This is a consequence of animals tracking through this space along the terraced slope.

Outside the Stop, towards the summit line of the esker, ground cover is better. Additional species occurring in there include *Platanthera chlorantha*, *Leucanthemum vulgare*, and *Anthyllis vulneraria*.

This Stop is deemed to 'Pass' the assessment of its Structures and Functions.

**Monitoring Stop 7:**

This Stop is located on the gentle sloping/flat summit at the nose-end of the esker. *Pteridium aquilinum* has encroached onto the esker from outside the SAC. The bracken averaged at 40cm high and occupied 80% cover within the Stop. Only 1 indicator species (*Conopodium majus*) and 1 unidentified orchid leaf was recorded amongst the stems. 1 negative indicator also occurred at low percentages, *Urtica dioica*.

Other species occurring were *Rubus fruticosus* agg., *Dactylis glomerata*, *Holcus lanatus*, *Festuca rubra*, *Cynosurus cristatus*, *Lolium perenne*, *Brachypodium sylvaticum*, *Anthoxanthum odoratum*, *Centaurea nigra*, *Agrimonia eupatoria*, and *Achillea millefolium*.

Because this Stop is deemed to occur in an area of dense bracken, i.e. where bracken cover exceeded 50% (Fossitt, 2000), its Structures and Functions are not assessed. The Stop is considered instead under the assessment of Extent.

**Monitoring Stop 8:**

The field in which Stop 8 is located in a separate polygon to the main esker site. This field was originally described in 1997 as a "Small hill with areas of both unimproved and little-improved species-rich dry grassland. Many of the species found on the rest of the esker are also found here".

During the 2006 survey it was clear that this field has been fertilised and is currently a semi-improved field with a soil depth which is deeper than that occurring on the esker. The field is tightly grazed and the vegetation is mainly dominated by grasses. Sheep were grazing on the day of survey.

The field slopes very gently upwards from the northern hedge line to a point close to the location of the Stop. It then slopes gently down towards the southern hedgerow. Stop 8 is positioned in the area where the slope just begins to fall away, where the soil is a little more shallow.

Within the Stop, herbs account for only 30% of vegetation cover and consist of *Lotus corniculatus*, *Galium verum*, *Conopodium majus*, *Daucus carota*, and *Briza media*. No orchids were noted. Bracken does not occur within the Stop but up to 40% cover exists in a larger area of 5m x 5m, mainly in the lower lying reaches of the slope.

Throughout the rest of the field, the vegetation is mainly dominated by grasses such as *Cynosurus cristatus*, *Festuca rubra*, *Briza media*, *Dactylis glomerata*, *Anthoxanthum odoratum*, and *Holcus lanatus*. Herbs include *Plantago lanceolata*, *Ranunculus acris*, *Trifolium repens*, *Achillea millefolium*, *Prunella vulgaris*, *Luzula campestris*, *Cerastium fontanum*, *Leucanthemum vulgare*, *Rumex acetosa*, and *Ranunculus bulbosus*. *Primula veris* occurs at the base of the hedgerow. *Cirsium palustre* is also well scattered throughout and *Pteridium aquilinum* dominates the low lying corner in the south of the field.

Due to the lack of indicator species and the low herb content within the Stop, this Stop is deemed to 'Fail' the assessment of the Structures and Functions for 6210 habitat.

## **Killeglan Grassland**

### **SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 27/06/2006

**Total Site Area (Ha):** 61.97

**Area of Priority Grassland (N2000) (Ha):** An estimate of 41ha is given.

**Area of Priority Grassland 2006 (Ha)\*:** 47

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:** Roscommon

**Discovery Sheet No:** 47

**6" Sheets:** RO047, RO050.

**Digital Aerial Photos (Tile Nos.):**  
O3031-a, O3031-b, O3031-c, O3031-d.

**Other Aerial Photographs:**  
None.

### **SITE DESIGNATIONS**

**SAC Site Code:**  
002214

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Killeglan grassland is situated in County Roscommon, approximately 9.5 km north of Ballinasloe. The underlying geology is Upper Carboniferous Limestone. A shallow rendzina type soil formation has developed in places between the outcropping limestone boulders and the shattered limestone formations. The topography of the site is undulating.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis describes the grassland as follows: The site is dominated by semi-natural dry grasslands rich in orchids, a priority habitat on Annex I of the EU Habitats Directive. The calcareous grassland vegetation comprises low-growing species such as Red Fescue (*Festuca rubra*), Wild Thyme (*Thymus praecox*), Cat's-ear (*Hypochoeris radicata*), Mouse-ear Hawkweed (*Hieracium pilosella*), Devil's-bit Scabious (*Succisa pratensis*), Mountain Everlasting (*Antennaria dioica*), Carlina Thistle (*Carlina vulgaris*), Dandelion (*Taraxacum officinale* agg.), Sedges (*Carex* spp.), Ribwort Plantain (*Plantago lanceolata*), Bulbous Rush (*Juncus bulbosus*), Heather (*Calluna vulgaris*), Crested Dog's-tail (*Cynosurus cristatus*), Cock's-foot (*Dactylis glomerata*), Common Bent (*Agrostis capillaris*), Yorkshire Fog (*Holcus lanatus*), Carnation Sedge (*Carex panicea*), Sheep's Sorrel (*Rumex acetosella*), Yellow Rattle (*Rhinanthus minor*), Daisy (*Bellis perennis*), Yarrow (*Achillea millefolium*), Clover (*Trifolium* spp.), Selfheal (*Prunella vulgaris*) and Early-purple Orchid (*Orchis mascula*).

On the out-cropping limestone, Herb Robert (*Geranium robertianum*), Wall-rue (*Asplenium ruta-muraria*), Hart's-tongue Fern (*Phyllitis scolopendrium*), Wild Thyme, Cat's-ear, Mouse-ear Hawkweed, Mountain Everlasting, Fairy Flax (*Linum catharticum*) and many mosses and lichens are present. Patches of Gorse (*Ulex europaeus*) and Bracken (*Pteridium aquilinum*) occur, with occasional specimens of Yew (*Taxus baccata*). The Red Data Book species, Green-winged Orchid (*Orchis morio*), was recorded in abundance at this site in 1998.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This habitat (6210) dominates the site. It occurs in association with patches of scrub, shattered limestone pavement and outcropping limestone boulders. The site supports a typical species rich calcareous grassland flora including many orchid species, such as, *Neotinea maculata*, *Orchis mascula* and the legally protected species *Orchis morio* (Flora Protection Order 1987). Other species present include, *Geranium robertianum*, *Carlina vulgaris*, *Thymus praecox*, *Briza media*, *Linum catharticum*, *Galium verum*, *Hypericum pulchrum*, *Calluna vulgaris*, and *Antennaria dioica*. There is diverse pteridophyte flora with *Ceterach officinarum*, *Phyllitis scolopendrium* and *Dryopteris filix-mas* common throughout.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the 6210 habitat was seen to be well-distributed across the site. The best example of the habitat is located in the central area, where suitable

grazing patterns have maintained good quality calcareous grassland on relatively flat, shallow soils. More scattered occurrences are located in a mosaic with scrub and bracken along the western and northern boundaries, where the landscape has a more rocky and hillocky nature. Encroachment of scrub and Bracken is seen as a serious management issue.

Species diversity was seen to be high, with good numbers of typical calcareous indicator species being recorded throughout. Small areas of heath-like vegetation also occur, usually in association with lower grazing pressures. Orchids were present throughout, although the variety of species previously recorded was not noted, perhaps due to the timing of the current survey.



**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was recommended for designation as a pSAC by C.O'Críodan and Jim Moore in 1997 subsequent to a field visit when 'excellent examples of orchid-rich grasslands' and *Orchis morio* populations were recorded. The full site was subsequently surveyed by S. Keane, S. Moles, and J. Moore in 1999 when the boundaries to the site were determined.

Three additional areas of orchid-rich grassland and scrub habitat were included in 2001 following recommendations by local NPWS staff and a field visit by C.O'Críodan.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

A summary of the results of the assessments undertaken at the Monitoring Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevés were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Eight Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. Structures and Functions were assessed at all 8 Monitoring Stops. Of these, 5 Stops were seen to fail the assessment, resulting in a significant failure rate for this attribute at Killeglan Grassland. The primary cause for the failure was encroachment by Bracken.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	5
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	2
Stop 02	1	Pass	Structures and Functions	2
Stop 03	3	Fail	Structures and Functions	2
Stop 04	4	Fail	Structures and Functions	2

Stop 05	2	Fail	Structures and Functions	2
Stop 06	2	Fail	Structures and Functions	2
Stop 07	1	Pass	Structures and Functions	2
Stop 08	5	Fail	Structures and Functions	2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 5 separate Management Units.

Stops 1, 2, and 7 are located in Management Unit 1. The vegetation and management across this area appears similar. Good calcareous grassland occurs on shallow soils in a relatively flat landscape. Moderate grazing pressures appear to occur.

Management Unit 2 contains Stops 5 and 6. Very little current management appears to be in place in this part of the site, as suggested by the excessive cover of plant litter.

Management Unit 3 represents the area where Stop 3 is located. The grassland in this area slopes gently to the south west. Soils are deeper than in Management Unit 1 but management is not as evident. Scrub and Bracken appears to be encroaching.

Management Unit 4 contains Stop 4. It represents a hilly and rocky landscape where field sizes are small to non-existent. Soil depth is variable and encroachment by scrub and bracken is widespread. Scattered patches of limestone grassland occur but management pressures are very light.

Management Unit 5 contains Stop 8. The grassland here is flat with relatively good soil depth. This end of the site had been managed by grazing in previous years but had not yet been grazed at the time of surveying. Bracken encroachment was evident in field corners and margins.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

The main threat to the 6210 habitat at this site is the spread of Bracken and scrub species (194). Of the 5 Stops which failed the Structures and Functions assessment, 4 failed as a result of excessive cover of Bracken and/or scrub species. Percentage values for this cover within all 8 Stops ranged from <5 to 25%. Outside the Stops, however, percentage cover reached to 40%. This suggests that encroachment has passed the early stages and is posing a significant threat to the grassland areas on the site.

Patches of *Crataegus monogyna* and *Prunus spinosa* are dense in places, particularly in Zones 1, 2, and 3 which were added to the SAC in 2001 (see overview Map 1). The north eastern corner of the site also shows significant presence of encroaching scrub and Bracken. The 1999 NHA note for this area (NHA N05) describes an open area of closely cropped calcareous grassland/heath with a high species diversity. During the 2006 survey however (see Note 10 and Stop 8), Bracken and scrub encroachment was seen to be a serious issue. While species diversity is still good in some parts of this corner of the site, the trend towards encroachment was obvious. Undergrazing (149) may be a significant factor in the spread of these invasive species.

Of concern also is the presence of the prostrate *Cotoneaster* sp. This was noted as a general threat during the 1999 NHA survey. Mature patches of this sprawling species were recorded during the current survey in the vicinity of Stop 4, an area which was included within the SAC in 2001. This species is known to be a rapid coloniser, particularly of the light, rocky soils which predominate on this site.

The main agricultural activity on the site is grazing (140). Farm machinery has only limited access through most of the site. The central area, in particular, is characterised by low walls with narrow gaps for animal access only. Most of this area appears to be well managed by grazing, with current pressures and patterns maintaining good, species-rich calcareous grassland. Stops 1, 2, and 7 which are located in this area, all passed the Structures and Functions assessment. Stop 5, 6, and Note 9, however, refer to areas of unmanaged grassland which are tending towards a more heath-like character. Grazing pressures in these locations need to be increased.

In general, agricultural improvement (103) is not a serious threat across the site. Some reseeded was noted in the field where Stop 3 is located but species diversity was still high. While the application of fertiliser (149) was also noted in this area, it appears not to be a serious threat across most of this site. Application levels appear to be light and not too damaging to the overall quality of the grassland. Another area which shows efforts at past improvement is at Note 8. Rocks have been cleared from this large field and a degree of semi-improvement has occurred. A heath-like element, rich in grass species, dominates the vegetation in this field but reseeded does not appear to have occurred.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
103	Cultivation: agricultural improvement	-1	C
120	Fertilisation	-1	C
140	Grazing	1	B
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The absence of any obvious management practices in the areas of scrub encroachment (Zones 1, 2, 3, in particular) are of great concern. These areas were described in 2000 as having particularly strong populations of orchids such as *Orchis morio*, *Gymnadenia conopsea*, *Platanthera bifolia*, *Anacamptis pyramidalis*, *Orchis mascula*, and *Listera ovata*. Without some form of scrub removal and control mechanisms, these populations will be lost to encroachment. Of concern also is the presence of the prostrate *Cotoneaster* sp. at Stop 4. This species was noted during the 1999 NHA survey as a general threat to the site. Again, in the absence of control mechanisms, this species has the potential to rapidly spread in the rocky, shallow soils that characterise the south western and the western side of the site.

The management regime in place in the central part of the site (Stops 1, 2, and 7) appear to be maintaining good species-rich grassland. Areas of undergrazing occur, however, such as at Note 9, and these would need to be addressed. Undergrazing may also be the primary factor influencing the spread of Bracken and scrub species in the western and south western parts of the site. Stocking levels and grazing patterns in these areas would need to be reassessed, ideally following a more proactive programme of scrub removal. In addition, the absence of sufficient grazing pressures in the areas of Stop 5, 6, and Note 9, may be facilitating the progression to a more heath-like vegetation in those locations. Higher grazing levels may assist in the re-establishment of good calcareous grassland in those areas.

The application of fertilisers does not appear to be an issue for concern for those areas of the site which were visited. It is recommended that current levels of application do not increase.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2005 series) in ArcView GIS 3.2.

44ha of the habitat was mapped within the SAC with a further 15ha mapped as being a mosaic of habitat 6210 and scrub/bracken. It should also be recognised that fragments of the 44ha would be better described as limestone outcrops or as scrub/bracken, but these fragments were considered too small to map during this survey. It can, however, be estimated (using the aerial photos and ground photos taken during the survey, P066-075) that ca. 10% of the 44ha is limestone outcrop, scrub or bracken, leading to a figure of close to 40ha for habitat 6210.

Of the 15ha mapped as being a mosaic, it can be estimated (again using aerial photos and the ground photos taken during the survey, P048-053 and P060-063) that a maximum of 50% of the area (or 7.5ha) is habitat 6210. Thus, overall in Killeglan Grassland SAC, it is estimated that there is approximately 47ha of habitat 6210 present on the site.

The Natura 2000 estimate for habitat 6210 at Killeglan SAC is 41ha (or "81% of the site"). However the explanatory notes also highlight that an accurate estimate is difficult, considering that the habitat occurs in a mosaic with limestone outcrops and scrub. Furthermore at the time of the Natura estimate, the SAC boundary was considerably smaller (51ha) compared to its extent today (62ha). Indeed, applying the methods used in the current survey to estimate the extent of habitat 6210 within the old SAC boundary would give an estimate of 41ha (39 + 2ha of mosaic).

Thus the extent of habitat 6210 at Killeglan SAC, estimated at 47ha, appears to have been maintained, and hence the conservation status of the extent can be considered to be Favourable. The results of the next section (Structure and Functions), however, show that a loss in extent is likely in the future (under current management regimes) as many of the areas surveyed were shown to be suffering from the early stages of scrub and bracken encroachment.

### ***Structure and Functions:***

Of the 8 Stops assessed at Killeglan Grassland, 5 Stops were seen to fail the assessment of the Structures and Functions attribute. The principal reason for the failure at 4 of these Stops was the excessive cover of Bracken and/or scrub species. Percentage values for this cover within all 8 Stops ranged from <5 to 25%. Only one Stop did not contain Bracken or scrub (Stop 5). Outside the Stops, however, percentage cover reached to 40%. This suggests that encroachment has progressed past the early stages and is posing a significant threat to the grassland areas on the site.

Species diversity was high at all Stops, with numbers of indicator species ranging from 6 to 13. Only one Stop, Stop 5, failed to reach the target number of 7 species. This Stop

contained only 6 indicator species. The failure to reach the target number of indicator species may sometimes be overlooked if there are other significant features of local distinctiveness present which would reflect the good quality or value of the habitat e.g. the presence of orchids. Unfortunately, while both *Dactylorhiza fuchsii* and *Platanthera chlorantha* were present in Stop 5, the fact that herbs only occupied 25% cover cannot be ignored. In addition, the height of the sward (25%) and the percentage cover of plant litter (25%) also suggest a management problem at this location. Therefore, when all of these negative trend indicators are taken into account, the Structures and Functions of the grassland at this location are seen to be compromised and an assessment of the attribute results in a 'Fail'.

Due to the fact that over 60% of the Monitoring Stops failed in their assessment, the Structures and Functions of the 6210 grassland at Killeglan are described as being Unfavourable - bad.

***Future Prospects:***

The Future Prospects for the 6210 habitat at Killeglan Grassland will depend upon two main management issues: the removal and control of invasive scrub and Bracken and the maintenance of suitable grazing regimes. Agricultural improvements in the form of extensive reseedling or fertilising, currently do not appear to pose a major threat (although some areas do show evidence of minor impact).

Although the problems of scrub and Bracken encroachment were seen to be the primary cause in the failure of the Structures and Functions assessment, the diversity of calcareous indicator species still occurring on the site is seen to be a positive feature. With immediate management of the encroachment issue through scrub and Bracken removal, followed by a suitable grazing regime, the integrity and quality of the site as a whole could be safeguarded.

Current grazing patterns across the central part of the site are maintaining good quality grassland habitat. Some areas of the site, however, require grazing attention to prevent further development of rank habitat or to hold back the natural progression of heath vegetation. Minor adjustments, made now, would re-establish good quality grassland relatively easily.

The estimate of the current extent of the habitat suggests that the area of grassland has not changed to any significant degree since first described. If current management practices are improved in terms of dealing with the encroachment issue in areas where invasion is still at the early stages, additional good quality grassland areas could be created, thereby increasing the overall Extent of the habitat on the site.

Nonetheless, while the extent of the habitat is thought to be stable, the condition of the grassland is seriously threatened by encroachment issues. In the absence of any indication that this issue will be dealt with in the near future, the overall description of the Future Prospects for the 6210 habitat at the site are described as being Unfavourable - inadequate.

***Conservation Assessment:***

The grassland at this site was originally described as supporting a typical species-rich

calcareous grassland flora including many orchid species. The 6210 habitat was said to occur in association with patches of scrub, shattered limestone pavement and outcropping limestone boulders. This mosaic character made an accurate assessment of the extent of the habitat difficult to estimate. Strong populations of a range of orchid species were also noted in the past.

During the 2006 survey, a very similar situation was found to occur. Orchids were present throughout, although the variety of species previously recorded was not noted, perhaps because of the timing of the current survey. Good quality calcareous grassland was seen to occur mainly in the central area of the site, with more scattered occurrences being located in a mosaic with scrub and bracken along the western and northern boundaries.

While suitable grazing patterns appear to exist in the centre of the site, lack of management was noted in some areas where undergrazing is leading to the development of rank vegetation. Other agricultural activities such as fertilising do not appear to pose a significant threat at the moment but as some areas show previous impacts, this would need to be monitored.

The extent of the habitat appears not to have declined. However, the Structures and Functions are seen to be currently badly affected by the encroachment of scrub and Bracken and are described as being Unfavourable - bad. The overall Conservation Assessment for the site are therefore described as being Unfavourable - bad (see Table 3). If the encroachment issue is dealt with, then the Future Prospects for the grassland would be better and the overall Conservation Status for the site would improve.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
Extent			
			<i>Unfavourable - bad</i>
		Structure and Function	
	Future Prospects		



**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This note refers to an area close to a wall at the boundary of the SAC. Young *Prunus spinosa* is spreading in this location and would need to be controlled. The shrubs are low-growing as yet (15-20cm high) and in an area of 5m<sup>2</sup>, cover is approximately 20%.

Outside the SAC, at the other side of the boundary wall, heavier grazing by sheep is evident in the semi-improved field. *Cirsium arvense* is widespread with scrub spreading. Also occurring are *Avenula pubescens*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Festuca rubra*, *Potentilla erecta*, *Bellis perennis*, *Cirsium palustre*, *Succisa pratensis*, *Trifolium repens*, and *Cerastium fontanum*. Around protruding limestone rocks, *Thymus praecox* occurs.

**Note 2:**

This area is heavily grazed by sheep. *Cirsium arvense* and *Potentilla anserina* are frequent in a grassland vegetation composed of *Cynosurus cristatus*, *Holcus lanatus*, *Avenula pubescens*, *Danthonia decumbens*, *Festuca rubra*, *Bellis perennis*, and *Urtica dioica*.

**Note 3:**

This is an area of good calcareous grassland on a gentle south-facing slope. Good indicator species occur, such as frequent *Carlina vulgaris*, *Briza media*, *Hieracium pilosella*, *Linum catharticum*, *Galium verum*, and *Lotus corniculatus*. Other indicators such as *Sanguisorba minor*, *Conopodium majus*, *Ranunculus bulbosus*, and *Carex caryophylla* are occasional. Additional species also occur (see details of Quadrat 2).

Bracken is encroaching from the edges of the field wall, occupying 15% cover in a 5m<sup>2</sup> area. Scattered areas of bracken also occur throughout this area. Its further spread needs to be prevented.

**Note 4:**

This is an orchid-rich area. It is similar in vegetation and structure to that recorded in Stop 1, consisting of low-growing calcareous grassland with a good suite of calcareous indicators. This area is orchid-rich with *Listera ovata*, and frequent *Platanthera chlorantha*, *Gymnadenia conopsea*, and *Dactylorhiza fuchsii*.

The area slopes gently with a south westerly aspect. Mature scrub of *Crataegus monogyna* and *Prunus spinosa* is scattered throughout this area. Few young seedlings were noted, suggesting current grazing patterns are sufficient to control scrub encroachment. Scattered cowpats occur throughout. Bracken predominates along the field walls.

## Note 5:

This area indicates a lack of management. Bracken is encroaching and grasses are growing rank. Indicator species still occur but bracken spread is an issue. Mature scrub also occurs with some young seedlings. *Dactylorhiza fuchsii* and *Platanthera chlorantha* are scattered between the bracken and scrub. *Succisa pratensis* is frequent with occasional *Galium verum*, *Anthyllis vulneraria*, *Ranunculus bulbosus*, and *Thymus praecox*.

This end of the site appears to indicate a greater problem with bracken encroachment, particularly at the base of slopes. Grasses are growing rank and vegetation is mainly dominated by *Dactylis glomerata*, *Holcus lanatus*, *Cirsium palustre*, and *Rumex acetosa*. Occasional flowers of *Leucanthemum vulgare* also occur.

## Note 6:

This notes the location of an abandoned vehicle in a hilly landscape which is dominated by scrub and bracken. There is no great evidence of consistent grazing or active management. Tracks cut through the scrub and in a few remaining open areas along these tracks species such as *Galium verum*, *Conopodium majus*, *Dactylorhiza fuchsii*, and *Platanthera chlorantha* still occur.

## Note 7:

This is an area of bracken and scrub dominating a landscape of rocky ground and hollows. More open slopes occur with some young scrub and encroaching bracken. Calcareous indicator species occur on the more open slopes but the vegetation is more heathy, with *Potentilla erecta* dominating.

## Note 8:

This area is evident in the aerial photographs as an area which may be slightly more improved. Rocks have been cleared from the fields and the vegetation has a heathy element, suggested by the frequency of *Succisa pratensis*, *Potentilla erecta*, and low percentages of low-growing *Calluna vulgaris*.

Grass species are dominated by *Anthoxanthum odoratum*, *Briza media*, *Avenula pubescens*, *Cynosurus cristatus*, and *Danthonia decumbens*. Herb species include *Galium verum*, *Euphrasia* spp., *Ranunculus bulbosus*, *Hypericum pulchrum*, *Carex flacca*, *Trifolium repens*, and *Cirsium palustre*. Around the few rocks remaining in the grassland are *Thymus praecox* and *Polygala serpyllifolia*. Small, scattered shrubs of *Prunus spinosa* also occur.

## Note 9:

This note describes an area of ungrazed heathy grassland. *Calluna vulgaris* is frequent as hummocks throughout this area, interspersed with tall growing *Avenula pubescens* (F). Also occurring are *Anthoxanthum odoratum* (F), *Briza media* (F), *Galium verum* (F), *Lotus corniculatus* (F), *Hypericum pulchrum* (O), *Succisa pratensis* (O), *Potentilla erecta* (O), *Polygala serpyllifolia* (O), *Carlina vulgaris* (R), and *Dactylorhiza fuchsii* (R).

*Thymus praecox* occurs around outcropping rocks and mature bushes of *Crataegus monogyna* are scattered throughout.

## Note 10:

At this northern end of the site, dense bracken dominates with encroaching scrub. Some calcareous indicator species remain in more open areas but even here, grasses dominate.

## Note 11:

This is an area of scrub located between the road and the rising ground to the west. The scrub (*Prunus spinosa* mostly) occupies 30% in a 5m<sup>2</sup> area and does not exceed 50cm in height. The grassland between the scrub is well-grazed with good calcareous indicators such as *Lotus corniculatus* (F), *Hieracium pilosella* (F), *Briza media* (F), *Ranunculus bulbosus* (O), *Linum catharticum* (O), with other species such as *Cynosurus cristatus* (F), *Anthoxanthum odoratum* (O), *Polygala serpyllifolia* (O), and *Thymus praecox* (O).

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Stop has good vegetation cover which is currently lightly grazed. It is located in an area where there is no access for farm machinery through the low stone walls. Some shrubs (*Prunus spinosa*, *Crataegus monogyna*) and *Rubus fruticosus* agg. occur along the edges of the field walls. Occasional mature examples of these scrub species occur throughout the area (approximately 5% cover in each field unit) but they appear to be well grazed; very few young seedlings were noted. Hare and rabbit droppings, along with old cowpats, are well distributed throughout.

Within the Stop, herb cover was good (50%) and 12 indicator species were recorded. The vegetation was low-growing vegetation (<10cm high) and has heathy element to its composition. No negative indicator species occurred and <5% cover of scrub seedlings were noted.

In addition to the indicator species, other species recorded within the Stop include *Danthonia decumbens* (O), *Anthoxanthum odoratum* (O), *Cynosurus cristatus* (R), *Succisa pratensis* (F), *Calluna vulgaris* (O), *Potentilla erecta* (O), *Bellis perennis* (O), *Carex pilulifera* (F), *Plantago lanceolata* (O), *Thymus praecox* (O), *Polygala serpyllifolia* (O), *Dactylorhiza fuchsii* (R), and *Platanthera chlorantha* (R) (see relevé 1). The *Calluna vulgaris* recorded was well grazed and consisted of low, scatted individuals of less than 10cm in height.

Outside the area of the Stop, other species occurring in the field include *Prunella vulgaris*, *Achillea millefolium*, *Platanthera chlorantha*, *Dactylorhiza fuchsii*, *Blackstonia perfoliata*, and *Listera ovata*. A low percentage (<5%) of *Cirsium palustre* occurs across the site.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 2:**

Stop 2 is located in a similar situation to Stop 1. The vegetation in Stop 2 is low (5cm) and moderate to tight grazing is evident.

Within the Stop, herb cover is good (50%) and 11 indicator species occur. No negative indicators occur and <5% cover was represented by seedlings of *Prunus spinosa*.

In addition to the 11 indicator species, the following also occur: *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Danthonia decumbens*, *Carex pulicaris*, *Achillea millefolium*, , *Hypochoeris radicata*, *Hypericum pulchrum*, *Bellis perennis*, *Viola* spp., *Dactylorhiza fuchsii*, and a single *Prunus spinosa* seedling. A heathy element is again suggested by the presence of *Calluna vulgaris*, *Succisa pratensis*, *Polygala serpyllifolia*, and *Potentilla erecta*.

Outside the Stop, additional species including *Carlina vulgaris*, *Listera ovata*, *Primula vulgaris*, and *Brachypodium sylvaticum* also occur.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 3:**

This Stop is located on gently sloping ground facing west. This area is characterised by small fields which have the appearance of little current management. Scrub and/or Bracken is frequent around field margins and corners and patches of dense Bracken also occur in places. The soil is deeper than in either Stops 1 or 2 but occasional outcrops of limestone rock occur where calcareous indicator species are more abundant. Light grazing is evident but at present, it does not appear to be sufficient to prevent encroachment.

Within the Stop, herb cover is at 40%. Species diversity is good with 10 indicator species occurring. However, the negative indicator species *Lolium perenne* also occurs and scrub cover reaches to 10%. Scrub cover rises to 15% outside the Stop and Bracken also occurs on the slopes behind.

Additional species occurring within the Stop include frequent *Anthoxanthum odoratum* and *Euphrasia* spp. with occasional *Cynosurus cristatus*, *Holcus lanatus*, *Festuca rubra*, *Plantago lanceolata*, *Carex pulicaris*, *Achillea millefolium*, *Potentilla reptans*, *Hypericum pulchrum*, *Succisa pratensis*, *Dactylorhiza fuchsii*, and a rare occurrence of *Viola* spp. (see relevé 3 for full details). Outside the Stop, additional species include *Thymus praecox* and *Primula veris*.

Due to the presence of *Lolium perenne* and the excessive cover of scrub, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 4:**

This Stop is located close to one of the tracks described in Note 6. The landscape is hilly, with shallow soils predominating. Bracken and scrub is encroaching in this area and both mature and young specimens occur. There is very little evidence of grazing or any other active management practices in this area.

Within the Stop, herb cover is good (60%) and 8 indicator species occur. While no negative indicator species were noted, the excessive cover of scrub and Bracken (25%) results in a 'Fail' for this attribute at Stop 4.

Additional species in Stop 4 include *Anthoxanthum odoratum*, *Holcus lanatus*, *Cynosurus cristatus*, *Rhinanthus minor*, *Hypochoeris radicata*, *Centaurea nigra*, *Plantago lanceolata*, *Senecio jacobea*, *Euphrasia* spp., *Hypericum pulchrum*, *Thymus praecox*, and *Polygala serpyllifolia*. Very short individuals of *Calluna vulgaris* also occur in low percentages. *Platanthera chlorantha* and *Dactylorhiza fuchsii* occur both within and outside the Stop.

Outside the Stop, *Anthyllis vulneraria* also occurs. In addition, a large spreading clump of a prostrate *Cotoneaster* species occurs close to the Stop. This well-established patch measured 2m x 4m and has the potential to spread rapidly in this environment.

Due to the excessive cover of scrub and Bracken (25%), this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 5:**

This area appears to be currently unmanaged and ungrazed. The vegetation is grass-dominated and shows signs of becoming rank. The slopes above Stop 5 are in better condition and the vegetation is more similar to Stop 1.

Within the Stop, herb cover is low (25%) and only 6 indicator species were recorded. No negative indicators or scrub/Bracken occurred. However, the percentage cover of plant litter is relatively high (25% cover) and sward height is also relatively high at 25cm. The vegetation composition suggests a heathy element.

Additional species occurring within the Stop include *Anthoxanthum odoratum* (O), *Festuca rubra* (O), *Succisa pratensis* (F), *Potentilla erecta* (F), *Plantago lanceolata* (F), *Calluna vulgaris* (O), *Rhinanthus minor* (O), and *Vicia cracca* (R). Orchids also occur, including *Dactylorhiza fuchsii* (O), and *Platanthera chlorantha* (R). This comprises relevé 4.

Due to the low herb cover and the insufficient number of calcareous indicator species present, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 6:**

This Stop is located in one of the areas added to the SAC in 2001. There is very little evidence of management and bracken and scrub is encroaching. Plant litter is also high (30%).

The vegetation in Stop 6 is grass-dominated with a herb content of only 30% being recorded. The abundance of *Avenula pubescens* is a significant feature. While a sufficient number of indicator species occur (7), the percentage cover of scrub and bracken (10%) is excessive. This value rises to 40% outside the Stop.

Additional species occurring within the Stop include *Anthoxanthum odoratum* (F), *Cynosurus cristatus* (O), *Holcus lanatus* (R), *Carex pulicaris* (F), *Hypericum pulchrum* (R), *Calluna vulgaris* (O), *Succisa pratensis* (O), *Potentilla erecta* (R), *Plantago lanceolata* (O), *Bellis perennis* (R), *Polygala serpyllifolia* (R), *Dactylorhiza fuchsii* (R), *Listera ovata* (R), and *Platanthera chlorantha* (R). This comprises relevé 5.

Parts of the other slopes in the vicinity of Stop 6 are in better condition, with up to 40% cover of herbs, occasional orchids, and only 5% bracken.

Due to the low herb cover and the excessive cover of scrub/Bracken present, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 7:**

Stop 7 is located in an area of good calcareous grassland on shallow soil. Rocky boulders are scattered throughout with intervening areas of well-grazed grassland <5cm high.

Within the Stop, herb cover high (70%) and 10 indicator species occur. There are no negative indicator species and bracken and scrub cover does not exceed 5%.

Also occurring in Stop 7 are *Festuca rubra* (O), *Potentilla reptans* (O), *Bellis perennis* (O), *Polygala serpyllifolia* (O), *Plantago lanceolata* (O), *Prunella vulgaris* (O), *Thymus praecox* (O), *Hypochoeris radicata* (R), *Dactylorhiza fuchsii* (R), and *Platanthera chlorantha* (R). Less than 5% scrub (*Prunus spinosa*) occurs, currently growing less than 15cm high. This vegetation composition comprises relevé 6.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 8:**

The grassland here is flat with relatively good soil depth. The EPA funded study on the 'Insects of Calcareous Grasslands' has a malaise trap and pitfall traps located in the south eastern corner of this field. Current management of the grassland is not very evident and information received on the day of survey from the supervisor of the EPA project (Dr. Eugenie Regan pers. comm.) suggests that while the landowner has had cattle grazing on the site in previous years, no grazing had occurred yet this year.

Within the Stop, herb cover is good (60%) and 13 indicator species were recorded (the highest number for any Stop at this site). There were no negative indicator species but scrub and Bracken accounted for 20% of cover. Outside the Stop, encroachment was seen to be a particularly serious issue on the western side of field.

Other species occurring within the Stop include *Koeleria macrantha* (O), *Cynosurus cristatus* (O), *Carex pulicaris* (O), *Danthonia decumbens* (R), *Succisa pratensis* (O), *Potentilla reptans* (R), *Bellis perennis* (R), *Leontodon taraxacoides* (R), *Polygala serpyllifolia* (R), *Thymus praecox* (R), *Dactylorhiza fuchsii* (O), and *Platanthera chlorantha* (R) . This comprises relevé 7. Outside the Stop, *Coeloglossum viride* also occurs.

Due to the excessive cover of scrub/Bracken present, this Stop is deemed to 'Fail' its assessment of Structures and Functions.



## **Ballyprior Grassland**

### **SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 04/07/2006

**Total Site Area (Ha):** 72.34

**Area of Priority Grassland (N2000) (Ha):** 37.

**Area of Priority Grassland 2006 (Ha)\*:** 12

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:** Laois

**Discovery Sheet No:** 55

**6" Sheets:** LA019.

**Digital Aerial Photos (Tile Nos.):**

O4002-c, O4002-d, O4061-a, O4061-b.

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

002256

**Priority Grassland Habitat Type:** 6210

Semi-natural dry grasslands and scrubland facies on calcareous substrates (festuco-brometalia) \*Important orchid sites.

## **SITE DESCRIPTION**

Ballyprior Grassland, 4 km south of the village of Stradbally in Co. Laois, is located at the north end of the Castlecomer Plateau on largely limestone bedrock. The soils of the area are generally thin and well drained, varying from a deeper sandy loam in lower places (10-20 cm depth), to thin or stony soil over local drift (5-10 cm depth) on the elevated plateau.

### **Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows - The site contains orchid-rich calcareous grassland, a priority habitat listed on Annex I of the EU Habitats Directive. The old grassland habitat is of high quality and the site is important due to the loss of similar habitat in surrounding areas. The site has an exceptionally rich mycoflora which is a good indication of grassland quality (in terms of continuity, lack of disturbance and low nutrient status).

There is abundant cover of grasses and herbs with a high level of species diversity, but low bryophyte cover. Quaking-grass (*Briza media*) is an abundant species, reflecting the calcareous conditions, in association with abundant Sheep's-fescue (*Festuca ovina*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Crested Dog's-tail (*Cynosurus cristatus*) and Common Bent (*Agrostis capillaris*). Other grass, sedge and rush species present include *Danthonia decumbens*, *Carex caryophylla*, *C. flacca*, *C. pulicaris* and *Luzula campestris*.

The herb-rich, calcicole flora is characterised by Early-purple Orchid (*Orchis mascula*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Yarrow (*Achillea millefolium*), Lady's Bedstraw (*Galium verum*), Mouse-ear Hawkweed (*Hieracium pilosella*), Thyme (*Thymus praecox*), Fairy Flax (*Linum catharticum*), Oxeye Daisy (*Leucanthemum vulgare*), Rough Hawkbit (*Leontodon hispidus*), Carlina Thistle (*Carlina vulgaris*) and Autumn Gentian (*Gentianella amarella*), with Heath Dog-violet (*Viola canina*), Mountain Everlasting (*Antennaria dioica*) and Maidenhair Spleenwort (*Asplenium trichomanes*) prevalent around rock out-crops.

On deeper soils, Wild Carrot (*Daucus carota*) and Pignut (*Conopodium majus*) are frequent. The presence in certain places of species such as Carnation Sedge (*Carex panicea*), Devil's-bit Scabious (*Succisa pratensis*), Tormantil (*Potentilla erecta*) and Heath Bedstraw (*Galium saxatile*) indicates variation in conditions with paucity of minerals, and adds to the species diversity.

*Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - This site is a good example of calcareous grassland supporting a diverse flora of both calcicole and calcifuge species. The proportion of old calcareous grassland and species-rich communities on grassland with rock outcrop is high at 37 ha (46% of the site). However, precise information on the presence, abundance and range of *Orchis morio* is required. *Orchis mascula* has also been recorded. It appears from current knowledge that the orchid-rich grassland may not be prevalent in all parts of the

habitat.

*Description based on the 2006 Survey :*

The grassland habitat encountered during the 2006 survey varies significantly from that described in either the Site Synopsis or the N2000 description. Almost all of the western half of the site has been agriculturally improved by reseeded with *Lolium perenne* with the associated application of fertiliser. In addition, areas in the south western corner of the site have also seen attempts at improvement in the form of scrub clearance with some reseeded and fertiliser application. Some calcareous grassland indicator species still remain in those areas of scrub removal which have not had fertiliser applied e.g. *Galium verum*, *Lotus corniculatus*, *Linum catharticum*, *Hieracium pilosella*, *Carex flacca*, and *Ranunculus bulbosus*.

Of the remaining grassland habitat in the eastern and northern sections of the site, areas of semi-improved grassland on deep soil occur in association with limited areas of old, calcareous grassland on thinner soils. Where 6210 habitat occurs, a good range of calcareous indicator species occur. These include *Antennaria dioica*, *Anthyllis vulneraria*, *Avenula pubescens*, *Briza media*, *Carex caryophylla*, *Carex flacca*, *Conopodium majus*, *Galium verum*, *Hieracium pilosella*, *Linum catharticum*, and *Lotus corniculatus*. Orchids encountered include *Coeloglossum viride*, *Dactylorhiza fuchsii*, and an unidentified seeding orchid (most likely *Orchis mascula*).

Other areas of semi-improved, old grassland occur on deeper soil throughout the eastern section of the site. These areas contain species such as *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Centaurea nigra*, *Senecio jacobaea*, *Prunella vulgaris*, *Cirsium arvense*, *Trifolium repens* and *Trifolium pratense*.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was initially surveyed as part of the NHA Survey in 1999. It was subsequently resurveyed in 2003 by R. Goodwillie at which time a proposal was made to extend the boundaries. This extension had not yet been implemented at the time of the 2006 Grassland Monitoring Project.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## **SITE MONITORING AND MANAGEMENT UNITS**

A summary of the results of the assessments undertaken at the Monitoring Stops is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevés were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

Eight Monitoring Stops were conducted within the site and their locations are depicted on Map 2. Detailed information on each of the Monitoring Stops is presented in full in Appendix 2. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that one of the Stops, Stop 2, was not included in the assessment of Structures and Functions. Stop 2 is included instead in the assessment of Extent as it was clear that the agricultural improvements noted in the field had occurred since the site was first designated. 1999 NHA notes (Note 9) indicate that while the grassland on this deeper and more fertile soil was managed for grazing and may receive some fertiliser, the habitat was still fairly natural and was not 'improved'. This field has since been reseeded with *Lolium perenne* and was being grazed by cattle on the day of survey. Therefore, as a loss of habitat has occurred, this Stop is included in the assessment of Extent and not Structures and Functions.

Of the 7 remaining Stops assessed for Structures and Functions, 4 were seen to Pass. This results in an overall 'Fail' for the Structures and Functions at Ballyprior Grassland.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	6
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	4
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	2
Stop 02	1	Fail	Extent	2
Stop 03	2	Fail	Structures and Functions	2
Stop 04	2	Pass	Structures and Functions	2
Stop 05	3	Fail	Structures and Functions	2
Stop 06	4	Pass	Structures and Functions	2
Stop 07	5	Pass	Structures and Functions	2
Stop 08	6	Pass	Structures and Functions	2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 6 separate management units.

Stops 1 and 2 were assigned to Management Unit 1 as they occur on land owned by a landowner who has made some attempt at scrub clearance and improvement. Stops 3 and 4 are assigned to Management Unit 2 as they are located in an enclosed area of calcareous grassland, currently being grazed by horses. Management Unit 3 contains a single Stop, Stop 5. This Stop represents a semi-improved calcareous grassland within an area which appears to be managed by light grazing. Management Unit 4 also contains a single Stop, Stop 6. This Stop is unique in this site in that it is good quality calcareous grassland occurring sloping ground with thin soil.

Management Unit 5 occurs north of a sturdy fence and post line. This Unit contains Stop 7 which represents sloping semi-improved grassland which shows light grazing pressure from horses. Management Unit 6 contains a single Stop, Stop 8, representing species-rich calcareous grassland on a slope which is grazed by cattle.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below. Over most of the western half of this site, agricultural improvement (103) has had a significant effect on the grassland habitat. Reseeding and fertilising of areas previously described as being semi-natural grassland habitat (see 1999 NHA Note 6) has occurred, with the concurrent loss of this habitat type.

In the south western corner of the site, extensive scrub removal (152) has occurred with the intention of agriculturally improving the grassland (see Notes 2 and 3). A minor degree of reseeded and fertiliser application has occurred where scrub was removed, as evidenced by the presence of *Lolium perenne* in the recolonising vegetation.

In the south eastern section of the site, much of the grazed land is showing indications of inadequate or inconsistent grazing pressures (149). While swathes of bracken-free grassland of reasonable quality occur around the area of Stop 4, other parts of those slopes show a distinct lack of grazing pressure. Bracken is seriously encroaching in places (954) and scrub is also showing early signs of spreading. In addition, on the lower slopes east of Stop 4, burning of scrub (180) in the area of the ponds was noted (see description of Stop 4).

Further north, in the vicinity of Note 11, the semi-improved sward is currently grazed by horses and while a degree of bracken encroachment was noted in that locality (954), it was not as severe as that observed in the vicinity of N8 where very light grazing pressures were evident.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
180	Burning	0	C
103	Cultivation: agricultural improvement	-2	A
149	Grazing: undergrazing	-1	C
152	Restructuring agricultural land holding: removal of scrub	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Management practices at Ballyprior have changed since the initial NHA survey in 1999. Parts of the site have been agriculturally improved to the extent that a loss of semi-natural grassland habitat has occurred. Notes 6 and 10 of the 2006 survey, describe fields which have been reseeded and improved and which appear to currently function as hay or silage fields. The field in which Stop 2 is located has also been improved and cattle were

grazing the field at the time of surveying.

The management of the remaining grassland areas in the site is not consistent. Horses were grazing some areas at the time of survey (e.g. Note 11 and Stops 3 and 4) but the grazing pressures varied. In the vicinity of Stop 4, a distinct mowing line occurred over the summit of the slopes. Calcareous grassland to the north east was relatively tightly mown and grazed while that to the south west was not mown, and appeared ungrazed and tussocky.

Other areas along the eastern sections of the site also show insufficient grazing pressures (Notes 8, 12, and Stop 5) and consequently, bracken encroachment is seen to be a problem. Much of the grassland in this eastern section is seen to be semi-improved, with pockets of less improved grassland that contain positive indicator species. These species more typically occurred on steeper slopes (e.g. Stop 6 and Stop 7) which did not indicate any great grazing pressures.



## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6210 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

12ha of the habitat was mapped within Ballyprior Grasslands SAC. This is likely to be an over-estimation as some of the 12ha, particularly that described by N11 (ca. 2ha), has a somewhat semi-improved element present in the vegetation. Thus the current estimation of the extent of habitat type 6210 at Ballyprior is significantly less than the 37ha estimated in the Natura 2000 Explanatory Notes.

The loss in extent of 25ha since the SAC was surveyed in 1999 is due mainly to agricultural improvement of the land, but with scrub and bracken encroachment also contributing. The largest loss (11ha estimated using ArcView GIS) has occurred in the mid-west of the site where N10 describes a re-seeded field. To the south of this another field has been re-seeded, but as this was described by the NHA notes in 1999 as "grassland with deeper, more fertile soil and/or lower species diversity" than the field referred to above, it is unlikely that this field was included in the original estimate of extent of habitat 6210. The agricultural improvement works carried out on this field had indeed already commenced by the time of the NHA survey of September 1999 with "bulldozing of the ground surface/vegetation (Hawthorn/Hazel) to remove scrub and surface stone (fragmented limestone out-crop)" as well as new trackways and wire-fencing noted at the time. Another large loss in extent due to agricultural improvements (ca. 10ha) has occurred in the south-west of the site (see N1-N4 and Stop 3). Thus, it is estimated that agricultural improvements have led to an overall loss in extent of over 20ha in the last seven years.

Scrub and bracken encroachment is more of a feature in the south-east of the site (see N8 and Stop 5) where there has been an estimated loss in grassland area of ca. 3ha since 1999, leading to an overall estimate of loss in extent at Ballyprior of approximately 24-25ha.

The overall loss in extent of habitat 6210 since 1999 can be estimated to be approximately 25ha (or 68% of the original extent). This is considered to be Unfavourable - bad.

### ***Structure and Functions:***

Of the 8 Monitoring Stops recorded, 7 were included in the assessment of Structures and Functions. 4 of the 7 Stops passed the assessment of this attribute. Of the 3 Stops which failed, 2 failed as a result of encroachment by scrub and bracken (Stops 1 and 5). The target number of indicator species recorded at both of these Stops were 6 and 5 respectively. While these do not reach the target number of 7, it suggests that the 6210 grassland is still present in the current understorey of spreading scrub and bracken.

The third Stop, Stop 3, while it recorded 9 indicator species, failed as an insufficient herb cover was recorded and it also contained too high a cover of *Lolium perenne*.

The Stops which passed (Stops 4, 6, 7, and 8) showed a good range of positive indicator species with no, or very little, *Lolium perenne* occurring. Stop 7 recorded only 6 indicator species. However, a concession was made based on the presence of 'Indicators of Local Distinctiveness', in this instance the orchid-rich nature of the slopes. As the orchid *Coeloglossum viride* was relatively abundant within the Stop and *Dactylorhiza fuchsii* was frequent outside the Stop, this Stop was deemed to 'Pass'.

Given that 3 of the 7 Monitoring Stops failed their assessment, resulting in a failure rate of over 40%, the Structures and Functions of the 6210 grassland habitat at Ballyprior Grassland cSAC are described as being Unfavourable - bad (see Table 3).

#### ***Future Prospects:***

Much of the landscape to the west of the SAC is agriculturally improved and it is evident that the pressure to improve areas within the boundary of the SAC must be high. Agricultural improvement (scrub clearance, reseeded, heavy use of fertilisers) of previously described semi-natural grassland within the SAC has already seriously impacted on the grassland habitat at Ballyprior. It is estimated that over 20ha of semi-natural grassland has been lost to agricultural improvement in the last 7 years. In addition, the site files indicate that a number of appeals by landowners to the designation of the SAC status are under consideration. All of these factors together suggest that the Future Prospects for the remainder of the 6210 habitat type within the site are very poor.

The eastern half of the site is currently mostly old, semi-improved grassland with some pockets of more semi-natural, calcareous, grassland remaining on thinner soil on sloping ground. Grazing by horses and sheep occurs but pressures vary in intensity. This has resulted in both well-grazed areas (Note 9) and undergrazed areas which show scrub and bracken encroachment (see Stops 1 and 5, and Notes 8 and 11). Some of these areas still record varying numbers of calcareous indicator species, suggesting that good grassland habitat could be re-established if control mechanisms were put in place. However, as Fossitt (2000) describes the category of Dense Bracken (HD1) as being areas with >50% cover of *Pteridium aquilinum*, the areas of Stop 5 and Note 8 are deemed to be mostly lost to bracken encroachment (bracken occupies > 60% of the vegetation cover in these areas).

Consequently, the assessments of Extent is described as Unfavourable - bad and the Structures and Functions are described as being Unfavourable - bad. In addition, taking into account that at least for the remaining grassland habitat, the Structures and Functions could be improved if management of the site were improved, the Future Prospects for 6210 habitat at this site are seen to be Unfavourable - inadequate (see Table 3).

#### ***Conservation Assessment:***

Significant pressure to agriculturally improve the semi-natural grassland habitat at Ballyprior has severely impacted upon the 6210 grassland. All of the western and south western half of the site shows considerable loss, both in the extent of area where a loss of >20ha is estimated and in the quality of the remaining grassland. As a result of the 2006 assessment, Extent is described as being Unfavourable - bad while the Structures and Functions of the remaining grassland is deemed to be Unfavourable - bad.

While the two large reseeded *Lolium perenne* fields (Notes 6 and 10) and the areas of bracken encroachment (e.g. N8) are seen as lost habitat, sections of the south western corner which show initial attempts at improvement via scrub clearance and some minor reseeded and fertiliser application, may be recoverable with the correct management protocol.

For the remainder of the southern and eastern section of the site, a consistency in grazing pressures is required for those areas which still retain some 6210 habitat. This is essential if current grassland quality (Stops 4, 6, 7, and 8 passed) and bracken encroachment is to be checked.

Taking into account the results of the 2006 assessments for Extent (Unfavourable - bad), Structures and Functions (Unfavourable - bad), and Future Prospects (Unfavourable - inadequate), the overall Conservation Assessment for Ballyprior Grassland is described as being Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
		Structure and Function	
		Extent	
			<i>Unfavourable - bad</i>
	Future Prospects		

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This note describes the base of the slope on which Stop1 is located. The soil is deeper here than on the slopes and the area has been re-seeded and fertilised. Species occurring include *Lolium perenne*, *Trifolium repens*, *Trifolium pratense*, *Senecio jacobea*, *Hypochoeris radicata*, *Lotus corniculatus*, and *Ranunculus bulbosus*. On thinner and more exposed soil, *Bellis perennis*, *Centaurea erythraea*, *Leucanthemum vulgare*, and *Prunella vulgaris* were also noted.

On the slopes at the north eastern section of this field, *Lolium perenne* dominates with scattered *Senecio jacobea*, *Cirsium arvense*, and *Cirsium vulgare*. *Trifolium repens* also occurs. Frequent cowpats were noted in this end of the field.

The raised ditch that forms the boundary on the eastern side of this field carries a remnant of calcareous indicators and general grassland species such as *Avenula pubescens*, *Lotus corniculatus*, *Linum catharticum*, *Hieracium pilosella*, *Thymus praecox*, *Leucanthemum vulgare*, *Achillea millefolium*, *Centaurea nigra*, and *Veronica chamaedrys*.

**Note 2:**

This area is described in the 1999 NHA notes as being scattered scrub with grassland. When viewed from OSI 2000 aerial photographs, the area in question shows evidence of major disturbance. On surveying the area, it is clear that scrub clearance has occurred and some attempt at improvement is evident.

The local Conservation Ranger indicated that two brothers became new landowners in this site. The owner of this particular field and the adjacent one described in Stop 1 had begun to clear scrub with the intention of improving the grassland. No significant, systematic effort was made after scrub removal to continue the improvement so the land is showing signs of natural recolonisation.

The surface soil is thin and rocky in places and scattered patches of *Lolium perenne*, *Trifolium repens*, and *Ranunculus repens* occur. *Senecio jacobea*, *Cirsium palustre*, and *Cirsium arvense* are widely scattered throughout. Other species occurring include *Centaurea nigra*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Cerastium fontanum*, and *Hypochoeris radicata*. Occasional calcareous indicator species occur such as *Galium verum*, *Lotus corniculatus*, and *Linum catharticum*. A few mature shrubs of *Crataegus monogyna* remain.

## Note 3:

The fields to the south west, the south, and the south east of Note 2 were all similarly described in the 1999 NHA notes as being relatively open semi-natural grassland with scattered scrub and areas of limestone rock. On surveying, however, all of these fields have been improved to a greater or lesser degree.

This improved field described in the current Note 3 is a well-grazed pasture with *Lolium perenne*, *Cynosurus cristatus*, *Trifolium repens*, *Senecio jacobea*, *Hypochoeris radicata*, and *Cirsium vulgare*.

## Note 4:

Immediately east of the archaeological ring fort feature, and on the rocky mound of the feature itself, calcareous indicators were also recorded which included *Galium verum*, *Conopodium majus*, *Lotus corniculatus*, *Briza media*, and *Ranunculus bulbosus*. Also occurring are *Cynosurus cristatus*, *Holcus lanatus*, *Lolium perenne*, *Leucanthemum vulgare*, *Bellis perennis*, *Prunella vulgaris*, *Hypochoeris radicata*, and *Rumex acetosa*. *Pteridium aquilinum* is also present while *Senecio jacobea* and *Cirsium palustre* are well scattered throughout.

## Note 5:

NHA notes from 1999 and OSI aerial photographs (2000) indicate this area to be mature larch and pine woodland with an open canopy and a grassy ground layer. Additional NHA notes recorded in 2003 indicate that these trees had been felled and that recolonisation of the disturbed soil was occurring. Local information suggests that these trees were felled as part of the general improvements which have occurred on this site.

Many of the tree trunks and a lot of the dead branch material remains scattered. The rocky soil is recolonising with grasses such as *Holcus lanatus*, *Lolium perenne*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, and *Avenula pubescens*. Calcareous indicator species also occur such as *Galium verum*, *Carex caryophyllea*, *Briza media*, *Daucus carota*, *Hieracium pilosella*, and *Linum catharticum*.

Other species present include *Leucanthemum vulgare*, *Viola* spp., *Cerastium fontanum*, *Senecio jacobea*, *Cirsium palustre*, *Prunella vulgaris*, *Veronica chamaedrys*, *Potentilla sterilis*, *Trifolium repens*, *Achillea millefolium*, and *Pteridium aquilinum*.

A hedgerow remains along the top of the slope and seedlings of *Prunus spinosa* are beginning to establish in the disturbed soil. 8 ponies were grazing in this area on the day of survey.

## Note 6:

This field, on the other side of the roadway track to Note 10, was described in the 1999 NHA notes as being "a relatively open grassland but with deeper soil in places". It was also described as being "still fairly natural".

Like Note 10, the area described by Note 6 has since also been cleared of scrub and has been re-seeded. *Lolium perenne* dominates (90%) with additional species also occurring such as *Trifolium repens* and *Ranunculus repens*. This sward had been mown in the days prior to the field visit in July 2006.

## Note 7:

This is a damp, improved, pasture of *Lolium perenne*, *Holcus lanatus*, *Rumex acetosa*, *Ranunculus acris*, *Trifolium repens*, *Cerastium fontanum*, and *Senecio jacobea*. Recent cowpats were noted. This field was noted in the 1999 NHA notes as being a semi-improved meadow.

## Note 8:

This grassland is semi-improved and lightly grazed by cattle. Scrub is well scattered across these east-facing slopes and occurs as dense patches in areas. Dense bracken also occurs in patches. *Dactylorhiza fuchsii* is distributed throughout.

The vegetation in this area is similar to that recorded from Stop 5 which 'Failed' its assessment for Structures and Functions due to lack of sufficient indicator species and the occurrence of bracken.

## Note 9:

This note describes the low lying semi-improved grassland between the higher ground to the west and that to the east. Horses were grazing on the day of survey.

The vegetation consists of *Anthoxanthum odoratum*, *Cynosurus cristatus*, *Holcus lanatus*, *Trifolium repens*, *Cirsium palustre*, *Ranunculus acris*, *Rumex acetosa*, *Luzula campestris*, *Conopodium majus*, *Hypochoeris radicata*, and *Plantago lanceolata*. *Pteridium aquilinum* is scattered throughout but appears to be kept in check by current grazing pressures.

**Note 10:**

The field in which Note 10 is located is described in the 1999 NHA notes for this site as being 'upland grassland on mineral soil'. It is described as being a relatively open grassland with some scattered scrub and a ground cover reflecting a semi-natural situation.

This description no longer applies as this large field has been improved to a significant degree. It has been cleared and re-seeded with *Lolium perenne* and is managed as a hay or silage meadow.

Within the Stop, there are no calcareous indicator species occurring. *Lolium perenne* dominates (90%) cover with *Trifolium repens*, *Ranunculus acris*, *Holcus lanatus*, and *Agrostis capillaris* also occurring. Sward height on the day of survey was 60cm, prior to mowing.

**Note 11:**

The vegetation in this area is similar to that recorded from Stop 5 which 'Failed' its assessment for Structures and Functions due to lack of sufficient indicator species and the occurrence of bracken. The grassland along this entire ridge is semi-improved and lightly grazed by horses. Scrub is lightly scattered across these slopes and bracken also occurs in patches.

**Note 12:**

This is a semi-improved field with a few remnant calcareous indicator species e.g. *Avenula pubescens*, *Lotus corniculatus*, *Galium verum*, and *Conopodium majus*.

Other species occurring include the grasses *Cynosurus cristatus* and *Anthoxanthum odoratum*, with herbs such as *Hypochoeris radicata*, *Potentilla erecta*, *Plantago lanceolata*, *Agrostis capillaris*, and *Senecio jacobea*. Some recent cowpats were noted and while the field is obviously grazed, tussocky areas would suggest that grazing pressures are currently relatively light.

**Note 13:**

This end of the site is characterised by rising, rocky ground along the eastern boundary to the SAC. While the rocky hillocks have some calcareous indicator species, the vegetation has a heathy nature. At the base of the hillocks, there is a distinct habitat change to a more low-lying and improved grassland.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Stop is located in an area which was described in the 1999 NHA notes as being 'relatively open grassland with scattered scrub'. OSI aerial photographs from 2000 indicate an area of scrub with surrounding areas of open grassland. The field slopes gently away to the west before dropping down a steeper outcrop of rocky limestone to a lower lying, flatter area at the boundary of the SAC.

During the survey in 2006, much of the scrub to the west of Stop1, in the lower-lying areas of this field, had been cut and left in place to die off. Information from the local Conservation Ranger indicates that two brothers became new landowners in this site and the owner of this particular field had begun to clear scrub with the intention of improving the grassland. No further significant progress had occurred beyond the cutting of some of the gorse scrub.

Where scrub had been removed from the sloping limestone outcrops, the thin, underlying soil had been exposed and here, some calcareous indicator species have begun to re-colonise. Stop 1 is located in this sloping outcropping area.

Within the Stop, while 6 indicator species were recorded, herb percentage at 30% does not reach the target for this attribute. Scrub and bramble also occupies 10% cover.

Other species occurring in Stop 1 are *Festuca rubra*, *Cynosurus cristatus*, *Agrostis capillaris*, *Lolium perenne*, *Hypochoeris radicata*, *Leucanthemum vulgare*, *Hypericum pulchrum*, *Polygala serpyllifolia*, *Cerastium fontanum*, *Achillea millefolium*, *Potentilla erecta*, *Prunella vulgaris*, *Trifolium pratense*, and *Trifolium repens* (see relevé 4 for full details).

Some scattered shrubs of *Crataegus monogyna* and *Prunus spinosa* remain on these slopes and the emergence of seedlings of these species suggests that scrub recolonisation is a potential problem. Also occurring in the disturbed rocky soil across the slopes are *Briza media*, *Potentilla sterilis*, *Centaurea nigra*, *Lolium perenne*, and *Rubus fruticosus* agg. Signs of grazing by horses and rabbits are evident. Note 1 describes the vegetation in the western and northern ends of this field.

Due to the low herb content, the insufficient number of indicator species, and the presence of scrub/Bracken, this Stop is deemed to 'Fail' its assessment for Structures and Functions.



**Monitoring Stop 2:**

1999 NHA notes (Note 9) indicate that while the grassland on this deeper and more fertile soil was managed for grazing and may receive some fertiliser, the habitat was still fairly natural and was not 'improved'. During the current survey it was evident that this field has been reseeded with *Lolium perenne* and is currently being grazed by cattle.

Information from the local Conservation Ranger indicates that the landowner for this field is one of two brothers who own part of this site. The brother who owns this particular field has significantly improved his portion by clearing scrub and reseeding with a *Lolium perenne*-dominated seed mix. Also within the Stop are species such as *Cynosurus cristatus*, *Cirsium arvense*, and *Trifolium repens*.

Given the re-seeded and improved nature of this field, this Stop is not assessed for Structures and Functions. It is instead taken into consideration for habitat Extent.

**Monitoring Stop 3:**

This Stop is located on a gradual, north west-facing slope which levels out onto a wide, open area of grassland. Horses were grazing on the day of survey but given the size of the area over which they range, their impact appears to be relatively minor. While some small patches show signs of recent grazing, most of the area appears ungrazed at present.

Within the Stop, 9 indicator species were recorded but herb content was low at 30%. No Bracken/scrub was recorded but the negative indicator, *Lolium perenne* occurred.

Also recorded within the Stop were grasses such as *Holcus lanatus*, *Dactylis glomerata*, *Anthoxanthum odoratum*, and *Cynosurus cristatus*. Herbs include *Plantago lanceolata*, *Trifolium repens*, *Senecio jacobaea*, *Achillea millefolium*, *Prunella vulgaris*, *Hypochoeris radicata*, and *Veronica officinalis*. *Pteridium aquilinum* is present but in low percentages (5%).

Due to the low herb content and the presence of the negative indicator species *Lolium perenne*, this Stop is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 4:**

This Stop is located on ground which just begins to slope gently away to the east. The vegetation is closely grazed by horses and rabbits but where patches of *Pteridium aquilinum* occur, the vegetation is longer.

Within the Stop, 7 indicator species were recorded and herb content is good at 40%. No Bracken/scrub occurs and the negative indicator species, *Lolium perenne*, occurs at minor percentages.

In addition to the 7 positive indicator species, other species representative of a semi-natural/semi-improved grassland occur (see relevé 1 for full details). The area is deemed to be orchid-rich as *Dactylorhiza fuchsii* was seen to be common both within the relevé and also in the general area.

When viewed on aerial photographs (OSI 2000), scrub is seen to occur on the slope. At the base of the slope, small ponds occur which are mentioned in the 1999 NHA notes (N10). During the current survey, it was noted that some of the scrub on the slope appeared to have been cleared. In addition, evidence of recent burning was noted in two areas close to the ponds.

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

**Monitoring Stop 5:**

This field slopes gently to the north east. The soil is deeper than previous Stops and bracken encroachment is a serious issue. Patches of dense bracken occur amongst which are more open, grassy, areas. Patches of *Rubus fruticosus* agg. also occur throughout.

Within the Stop, herb content is good (60%) but only 5 indicator species were recorded. In addition, bracken occupies 10% cover within the Stop and 20% cover in a larger area of 5m x 5m.

The herbs occupying the majority of cover in the Stop are more indicative of deeper soil which is showing some indication of tending towards a more heathy nature e.g. *Succisa pratensis*, *Potentilla erecta*, *Pedicularis sylvatica*, *Ranunculus acris*, *Trifolium repens*, *Trifolium pratense*, *Cynosurus cristatus*, *Festuca rubra*, *Anthoxanthum odoratum*, and *Centaurea nigra*. Also occurring within the Stop are *Hypochoeris radicata*, *Plantago lanceolata*, *Achillea millefolium*, and *Prunella vulgaris* (see relevé 2 for full details).

Outside the Stop, additional species occurring include *Rumex acetosa*, *Cirsium palustre*, *Stellaria media*, and *Rubus fruticosus* agg. *Dactylorhiza fuchsii* is well scattered across the slopes of this field and *Platanthera chlorantha* also occurs towards the grassy lower end. Urgent management of bracken and bramble is needed in this field.

Due to the insufficient number of indicator species and the excessive cover of Bracken/scrub, the Stop is deemed to 'Fail' its assessment for Structures and Functions.

**Monitoring Stop 6:**

This slope faces southwest and shows a thin cover of calcareous soil. Grazing by rabbits was evident and some minor soil disturbance was noted.

Within the Stop, 10 indicator species were recorded and herb content was good at 50% cover. No scrub, bracken, or negative indicator species were recorded.

In addition to the 10 positive indicator species, other species occur such as *Anthoxanthum odoratum*, *Agrostis capillaris*, *Thymus praecox*, *Leucanthemum vulgare*, *Bellis perennis*, *Euphrasia* spp., *Prunella vulgaris*, *Cerastium fontanum*, and *Potentilla sterilis* (see relevé 5 for full details). Outside the relevé, *Carlina vulgaris* also occurred.

Dense gorse scrub occupies much of this slope and the area of calcareous grassland is very small as a result. This grassland type grades quickly into more improved grassland at the base of the slope.

This Stop is deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 7:**

This Stop is located on a gradual-to-steep slope facing to the south west. The lower slopes are covered in dense scrub of gorse and hawthorn. Occasional occurrences of bracken were noted across the open slope (5% cover in total).

Within Stop 7, herb content is good (50%) and 6 indicator species were recorded. Bracken cover is also low (<5%) and no negative indicators were recorded. The vegetation is tightly grazed, most likely by rabbits as abundant droppings for this species were noted on these open slopes.

In addition to the 7 indicator species, other species occurring include *Danthonia decumbens*, *Plantago lanceolata*, *Hypochoeris radicata*, and *Thymus praecox*.

Although the target of 7 indicator species was not reached, in this instance the attribute is not seen to fail. The failure to reach the target number of indicator species may sometimes be overlooked if there are other significant features of local distinctiveness present which would reflect the good quality or value of the habitat e.g. the presence of orchids. The fact that this Stop is orchid-rich (up to 7 spikes of *Coeloglossum viride* occur within the 2m<sup>2</sup> quadrat), is seen to be a significant feature, facilitating a 'Pass' result. *Dactylorhiza fuchsii* also occurs in the immediate vicinity of the Stop.

The Stop is therefore deemed to 'Pass' its assessment of Structures and Functions.

**Monitoring Stop 8:**

This Stop is located in the northern corner of the site, on a gradual, rocky slope which faces to the south. Patches of dense gorse occur around the slope but no young seedlings were noted. Cattle tracks traverse the slope but disturbance levels are localised and at a moderate level. Some soil disturbance has occurred on the slope as a result of cattle grazing.

Herb content within the Stop is good (60%) and 11 indicators species were recorded. No bracken or negative indicators were noted.

Also occurring within the Stop are *Danthonia decumbens*, *Dactylis glomerata*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Thymus praecox*, *Prunella vulgaris*, *Achillea millefolium*, *Leucanthemum vulgare*, *Plantago lanceolata*, and *Polygala serpyllifolia* (see relevé 3 for full details).

This Stop is deemed to 'Pass' its assessment for Structures and Functions.

# Grasslands Monitoring Project

## 2006



### Volume IV

### Summary Site Reports

### **Species-rich *Nardus* Grasslands**

Site Codes 000646 to 002257

Report produced by NPWS by Rosaleen Dwyer, Willie Crowley, and Faith Wilson  
as part of the Grasslands Monitoring Programme

# Grasslands Monitoring Project 2006

## Volume IV

### Summary Site Reports

#### Species-rich *Nardus* Grasslands

SITECODE	SITE NAME
IE0000646	Galtee Mountains
IE0000934	Kilduff, Devilsbit Mountain
IE0000939	Silvermine Mountains
IE0001197	Keeper Hill
IE0002122	Wicklow Mountains
IE0002124	Bolingbrook Hill
IE0002125	Anglesey Road
IE0002257	Moanour Mountain

## **Galtee Mountains**

### **SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	10/11/2006
Willie Crowley	11/11/2006
	12/11/2006

**Total Site Area (Ha):** 6421.8

**Area of Priority Grassland (N2000) (Ha):** Difficult to estimate, probably tens of hectares.

**Area of Priority Grassland 2006 (Ha)\*:** 200 - 400

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Limerick	74	LI058, LI050, TI073, TI073a, TI074,
Tipperary		TI080.

#### **Digital Aerial Photos (Tile Nos.):**

O0539-d, O5300-d, O5301-c, O5301-d, O5302-c, O5302-d, O5360-a, O5360-b, O5360-c, O5360-d, O5361-a, O5361-b, O5361-c, O5361-d, O5362-a, O5362-b, O5362-c, O5362-d, O5363-a, O5363-c, O5420-b, O5420-d, O5421-a, O5421-b, O5421-c, O5421-d, O5422-a, O5422-b, O5422-b, O5422-c, O5422-d, O5422-d, O5423-a, O5423-b, O5423-c, O5423-d, O5424-a, O5482-a, O5482-b, O5483-a, O5483-b.

#### **Other Aerial Photographs:**

None.

### **SITE DESIGNATIONS**

#### **SAC Site Code:**

000646

**Priority Grassland Habitat Type:** 6230

Species rich *Nardus* grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

Situated in east Limerick and south Tipperary, the Galtee Mountains are Ireland's highest range of inland mountains. Galtymore has an elevation of 920 m and the main ridge, mostly above 700 m, extends approximately 10 km from east to west. The underlying geology comprises sandstones and shales.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the main habitats as follows; Heath is the main habitat type within the site and Heather (*Calluna vulgaris*) dominates the vegetation. Areas of both dry heath and alpine heath are found. Upland Mat-grass (*Nardus stricta*) grassland occurs on steep slopes, particularly in the west. It also mentions the presence of the Rare Small-white orchid (*Pseudorchis albida*), Mountain Rock-cress (*Cardaminopsis petraea*) and Alpine Saw-wort (*Saussurea alpina*) which have been recorded from the site. These species are included in the Red Data Book and the former is legally protected under the Flora Protection Order (1987). The main grass species present are *Agrostis capillaris*, *Nardus stricta*, *Anthoxanthum odoratum*, and *Festuca ovina*. Sedges are a feature with *Carex binervis*, *Carex panicea* and *Carex pilulifera* present. Herb species include *Galium saxatile*, *Potentilla erecta*, *Pedicularis sylvatica*, *Polygala serpyllifolia*, *Polygala vulgaris*. *Pseudorchis albida* occurs at Ballygeana and may occur in other areas.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: This habitat occurs in mosaic with humid grassland and heath, mainly in a zone above 300m, between more intensively managed fields at the lower levels and the bog and pure heath habitats higher up. Soils are variable but usually have a peaty character.

Good documentation comes from the 1995 NHA survey which identifies its presence around the western part of the site from Knockmoyle to Knockateriff. Elsewhere within the site it is more localised. R. Fitzgerald (Rare Plant 1991 survey) also describes in detail an area of species-rich *Nardus* grassland with *Pseudorchis albida* at Ballygeana (Limerick). Further reference to its presence is made by M. Wyse Jackson and A. O'Sullivan from a site visit in April 1996 to an area south of Baunteen (and not far south of R. Fitzgerald's site).

The main grass species present are *Agrostis capillaris*, *Nardus stricta*, *Anthoxanthum odoratum* and *Festuca ovina*. Sedges are a feature with *Carex binervis*, *Carex panicea* and *Carex pilulifera* occurring. Herb species include *Galium saxatile*, *Potentilla erecta*, *Pedicularis sylvatica*, *Polygala serpyllifolia*, and *Polygala vulgaris*. More typical heath species include *Calluna vulgaris* and *Danthonia decumbens*. Bryophytes are frequent. As noted above, *Pseudorchis albida*, a legally protected species, occurs at Ballygeana and may occur in other areas. The various descriptions indicate that there are some very good examples of species-rich *Nardus* grassland within this site.

#### *Description based on the 2006 Survey :*



During the 2006 survey, areas on the western, southwestern, and northern boundaries of the site were assessed. At all locations, species-rich *Nardus* grassland was recorded in the zone above the upper limit of managed farmland. In some areas, grazing pressures were sufficient to maintain reasonably good grassland, contrasting with adjacent unmanaged areas which supported heath communities. In other areas, wide ridges of grassland occurred on the slopes between stream channels dominated by *Juncus effusus* and *Polytrichum commune*.

A good range of indicator species were recorded, including the grasses *Agrostis capillaris*, *Anthoxanthum odoratum*, *Festuca ovina*, and *Nardus stricta*. Herbs recorded include *Achillea millefolium*, *Galium saxatile*, *Pedicularis sylvatica*, *Polygala serpyllifolia*, *Potentilla erecta*, *Viola* sp., *Succisa pratensis*, and *Luzula multiflora*. *Carex pilulifera* and *Juncus squarrosus* were also recorded. Additional species recorded include *Festuca vivipara*, *Festuca rubra*, *Carex binervis*, *Carex panicea*, *Molinia caerulea*, *Holcus lanatus*, *Juncus effusus*, *Calluna vulgaris*, *Vaccinium myrtillus*, and the mosses *Rhytidiadelphus squarrosus*, *Hylocomnium splendens*, and *Polytrichum commune*. The orchid *Pseudorchis albida* was not recorded, perhaps due to the fact that the survey occurred too late in the season to detect this species.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was first surveyed in 1991 by R. Fitzgerald during the NPWS Rare Plant Survey. It was surveyed in 1994 by R. Goodwillie and in 1995 as part of the NHA Survey. The site was visited in 1996 by NPWS staff to assess a forestry grant application at Barna, on the west facing slopes of the site.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

14 Monitoring Stops were conducted within the site and the Structures and Functions of the 6230 habitat were assessed at each Stop. The details recorded at each Stop are presented in Appendix II. The results of the Structures and Functions assessment is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It will be seen that of the 14 Stops which were assessed, 6 Stops were seen to fail, resulting in an overall failure of the Structures and Functions at the Galtee Mountains SAC. The primary cause for the failure was the insufficient number of indicator species occurring and the low herb content of the grassland habitat.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	4
<b>Number of Monitoring Stops:</b>	14
<b>Number of Stops That Pass:</b>	8
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Sheet 3 of 4
Stop 02	1	Fail	Structures and Functions	Sheet 3 of 4
Stop 03	2	Fail	Structures and Functions	Sheet 2 of 4
Stop 04	2	Fail	Structures and Functions	Sheet 2 of 4
Stop 05	2	Pass	Structures and Functions	Sheet 2 of 4

Stop 06	2	Pass	Structures and Functions	Sheet 2 of 4
Stop 07	2	Pass	Structures and Functions	Sheet 2 of 4
Stop 08	2	Pass	Structures and Functions	Sheet 2 of 4
Stop 09	3	Pass	Structures and Functions	Sheet 1 of 4
Stop 10	3	Pass	Structures and Functions	Sheet 1 of 4
Stop 11	4	Pass	Structures and Functions	Sheet 4 of 4
Stop 12	4	Pass	Structures and Functions	Sheet 4 of 4
Stop 13	4	Fail	Structures and Functions	Sheet 4 of 4
Stop 14	4	Fail	Structures and Functions	Sheet 4 of 4

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 4 separate management units. These Management Units reflect the geographical distribution of the areas targeted for survey, where 4 of the 6 target zones were visited.

Stops 1 and 2 are located in Management Unit 1 (Target Area 2), on land owned by a Mrs. Margaret Ryan of Ballyanna. *Pseudorchis albida* was previously recorded from these lands in 1991 during a Rare Plant Survey.

Management Unit 2 (Target Area 1) contains the 6 Stops from Stop 3 to Stop 8. Stops 3, 4, 5, 6, and 7 are located on the lands previously assessed by A. O'Sullivan and M. Wyse-Jackson (1996) in relation to an application for a forestry grant. At that time, most of the land in Management Unit 2 was owned by 3 landowners and management was relatively similar.

Management Unit 3 (Target Area 6) contains Stops 9 and 10. This area is located at the end of a remote track in an isolated valley. Sheep heavily graze the area.

Management Unit 4 (Target Area 4) contains Stops 11, 12, 13, and 14. These Stops are located above the line of managed farmland where the slopes rapidly become severe. Sheep graze these slopes.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

In general, the areas assessed did not show significant levels of impact or damage. Levels of fertiliser application (120) are low overall, with the effects of very light inputs suggested only in one Stop, Stop 11. Despite this, this Stop passed the Structures and Functions assessment.

Grazing levels (140) are believed to be moderate to light over most of the areas assessed. Sheep are the predominant grazers, with cattle appearing to occur at only one location, in the area of Stops 1 and 2. Altitude and steepness of slope are not suitable for cattle over most of the rest of the Stops. At one Stop, Stop 11, the comparatively high cover of *Rhytidiadelphus squarrosus* and *Juncus squarrosus* suggested that overgrazing may become a problem. This Stop also shows some signs of light fertiliser application (see above). For most of the other Stops assessed, lighter grazing patterns occur with undergrazing (149) being suggested at a few locations.

Above one Stop, Stop 11, a shallow drainage channel (810) has been constructed across the slopes. This has had the effect of maintaining dry *Nardus* upland grassland on the slopes below the stream and Stop 11 passes the assessment of Structures and Functions. Wet heath communities currently occur on the slopes above the stream. Artificial drainage of the slopes would generally be seen to be a negative impact and the status of the wet heath communities are threatened by the stream. However, in this instance, the stream has the effect of allowing the priority *Nardus* grassland to occur on the drier slopes below the stream.

Natural processes (990) of organic soil accumulation are occurring on the site, resulting in a mosaic of underlying soil conditions. According to Fossitt (2000), dry heath will occur on 15cm of peat while wet heath will occur on peat with depths of between 15-50cm. A mosaic of soil and peat of varying depths occurs across the slopes, resulting in a mosaic of habitat types in some places. Species-rich *Nardus* grassland appears to occur across this range of peat depths, being noted on peat of between 15 to 30cm (e.g. Notes 1 and 7).

A forestry grant application was previously refused in 1996 for the area where Stops 3, 4, 5, 6, and 7 are located. Coniferous forestry plantation (160) currently occurs adjacent to the northern, eastern, and parts of the southern boundaries to this cSAC, placing pressure on the site to succumb to further planting.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
810	Drainage	1	C
120	Fertilisation	-1	C
160	General Forestry management	-2	C

140	Grazing	0	B
149	Grazing: undergrazing	-1	C
990	Other natural processes	0	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

Current levels of grazing appear to be maintaining reasonably good upland grassland over most of the areas assessed. Invasion by Bracken or scrub species was not an issue on this site. In some instances, however, insufficient grazing levels may be facilitating a transition to more heathy communities. This is suggested at Stops 3 and 4 in particular, where *Calluna vulgaris* and *Vaccinium myrtillus* occur in the vegetation. Stop 1, which is at a lower altitude and is grazed by cattle, also shows signs of undergrazing.

Correct grazing levels at the altitudes experienced in this site are essential. While Stops 3 and 4 failed as a result of low herb cover and insufficient indicator species, both attributes were close to the target thresholds. Evidence of some grazing management was noted but it was slightly below the intensities required to sustain good grassland. In contrast, however, directly north of these Stops and at the same altitudes, wet heath communities (see Note 6) existed on the north eastern side of a deep stream ditch, on slopes which had very little evidence of grazing management. The absence of grazing on that side of the ditch appears to be facilitating the natural development of wet heath.

An assessment of current grazing patterns is therefore mandatory to determine the current intensities which are required to sustain good species-rich *Nardus* grassland.

## CONSERVATION STATUS

### ***Extent:***

As noted in the NATURA 2000 Explanatory Notes the extent of habitat type 6230 in the Galtee Mountains SAC is difficult to estimate as it occurs "in a mosaic with humid grassland and heath, mainly in a zone above 300m, between the more intensively managed fields at the lower levels and the bog and pure heath habitat higher up". However, during the current project a crude estimate of the extent was approximated using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and an analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

After an examination of the aerial photographs and any NHA notes relating to grassland habitat, four areas were chosen for ground-survey. Each of these was deemed to support some amount of Species-rich *Nardus* Grassland with just over 200ha estimated to occur within and adjacent to these four areas. There is no doubt that there are further areas of habitat 6230 within the Galtee Mountains SAC which were not surveyed during this project. Time constraints dictated that survey areas were chosen based on the descriptions provided in the NHA notes. While it can be assumed that the majority of potential areas for this habitat type have been identified by both surveys, further survey work is essential.

While it is difficult to estimate the extent of the as yet un-surveyed areas of habitat 6230, from an analysis of the aerial photos and the NHA notes, it is believed that there could be up to another 200ha of the habitat present within the SAC. Aerial photographs suggest that additional areas of this habitat are likely to occur in the area of mountain between that represented in Sheets 3 and 4. This could be viewed from the slopes where Stops 1 and 2 are located (see Sheet 3).

Thus, a crude estimate of the extent of habitat 6230 within the Galtee Mountains SAC is between 200 - 400ha, with the actual extent likely to be somewhere close to the middle of this range. This is higher than the NATURA 2000 estimate of "several tens of hectares". However, it is believed that NATURA 2000 under-estimated the extent. Since no loss in extent of the habitat was noted during the ground survey (or appears likely to have occurred from an analysis of the aerial photographs), the Conservation Assessment of extent of habitat 6230 at the Galtee Mountains is thus considered to be Favourable.

### ***Structure and Functions:***

Of the 14 Stops assessed for Structures and Functions, 8 stops were seen to Pass. For these Stops, 9 or 10 indicator species were recorded and herb cover ranged from 25% to 40%. 6 Stops were seen to fail the assessment: Stops 1 and 2 in Target Area 3; Stops 3 and 4 in Target Area 2; and Stops 13 and 14 in Target Area 4.

For all 14 Stops, no Stop failed because of negative indicator species and no Bracken or scrub species were recorded at any Stop. For the 6 Stops which failed, low herb cover in association with insufficient indicator species, was the primary cause of the assessment failure. Nonetheless, even in these instances, recorded numbers of indicator species did not drop below 7, only 2 species short of the target number of 9. On some occasions, where

low herb cover was recorded e.g. Stop 3 presented with only 10% herb cover, this was the result of high percentage values for grass species already listed as indicator species (*Agrostis capillaris*, *Nardus stricta*, or *Festuca ovina*,) and as a result of high cover of *Carex binervis*.

Therefore, while 6 of the 14 Stops were seen to fail, in reality the actual Structures and Functions of the grassland habitats assessed were not seen to be excessively bad. Nevertheless, as over 40% of the assessed Stops were seen to Fail, the Structures and Functions of the habitat at this site must be described as being Unfavourable - bad.

***Future Prospects:***

The Future Prospects for the 6230 habitat at this site are seen to be good. Additional areas of priority habitat have been identified as a result of the 2006 survey and it is assumed that further survey would identify other areas of grassland.

Although the Structures and Functions were described as being Unfavourable - bad, in reality the condition of the grassland was not seen to be very bad. A reasonable number of indicator species occurred in those Stops which failed, with 7 or 8 species being recorded instead of the target number of 9 or more. Therefore it is believed that minor adjustments to grazing pressures could improve the grassland quality in a relatively short time.

In addition, apart from a slight problem of undergrazing, there are currently no other significant threats to the grassland on the site. As a result, the Future Prospects are described as being Favourable.

***Conservation Assessment:***

The determination of the overall Conservation Assessment for a site should take into account the results of the assessment of Extent, Structures and Functions. If one 'Unfavourable - bad' assessment results, the consequence should be an overall Conservation Assessment of Unfavourable - bad.

For the 6230 habitat in the Galtee Mountains cSAC, the assessments of Extent and Future Prospects were determined to be Favourable. The Structures and Functions were described as being Unfavourable - bad, due to the fact that over 40% of the Stops were deemed to Fail the assessment. This should automatically define the overall Conservation Assessment to be Unfavourable - bad.

However, the failure of the Structures and Functions was seen not to be as a result of agricultural improvement or serious mis-management of the habitat. Reasonably good numbers of indicator species were seen to occur where Stops failed and no negative indicators or scrub/Bracken occurred at any of the survey locations.

Natural processes of soil development have resulted in the occurrence of a mosaic of mineral soil with areas of peaty soils of varying depths. Species-rich *Nardus* grassland was seen to occur across this range of soil types, with the variation in vegetation composition relating more to underlying conditions than to management practices. Minor adjustments to current grazing patterns could assist in improving the herb content and increasing the



numbers of indicator species.

For this reason, the overall Conservation Assessment of the 6230 habitat at this site is described as being Unfavourable - inadequate, rather than Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - inadequate</i>
Future Prospects			
Extent			
		Structure and Function	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is an area of *Nardus*-dominated upland grassland on peat of approximately 50cm deep. The vegetation is dominated by *Nardus stricta* with *Festuca ovina* (F), *Galium saxatile* (F), *Juncus squarrosus* (F), some *Festuca rubra* (R), *Polygala serpyllifolia* (R), and *Agrostis* spp.

**Note 2:**

This note is located in the area close to the boundary of the SAC where soil predominates as the underlying substrate. Along the boundary, running downslope in a north westerly direction, a deep, dry channel occurs with an exposed soil profile. Herbs are more frequent on the soil substrate and include *Succisa pratensis*, *Pedicularis sylvatica*, *Potentilla erecta*, *Calluna vulgaris*, *Luzula sylvatica*, *Festuca vivipara*, and frequent *Agrostis* spp. *Crataegus monogyna* also occurs along the rim of the channel. Away from the channel, the surface vegetation and the underlying substrate is very similar to that described in the nearby Monitoring Stop 2.

**Note 3:**

The vegetation here is similar to the vegetation recorded at the nearby Stop 1.

**Note 4:**

This corner of the field is characterised by heath vegetation dominated by *Calluna vulgaris* (10cm high) and *Carex binervis*. Also occurring are *Potentilla erecta*, *Molinia caerulea*, *Succisa pratensis*, and *Sphagnum subnitens*. Mature shrubs of *Crataegus monogyna* and *Ulex gallii* also occur.

This appears to be the area described by R. Fitzgerald (28.6.1991) which refers to the populations of *Pseudorchis albida* recorded at that time. The 1995 NHA survey note (Note 13) describes an “upland grassland on mineral soil and the rare and protected small white orchid (*Pseudorchis albida*) occurs in this area of upland grassland . Small white orchid populations were found only in the lower north-east end of the field but may be present elsewhere on the slopes”. No evidence of this species was found during the 2006 survey but this may reflect the timing of the survey, which was too late in the season to detect this species.

## Note 5:

This area is located just within the SAC boundary, close to the edge of a deep stream channel. The soil on the slopes is peaty with an accumulation of between 10-15cm of organic matter over stony boulder clay. Fossitt (2000) indicates that dry heath can occur on <15cm of peaty soil.

The vegetation in this area is grass-dominated with a very low herb content (15%). *Nardus stricta*, *Molinia caerulea*, and *Agrostis* spp. are co-dominant. Low-growing (<5cm) *Calluna vulgaris* occurs with *Juncus squarrosus* (O), *Potentilla erecta* (O), *Galium saxatile* (R), *Rhytidiadelphus squarrosus* (R), *Rhytidiadelphus loreus* (R), *Vaccinium myrtillus* (R), *Carex binervis* (O), and *Polytrichum commune* (R). The area is grazed by sheep.

*Calluna vulgaris* becomes less frequent with increasing altitude and the vegetation takes on a more grassy appearance with *Nardus stricta* and *Agrostis* species dominating with some *Carex binervis*. Low growing *Calluna vulgaris* becomes more scattered and infrequent while moss cover increases. Herb content remains low, however.

## Note 6:

Large patches (approx. 10m in diameter) of *Molinia caerulea* occur at this level on the slope.

## Note 7:

An exposed cutting caused by sheltering sheep shows a soil profile with up to 15cm of peaty soil accumulating. The vegetation in this area shows much less *Nardus stricta* and *Calluna vulgaris*. There is more *Agrostis* spp. with scattered *Carex binervis*, *Galium saxatile*, and *Juncus squarrosus*. The vegetation is low in height, not exceeding 5cm.

## Note 8:

On the north side of the deep stream channel, the vegetation is a mosaic of dry heath with wetter areas of wet heath. It would appear that the steep slopes prevent surface water accumulating to any great degree. *Calluna vulgaris* is frequent with *Tricophorum caespitosum*, *Molinia caerulea*, *Eriophorum angustifolium*, *Juncus squarrosus*, *Vaccinium myrtillus*, *Potentilla erecta*, *Nardus stricta*, *Agrostis* spp., and *Galium saxatile* also occurring. Occasional small hummocks of *Sphagnum* mosses also occur. *Erica tetralix* is occasional.

## Note 9:

The vegetation on these south easterly slopes is similar to that recorded at Stop 5 which is representative of good *Nardus* grassland. The vegetation is very similar to the description of the grassland recorded by A.O'Sullivan and M.Wyse-Jackson in 1996 when this area was assessed for a forestry grant application (see 1996 Note 12 in Grasslands Monitoring Database).

## Note 10:

This is an area of wet grassland dominated by *Juncus effusus* with more open patches dominated by *Agrostis capillaris* with some *Luzula sylvatica*, *Potentilla erecta*, *Carex echinata*, *Carex panicea*, *Carex binervis*, *Juncus squarrosus*, *Danthonia decumbens*, and *Hylocomnium splendens*. Low-growing *Calluna vulgaris* is rare and scattered.

## Note 11:

This is a sloping wet grassland located beside the stream. The grassland is bordering on being quaking in places. *Juncus articulatus* dominates with scattered *Juncus effusus*. Other species occurring include frequent *Molinia caerulea* and *Lat pr* with occasional *Calluna vulgaris*, *Plantago lanceolata*, *Trifolium repens*, *Luzula sylvatica*, and *Rhytidiadelphus loreus*. Also occurring in smaller percentages are *Potentilla erecta*, *Prunella vulgaris*, *Ranunculus acris*, *Carex echinata*, *Narthecium ossifragum*, *Pedicularis sylvatica*, *Sphagnum subnitens*, *Sphagnum papillosum*, and *Rhytidiadelphus triquetrus*.

## Note 12:

This area of the slope is characterised by a heath vegetation. *Calluna vulgaris* dominates at 80% cover with the remaining species consisting of *Juncus squarrosus*, *Nardus stricta*, *Molinia caerulea*, *Festuca rubra*, *Carex binervis*, *Potentilla erecta*, *Vaccinium myrtillus*, and *Sphagnum capillifolium*.

## Note 13:

Closer to the edge of the SAC boundary, *Juncus effusus* accounts for at least 40% of plant cover, occurring with low-growing *Calluna vulgaris*, *Polytrichum commune* (F), *Galium saxatile* (O), *Nardus stricta* (O), *Agrostis capillaris* (O), *Potentilla erecta* (O), *Festuca rubra* (R), *Festuca ovina* (R), *Carex binervis* (R), *Juncus squarrosus* (R), and *Sphagnum papillosum* (R).

## Note 14:

This area was described as being improved by A.O'Sullivan and M.Wyse Jackson (1996) during a survey of the area. The survey was prompted by an application by local landowners for a forestry grant.

During the 2006 survey, the area was seen to be semi-improved, with a well-developed moss understorey. Species occurring include *Agrostis capillaris* (O), *Cynosurus cristatus* (R), *Holcus lanatus* (R), *Achillea millefolium* (R), *Rumex acetosa* (O), *Trifolium repens* (O), *Plantago lanceolata* (R), *Cerastium fontanum* (R), *Ranunculus acris* (R), *Senecio jacobea* (O), *Juncus effusus* (O), *Galium saxatile* (R), and *Potentilla erecta* (R).

Some open areas remain which are more similar to the vegetation described in Stop 8, with *Galium saxatile*, *Succisa pratensis*, *Pedicularis sylvatica*, *Potentilla erecta*, and *Agrostis capillaris*.

## Note 15:

This upland grassland occurs on 10cm of peaty soil. *Juncus squarrosus* occupies 20% cover across the slopes. Also occurring are *Nardus stricta* (O), *Agrostis capillaris* (O), *Festuca ovina* (R), *Juncus squarrosus* (R), *Carex panicea* (F), *Galium saxatile* (F), *Potentilla erecta* (O), and *Rhytidiadelphus squarrosus* (R). Sheep graze the slopes and the vegetation is low (5cm).

## Note 16:

This note location is upslope above the position of Stop 11 and is separated from the area of the Stop by a small stream crossing the hill. The peaty soil (15cm of organics) above the stream is much wetter and the vegetation is more characteristic of a wet heath. *Calluna vulgaris* is abundant and is low-growing, averaging at <5cm high due to tight grazing patterns. *Juncus squarrosus* is also a noticeable component of the vegetation. The moss layer is dominated by *Sphagnum capillifolium* (70% cover).

Other species occurring include *Juncus squarrosus*, *Nardus stricta*, *Vaccinium myrtillus*, *Potentilla erecta*, *Molinia caerulea*, *Polytrichum commune*, *Galium saxatile*, and *Polygala serpyllifolia*.

## Note 17:

This area is a mosaic of mainly wet heath with patches of drier *Nardus* grassland. These drier areas also have less *Sphagnum* cover but *Juncus squarrosus* cover is still high. *Nardus stricta* is more frequent, occurring with *Potentilla erecta*, *Polygala serpyllifolia*, *Molinia caerulea*, *Polytrichum commune*, *Hylocomnium splendens*, *Galium saxatile*, *Rhytidiadelphus squarrosus*, and *Pedicularis sylvatica*. Old stream channels run downslope at regular intervals and these are vegetated with *Juncus effusus*, *Molinia caerulea*, and *Luzula sylvatica*.

## Note 18:

*Juncus effusus* dominates on these slopes.

## Note 19:

The slopes here increase to a severe gradient. The vegetation is a dry *Nardus* upland grassland with *Agrostis capillaris*, *Nardus stricta*, and *Festuca ovina*.

The herb flora is dominated mainly by *Galium saxatile* and some *Potentilla erecta*. *Juncus squarrosus* is also occasional. In places, up to 20cm of peaty soil has accumulated.

## Note 20:

This is an area of wet heath with abundant *Polytrichum commune*, *Nardus stricta*, and *Juncus squarrosus*. Some *Galium saxatile*, *Agrostis capillaris*, *Festuca ovina*, and *Potentilla erecta* also occur. Small, drier, patches of *Nardus* grassland occur occasionally between the stream channels.

The slopes here are drained by frequent streams lined with *Juncus effusus*. Above these gentle slopes, the gradient increases to severe and drier upland grassland dominates.

Note 21:

The vegetation in this area is similar to Stop 12.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop is located on steep slopes at the 1,000 ft contour, just above the limit of agriculturally improved grasslands. The slopes face northeast and the vegetation has a grassy appearance. The soil is stony with a high organic content and the vegetation appears to be lightly to moderately grazed by cattle (recent cowpats were observed). Grazing levels are not too high as only 10% cover of *Rhytidiadelphus squarrosus* was noted. Very little plant litter was noted and there were no signs of disturbance. Sward height averaged at 20cm high.

Within the Stop, herb cover was low at 20% and only 8 indicator species were recorded. No negative indicators or scrub/Bracken occurred. Mature shrubs of *Crataegus monogyna* are scattered across the slopes but no young scrub seedlings were noted. Also occurring within the Stop were *Festuca vivipara*, *Molinia caerulea*, *Festuca rubra*, *Agrostis canina*, *Carex binervis*, *Euphrasia* spp., *Hylocomnium splendens*, and *Polytrichum commune* (see relevé 3 for full details).

Outside the Stop, additional species occurring include *Nardus stricta*, *Holcus lanatus*, *Calluna vulgaris*, *Rumex acetosa*, *Vaccinium myrtillus*, *Trifolium repens*, and *Achillea millefolium*. The rush, *Juncus effusus*, occurs in small, scattered patches across these fields. Where grasses are shorter along tracks, *Galium saxatile* was more abundant.

Due to the insufficient number of indicator species and the low herb content, this Stop fails the assessment of Structures and Functions for this habitat.

### Monitoring Stop 2:

This Stop is also located on steep, north easterly facing slopes. Sheep graze this area of the mountain and vegetation height is lower at 10cm. The tighter grazing is also suggested in the higher percentage cover of *Rhytidiadelphus squarrosus* occurring (20%). *Nardus stricta* is also more prevalent (F) with *Festuca ovina* (F), and *Galium saxatile* (F) dominating the vegetation (see relevé 4 for full details).

Within the Stop, herb content was low at 20% and only 7 indicator species were recorded. No negative indicators or scrub/Bracken occurred. Also occurring within the Stop are *Agrostis canina*, *Festuca vivipara*, *Molinia caerulea*, *Hylocomnium splendens*, and *Polytrichum commune*.

Outside the Stop, small hummocks of *Sphagnum subnitens* are occasional with scattered, well-grazed stems of *Vaccinium myrtillus* also noted. Across these slopes, *Juncus squarrosus* and *Juncus effusus* are also more visible in the vegetation.

Due to the insufficient number of indicator species and the low herb content, this Stop fails the assessment of Structures and Functions for this habitat.

**Monitoring Stop 3:**

This Stop is located on steep northwest-facing slopes. The slopes are grass-dominated with the vegetation dominated by *Nardus stricta* (A), *Agrostis capillaris* (O), and *Carex binervis* (O). Current grazing patterns are light to moderate, with sheep and rabbits being the main grazers.

Within the Stop, herb cover was very low at 10%. The dominance of the grass component is a result of the high frequencies of the indicator grass species *Nardus stricta* (A) with some *Agrostis capillaris* (O) and *Festuca ovina* (R). The abundance of *Nardus stricta* is seen to be a negative characteristic, reflecting a more overgrazed situation. Nonetheless, 8 indicator species were recorded and no negative indicators or scrub/Bracken occurred.

Also occurring within the Stop are very short (<5cm), stunted shrubs of *Calluna vulgaris* (O), scattered *Vaccinium myrtillus* (R), and *Carex panicea* (R) (see relevé 5 for full details). Outside the Stop, *Molinia caerulea*, *Juncus squarrosus*, and *Juncus effusus* also occur.

Due to the insufficient number of indicator species and the low herb content, this Stop fails the assessment of Structures and Functions for this habitat.

**Monitoring Stop 4:**

These steep slopes face to the southwest. The vegetation in the Stop was dominated by *Agrostis capillaris* with some *Festuca ovina* and *Carex binervis* also occurring. *Nardus stricta* was rare and *Galium saxatile* was frequent in the low sward. Grazing by sheep was light and no signs of disturbance occurred.

Within the Stop, herb content was low (20%) and only 7 indicator species were recorded. No negative indicators or scrub/Bracken occurred. In addition to the 7 indicator species, *Carex binervis* (O), *Calluna vulgaris* (R), *Vaccinium myrtillus* (R), *Hylocomnium splendens* (R), and *Polytrichum commune* (R) also occurred (see relevé 6 for full details).

Outside the Stop, *Juncus squarrosus* and *Rumex acetosa* also occur. Mosses are frequent on the slopes and include *Hylocomnium splendens*, *Rhytidiadelphus loreus*, and *Polytrichum commune*.

Due to the insufficient number of indicator species and the low herb content, this Stop fails the assessment of Structures and Functions for this habitat.



**Monitoring Stop 5:**

This Stop is located on a steep south west-facing slope. Unlike previous Stop locations, the vegetation in this area has less of a heathy element. Grasses are frequent but there is also good herb content. *Galium saxatile* is particularly obvious and *Nardus stricta* is rare, occurring as isolated tussocks. Sheep grazing pressures appear to be very light with only 5% cover accounted for by *Rhytidiadelphus squarrosus*. The vegetation is very similar to the description of the grassland recorded by A.O'Sullivan and M.Wyse-Jackson in 1996 when this area was assessed for a forestry grant application (see 1996 Note 12 in Grasslands Monitoring Database).

Within the Stop, herb content passes the assessment at 25% and 9 indicator species occurred. No negative indicators or scrub/Bracken occurred. Also occurring within the Stop are *Festuca vivipara* (R), *Molinia caerulea* (R), *Carex binervis* (O), *Carex panicea* (R), and *Hylocomnium splendens* (O) (see relev  7 for full details). Outside the Stop, *Rumex acetosa* was noted in the vicinity while lower down on the slopes, *Juncus squarrosus* and *Molinia caerulea* occur on soil.

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 6:**

The vegetation in this area occurs on soil. Slopes are more gradual and face to the north. Vegetation is low and grazing pressures appear to be light. Grasses on the slopes are dominated by *Agrostis* spp. and *Festuca* spp with occasional, scattered *Nardus stricta* and some *Anthoxanthum odoratum*. Tussocks of *Juncus effusus* are also scattered.

Within the Stop, herb content is good at 25% and 9 indicator species occur. One negative indicator species, *Holcus lanatus*, occurred but at 10% cover, it did not exceed the target percentage cover set for this species of >30%. No other negative indicators or scrub/Bracken were noted. Also occurring in the Stop were *Festuca rubra* and *Holcus lanatus* with the mosses *Hylocomnium splendens* and *Polytrichum commune* (see relev  8 for full details).

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 7:**

This Stop is located beside a stream on gentle, north west-facing slopes. While sheep droppings are plentiful, grazing pressures do not appear to be excessive. Sward height is 10cm and no indications of over grazing were noted.

Within the Stop, herb content is good (25%) and 9 indicator species were recorded. The negative indicator species, *Juncus effusus* occurred but at <5% cover, it did not exceed the target percentage cover set for this species of >30%. No other negative indicators or scrub/Bracken were noted. Also occurring in the Stop were *Festuca vivipara*, *Festuca rubra*, *Carex binervis*, *Rumex acetosella*, and *Hylocomnium splendens* (see relevé 9 for full details).

Outside the Stop, *Calluna vulgaris*, *Vaccinium myrtillus*, *Lotus corniculatus*, and *Deschampsia caespitosa* also occur.

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 8:**

This Stop is located on the upper slopes, just inside the boundary of the SAC. The gradual slopes face northwest. The vegetation is low (5cm) with *Juncus effusus* scattered across the slopes in patches. No signs of over-grazing or other disturbance indicators were noticed.

Within the Stop, herb content was good (30%) and 9 indicator species were recorded. The negative indicator species, *Juncus effusus* occurred but at <5% cover, it did not exceed the target percentage cover set for this species of >30%. No other negative indicators or scrub/Bracken were noted. Also occurring in the Stop were *Festuca rubra*, *Vaccinium myrtillus*, and *Hylocomnium splendens* (see relevé 10 for full details). .

Outside the Stop, *Molinia caerulea*, *Pedicularis sylvatica*, and *Calluna vulgaris* occur. Mature bushes of *Ulex gallii* are also scattered.

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 9:**

These steep slopes face east-northeast. The vegetation in this area is very low (<5cm) and appears to be grazed by sheep. Moss cover is very low and small areas of bare soil (5%) occur as a result of disturbance by grazers.

Within the Stop, herb content is good (30%) and 9 indicator species occur. No negative indicators or scrub/Bracken occurred. In addition to the 9 indicator species, *Festuca rubra*, *Festuca vivipara*, *Carex panicea*, *Hylocomnium splendens*, and *Polytrichum commune* also occurred (see relevé 11 for full details). Outside the Stop, *Nardus stricta* occurs as scattered individuals.

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 10:**

The slopes in this area are severe and the vegetation is very low, <5cm. Sheep graze the slopes but very little disturbance was noted, given the aspect (east northeast) and the steepness of the slopes. The vegetation is dominated by *Galium saxatile*, *Agrostis capillaris*, and *Festuca ovina*.

Within the Stop, herb cover is good (30%) and 9 indicator species were recorded. No negative indicators or scrub/Bracken occurred. In addition to the 9 indicator species, *Vaccinium myrtillus* (O), *Rumex acetosella* (R), and *Polytrichum commune* (O) also occur (see relevé 12 for full details). Outside the Stop, *Anthoxanthum odoratum* was recorded.

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 11:**

This west-facing slope is steep and is dominated by *Juncus squarrosus* with some *Agrostis capillaris*, *Nardus stricta*, and *Festuca ovina* also occurring. The soil consists of a shallow peaty soil (<5cm deep) and heath species such as *Calluna vulgaris*, *Vaccinium myrtillus*, and *Sphagnum subnitens* also occur. Grazing pressures appear to be moderate. However, up to 30% cover was accounted for by *Rhytiadelphus squarrosus*, suggesting that grazing pressures are verging on being too high for this altitude.

Within the Stop, herb content is good at 40% and 9 indicator species were recorded. No negative indicators or scrub/Bracken occurred. In addition to the indicator species, other species occurring include *Festuca rubra*, *Molinia caerulea*, *Vaccinium myrtillus*, *Calluna vulgaris*, *Cerastium fontanum*, *Cirsium palustre*, *Hylocomnium splendens*, *Polytrichum commune*, and *Sphagnum subnitens* (see relevé 13 for full details). Outside the Stop, *Luzula sylvatica* and *Sphagnum capillifolium* were also noted.

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 12:**

This Stop is located on a steep west-facing slope, on an area of drier *Nardus* grassland, running downslope between shallow drainage channels lined with *Juncus effusus*. Vegetation height is low (5-10cm) and grazing levels appear to be light to moderate. Scattered across the slopes are *Cirsium palustre* and some *Juncus effusus*, but *Juncus effusus* does not exceed 20%. Heath species such as *Calluna vulgaris*, *Vaccinium myrtillus*, and *Sphagnum* mosses are absent from these slopes.

Within the Stop, herb content is high at 40% and 10 indicator species were recorded. No negative indicators or scrub/Bracken occurred. In addition to the indicator species, other species occurring include *Festuca rubra*, *Hylocomnium splendens*, and *Polytrichum commune* also occurred (see relevé 14 for full details).

This Stop is deemed to have passed the assessment of the Structures and Functions for this habitat.

**Monitoring Stop 13:**

This Stop is also located on steep, west-facing slopes on dry *Nardus* grassland occurring between channels of *Juncus effusus*. The underlying soil has less than 5cm of organic material. Large hummocks of *Polytrichum commune* occur with mats of *Juncus squarrosus*. Sheep grazing is at a moderate level.

Within the Stop, herb content is good at 25% but only 7 indicator species were recorded. No negative indicators or scrub/Bracken occurred. In addition to the indicator species, other species occurring include *Festuca rubra*, *Festuca vivipara*, *Molinia caerulea*, *Hylocomnium splendens*, *Rhytidiadelphus loreus*, *Polytrichum commune*, *Sphagnum capillifolium* also occurred (see relevé 15 for full details).

Due to the insufficient number of indicator species, this Stop fails the assessment of Structures and Functions for this habitat.

**Monitoring Stop 14:**

These west facing slopes have a grass-dominated appearance. The slopes are steep and grazing pressures appear moderate to heavy, with some previous improvement evident.

Within the Stop, herb content is low (15%) and only 8 indicator species were recorded. The negative indicator species, *Holcus lanatus* occurred but at 10% cover, it did not exceed the threshold percentage cover set for this species of >30%. No other negative indicators or scrub/Bracken were noted. Also occurring in the Stop were *Festuca rubra*, and *Cerastium fontanum* (see relevé 16 for full details).

Due to the insufficient number of indicator species and the low herb content, this Stop fails the assessment of Structures and Functions for this habitat.

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

### **Monitoring Stop 1:**

This Monitoring Stop was located on the south facing terraced slopes of the northern ridge of the esker - see Photos 21 and 22. This is the area of the site in which R. Fitzgerald recorded *Orchis morio* in 1991. The malaise and pit fall traps associated with the EPA funded study on the 'Insects of Calcareous Grasslands' are erected within close proximity to the west of this Monitoring Stop. Eleven calcareous indicator species were recorded in a herb rich sward (40%) with no encroachment by *Pteridium aquilinum*, and no negative indicator species present which resulted in a 'Pass' for the Monitoring Stop.

Additional species recorded include *Leucanthemum vulgare*, *Succisa pratensis*, *Carex pilulifera*, *Achillea millefolium*, *Polygala serpyllifolia*, *Festuca ovina*, *Centaureum erythraea*, *Cynosurus cristatus* and *Danthonia decumbens*.

### **Monitoring Stop 2:**

This Monitoring Stop was located on the south west facing slope of the northern esker ridge c. 20m west of Monitoring Stop 1. Eleven calcareous indicator species were recorded in a herb rich sward (40%) with no encroachment by *Pteridium aquilinum*/scrub or negative indicator species present which resulted in a 'Pass' for the Monitoring Stop.

Additional species present include occasional *Holcus lanatus*, *Dactylis glomerata*, *Polygala serpyllifolia*, *Luzula campestris*, *Leucanthemum vulgare*, *Carex pilulifera*, *Plantago lanceolata*, *Trifolium pratense*, *Potentilla erecta* and *Danthonia decumbens*.

### **Monitoring Stop 3:**

This Monitoring Stop was located on the south facing slopes of the southern esker ridge. Eleven calcareous indicator species were recorded in a herb rich sward (40%) with no encroachment by *Pteridium aquilinum*/scrub and no negative indicator species present which resulted in a 'Pass' for the Monitoring Stop.

Additional species present include; *Cynosurus cristatus*, *Holcus lanatus*, *Dactylis glomerata*, *Anthoxanthum odoratum*, *Luzula campestris*, *Cerastium fontanum*, *Hypericum perforatum*, *Trifolium repens*, *Plantago lanceolata*, *Achillea millefolium*, *Agrimonia eupatoria* and *Leucanthemum vulgare*.

**Monitoring Stop 4:**

This Monitoring Stop was located on the north facing slope of the southern ridge of the esker. The ground was heavily poached by horses. Only six calcareous indicator species were recorded in a herb poor sward (20%) with no encroachment by *Pteridium aquilinum*/scrub and no negative indicator species present which resulted in a 'Fail' for the Monitoring Stop.

This Monitoring Stop was dominated by *Anthoxanthum odoratum*, *Plantago lanceolata*, abundant *Succisa pratensis*, and occasional *Briza media*, *Lotus corniculatus* and *Cirsium arvense*. *Luzula campestris* and *Cynosurus cristatus* were also present. These slopes have lost their calcareous grasslands - possibly through agricultural enrichment.

## **Kilduff, Devilsbit Mountain**

### **SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Faith Wilson                21/07/2006  
Willie Crowley

**Total Site Area (Ha):** 134.27

**Area of Priority Grassland (N2000) (Ha):** 59.

**Area of Priority Grassland 2006 (Ha)\*:** 1-14

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                        **Discovery Sheet No:**        **6" Sheets:**  
Tipperary                        59                                TI022, TI023, TI028, TI029.

**Digital Aerial Photos (Tile Nos.):**  
O4398-a, O4398-b, O4340-c, O4340-d.

**Other Aerial Photographs:**  
None.

### **SITE DESIGNATIONS**

**SAC Site Code:**  
000934

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).



## **SITE DESCRIPTION**

This site is situated on the north-eastern slopes of Devilsbit Mountain, a flat topped ridge composed of Silurian grits. The main vegetation found throughout the site is a species rich heathy grassland, degraded *Molinia* dominated wet heath, dry heath, and stands of *Quercus* sp./*Fagus sylvatica* woodland occur in the upper sections of the site. Light scrub is scattered throughout the lower sections of the site and here several streams and flushes are found. The main importance of the site lies in the fairly extensive area of good quality species-rich *Nardus* grassland that occurs and in the large population of the nationally rare and protected orchid *Pseudorchis albida* that is supports.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland habitats as follows: The main habitats found within the site are upland grassland, heath and woodland. Grassland is patchy in its distribution and largely confined to mineral soils on the lower slopes. It is relatively herb-rich, with many calcifuge species occurring. Populations of the Rare, Small-white Orchid (*Pseudorchis albida*), protected under the Flora Protection Order (1987), occur in areas of unimproved grassland. Associated species include Sheep's-Fescue (*Festuca ovina*), Great Wood-rush (*Luzula sylvatica*), Devil's-bit Scabious (*Succisa pratensis*) and Bracken (*Pteridium aquilinum*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describes the grassland as follows: The area of this habitat on the site is quite extensive (59 ha or 0.78% of the estimated total national area of the habitat). It has both a diversity of vegetation communities (scrubby, boggy, flushed and heathy areas in addition to the predominant community of damp and 'less-damp' grassland) and of plant species. This species-rich flora includes a significant population of the rare and protected *Pseudorchis albida*. The site appears to be little disturbed. This habitat occurs more frequently in the west of the country and its presence here is notable.

#### *Description based on the 2006 Survey :*

The 2006 survey describes the species rich *Nardus* grassland as follows - much of the species rich *Nardus* grassland within the site has been encroached by *Pteridium aquilinum*. Typical indicator species of this priority grassland which were encountered include *Agrostis capillaris*, *Anthoxanthum odoratum*, and *Potentilla erecta* with less frequently *Achillea millefolium*, *Festuca ovina*, *Galium saxatile*, *Hypericum maculatum*, *Lathyrus montanus*, *Luzula multiflora*, *Nardus stricta*, *Rhytidadelphus squarrosus* and *Succisa pratensis*. Other species present include *Trifolium repens*, *Rumex acetosa*, *Plantago lanceolata*, *Holcus lanatus*, with less frequently *Ranunculus repens*, *Conopodium majus* and *Trifolium pratense*.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

There are no NHA Survey notes available for this site. Most of the available information was gleaned from the NATURA 2000 data form and from the rare plant survey conducted by R. Fitzgerald in 1991.

## SITE MONITORING AND MANAGEMENT UNITS

This survey concentrated on those areas where the rare plant survey took place in 1991 and in other areas identified as potential *Nardus* grassland from aerial photographs. Eight Monitoring Stops were conducted within the site. The locations of these Stops are depicted on Map 2 and are described in Appendix II. Only one of the seven Monitoring Stops used to assess Structures and Functions passed, resulting in an overall fail for the Structures and Functions of the site (see Table 1a).

Of the eight Monitoring Stops, seven were used to assess the Structures and Functions of species-rich *Nardus* grassland within the site. One Stop, Stop 8, was deemed to have been reseeded with *Lolium perenne* and was therefore included in the assessment of Extent instead (see Table 1b).

The site was divided into three management units. A summary of the Monitoring Stops and Management Units they are assigned to is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	3
<b>Number of Monitoring Stops:</b>	8
<b>Number of Stops That Pass:</b>	1
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Map 2
Stop 02	1	Fail	Structures and Functions	Map 2
Stop 03	1	Fail	Structures and Functions	Map 2
Stop 04	1	Fail	Structures and Functions	Map 2
Stop 05	2	Fail	Structures and Functions	Map 2
Stop 06	2	Pass	Structures and Functions	Map 2
Stop 07	3	Fail	Structures and Functions	Map 2
Stop 08	3	Fail	Extent	Map 2

The areas of the site in which species-rich *Nardus* grassland was present were treated as three management units based on existing field boundaries.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The main threats to the species-rich *Nardus* grassland within this site are the reseeded and the agricultural improvement of grassland (103/120) within the site. Some areas had been recently mown (102). There is also a lack of grazing within the site (149) resulting in encroachment of slopes by *Pteridium aquilinum* and scrub species such as *Crataegus monogyna*, *Rubus fruticosus* and *Ulex europaeus* (954). There is also some poaching by stock. Further applications for forestry plantations are also likely. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	B
103	Cultivation: agricultural improvement	-1	B
102	Cultivation: mowing/cutting	-1	B
120	Fertilisation	-1	C
149	Grazing: undergrazing	-1	A

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The future management of this site will depend on the current ownership of it. It was previously thought that the site was in common ownership but given an application for a forestry plantation within the site this would appear not to be the case. There is a general lack of grazing resulting in encroachment by *Pteridium aquilinum* and scrub on the slopes of the site (Monitoring Stops 1, 2, 3, 4, 5 and 7). There has also been improvement and reseeded of what was formerly the best area of species-rich *Nardus* grassland in the site (Monitoring Stop 8), resulting in the loss of this habitat and suitable habitat for the *Pseudorchis albida*.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6230 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

Only one hectare of the habitat was mapped at the site. An additional area of 9ha was mapped as dense bracken and was described as retaining elements of habitat 6230 with many of the indicator species still present underneath the bracken. A further 3ha mapped as semi-improved grassland also supported many of the indicator species and could conceivably (given time and the correct management) be returned to habitat 6230. Thus, although only one hectare of habitat 6230 was mapped during the current survey, the overall extent could be estimated to be as high as 14ha.

Such a figure is still considerably lower than the estimate of 59ha for the habitat given in the NATURA 2000 form. While 59ha may have been an over-estimation, it is known that at least 13ha of the habitat have been lost since designation. Species-rich *Nardus* grassland has been substantially reduced through reseeded and agricultural improvement as evidenced at Monitoring Stop 8 (and to a lesser extent at Monitoring Stops 1, 2, 3, 4, 5 and 7 and Note 1 and 6). Encroachment by *Pteridium aquilinum* and scrub is also occurring over much of the site (see Notes 4, 5, 7 and 8).

The area towards the south of the site where Monitoring Stop 08 was located was seen to have been fully reseeded. O'Criodáin (pers. comm.) described this area as having possibly been the best example of species-rich *Nardus* grassland in the country and it was also known (from Fitzgerald's 1991 Rare Plant Survey) to contain a significant population of *Pseudorchis albida*. Thus, it can be estimated that at least 50% of the extent of habitat 6230 at the site has been lost since designation, resulting in the Conservation Assessment for Extent at the site to be described as Unfavourable - bad.

### ***Structure and Functions:***

Only one of the seven Monitoring Stops (Stop 6), which were used to assess the Structures and Functions of habitat 6230 at Kilduff, Devilsbit Mountain SAC passed the assessment process. All of the six Stops that failed had an insufficient number of positive indicator species (ranging from two to five) and an over-abundance of negative indicator species (Stops 1, 2, 3, 4, 5, 7 and 8). Three Stops (Stops 3, 5, and 7) also failed due to a poor herb cover.

*Pteridium aquilinum* encroachment was noted over much of the site (see Notes 4, 5, 7 and 8) and two Stops (Stops 1 and 5) failed due to such encroachment. The encroachment of *Pteridium aquilinum* suggests a degree of abandonment at the site and this is contributing to the deterioration of the habitat quality. It is unlikely that a large population of *Pseudorchis albida* remains at this site and it may even be that the orchid is no longer present here. The Structures and Functions of the species-rich *Nardus* grassland within the site are therefore rated as Unfavourable - bad.

**Future Prospects:**

The 13ha of Species-rich Nardus Grassland lost to agricultural improvement towards the south of the site close to Monitoring Stop 08 will not recover unless serious remediation works are carried out. Furthermore, the 9ha mapped as dense bracken will also require extensive restoration works and the implementation of a stronger grazing regime. Thus, the future prospects for the habitat at Kilduff are currently considered to be Unfavourable - bad since it is unlikely that the all of the former extent of the habitat will be recovered and pressure to agriculturally improve remaining areas are high.

**Conservation Assessment:**

There has been considerable loss of habitat extent and quality at this site. What had been the largest area of species-rich Nardus grassland within the site was seen to have lost as a result of agricultural improvements. The condition of remaining areas of species-rich Nardus grassland elsewhere within the site is poor, also as a result of a combination of agricultural improvement activities, undergrazing and inappropriate management.

It is therefore likely that the once healthy population of *Pseudorchis albida* has also been greatly diminished or may even have been completely lost from the site. The Future Prospects for the species-rich Nardus grassland within the site are worrying and will depend on agreements between NPWS and the landowners. Significant levels of active management would be required on the ground and recovery of the habitat would not be guaranteed.

Due to the Unfavourable - bad assessment results for Extent, Structures and Functions, and Future Prospects, the overall Conservation Status Assessment for the species-rich Nardus grassland within this site is rated as Unfavourable - bad.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
		Future Prospects	
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is a semi-improved field located above an area of *Ulex europaeus* scrub with *Holcus lanatus*, *Trifolium repens*, *Agrostis capillaris* and frequent *Pteridium aquilinum* which is beginning to spread from adjoining field boundaries. There is occasional *Cirsium palustre*, *Ranunculus repens* and *Potentilla erecta*. There is also scrub encroachment by *Ulex europaeus*, *Crataegus monogyna* and *Rubus fruticosus* agg. from the field boundaries. See photo 5.

Between this location and the area described in Monitoring Stop 1 the soils are c.5cm of thin peat over mineral soils and are badly poached by the sheep and cattle which currently graze the site.

**Note 2:**

This is a damp area with abundant *Filipendula ulmaria*, *Juncus acutiflorus/articulatus*, *Lychnis flos-cuculi*, *Mentha aquatica*, *Ranunculus repens*, *Pedicularis sylvatica*, *Prunella vulgaris*, *Cardamine hirsuta*, *Dactylorhiza fuchsii*, *Triglochin palustris*, *Lathyrus* sp., *Ranunculus acris*, *Epilobium parviflorum* and *Myosotis* sp., growing on a peaty soil with occasional iron staining on the surface. *Juncus effusus* is found at the margins and the area is badly poached by cattle. See photo 6.

**Note 3:**

This is an area of heath with *Calluna vulgaris* (40cm high), *Molinia caerulea*, *Potentilla erecta*, *Juncus effusus*, *Vaccinium myrtillus*, *Holcus lanatus*, *Deschampsia caespitosa*, *Agrostis capillaris* and *Luzula sylvatica* on peaty soil. This area was grazed by cattle.

**Note 4:**

This is a *Pteridium aquilinum* dominated slope with *Holcus lanatus*, *Ranunculus repens*, *Rumex acetosa*, *Potentilla erecta*, *Anthoxanthum odoratum*, *Dactylis glomerata*, *Agrostis capillaris* and *Plantago lanceolata*. It is heavily grazed by cattle.

**Note 5:**

This is a small area of grassland located adjacent to the road and surrounded by encroaching *Ulex europaeus* scrub and *Pteridium aquilinum*. Species present include *Lolium perenne*, *Anthoxanthum odoratum*, *Achillea millefolium*, *Ranunculus repens*, *Rumex acetosa*, *Pteridium aquilinum*, *Holcus lanatus*, *Cerastium fontanum*, *Trifolium repens* and *Plantago lanceolata* with more rarely *Conopodium majus*. There is some poaching and the area is heavily grazed. *Pteridium aquilinum* would be c.80% cover on the sloped areas and c.10% cover within the grassland on the flat.

Above this the slopes are covered by 95% *Pteridium aquilinum* and scrub with very occasional more open patches of grassland with a similar species complement to that described above with the addition of *Cirsium palustre*.

## Note 6:

This is an area of improved/semi-improved pasture which shows up as a disturbed area on the 2000 aerial photograph - possibly as a result of scrub clearance. The sward is dominated by *Holcus lanatus*, *Anthoxanthum odoratum* (c.90%) with occasional *Agrostis capillaris*, *Ranunculus repens*, *Achillea millefolium*, *Plantago lanceolata*, *Rumex acetosa*, *Cerastium fontanum* and occasional *Conopodium majus*. Currently grazed by horses.

## Note 7:

This is a sloped area with frequent *Ulex europaeus* scrub. In between the scrub there are patches of grassland dominated by *Anthoxanthum odoratum*, *Agrostis capillaris* and occasional *Hyacinthoides non-scriptus*, *Pteridium aquilinum*, *Lathyrus montanus* and *Potentilla erecta*.

## Note 8:

These slopes are dominated by *Pteridium aquilinum* with a sward dominated by *Agrostis capillaris* and *Holcus lanatus*, with occasional *Potentilla erecta*, *Rumex acetosa*, *Prunella vulgaris*, *Trifolium pratense*, *Ranunculus repens*, *Lathyrus montanus*, *Plantago lanceolata*, *Euphrasia* sp., *Cirsium palustre* and *Centaurea nigra* beneath the canopy formed by the *Pteridium*. See photo 24.

## Note 9:

This is a flat area located above monitoring stop 6. Herb cover is c.40 - 50%. *Anthoxanthum odoratum* is abundant, with frequent *Agrostis capillaris*, *Potentilla erecta* and *Succisa pratensis*. *Festuca ovina* is occasional as is *Galium saxatile*, *Rhytidadelphus squarrosus* and *Holcus lanatus*, with, more rarely, *Conopodium majus*.

## Note 10:

This note was located in an area of heath on the slopes of the hillside. The heath is dominated by *Calluna vulgaris* with frequent *Molinia caerulea*, *Juncus squarrosus*, *Potentilla erecta*, and occasional *Carex echinata*, *Carex binervis*, *Deschampsia caespitosa*, *Festuca ovina*, *Luzula sylvatica* and more rarely *Vaccinium myrtillus*. This area is grazed by cattle.



## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located on a gentle south easterly facing slope in an area identified in the MPSU habitat map as species rich *Nardus* grassland. See photo 3.

The sward is dominated by *Pteridium aquilinum* with frequent patches of *Ulex europaeus* scrub and occasional *Rubus fruticosus*. The sward is lightly grazed with some poaching. Both the *Pteridium aquilinum* and increasing *Rubus fruticosus* agg. threaten this habitat. There was occasional *Cirsium palustre* within the vicinity of the Monitoring Stop.

This area was herb rich (30%) with only five *Nardus* grassland indicator species present. Three negative indicators and 10% *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. The herb cover of 30% was based on cover of *Trifolium repens*.

There was a greater abundance of *Achillea millefolium* in the sward than was seen in any of the previous *Nardus*-rich grassland sites visited this week (001197, 002124 and 002125).

The data for this Monitoring Stop is presented in Quadrat 1.

### Monitoring Stop 2:

This Monitoring Stop was located on mineral soils west of a flushed area (*Molinia* meadow?). The sward is closely grazed and semi-improved. This area was herb rich (50%) with only two *Nardus* grassland indicator species present. Three negative indicators and no *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. The data for this Monitoring Stop is presented in Quadrat 2. See photo 8.

*Nardus stricta* was present in the vicinity of the Monitoring Stop but not in any great abundance. Clumps of *Juncus effusus* are found in the surrounding area with occasional *Crataegus monogyna*/*Ulex europaeus* scrub on the slopes. This area also had frequent *Ranunculus repens*, *Trifolium repens*, *Plantago lanceolata*, *Trifolium pratense* and *Prunella vulgaris*. The flushed area (*Molinia* meadow?) has *Molinia caerulea*, *Rumex acetosa*, *Sphagnum* sp., *Juncus effusus*, *Juncus acutiflorus* and *Succisa pratensis*. Upslope the area grades into heath as described in N3.

**Monitoring Stop 3:**

This Monitoring Stop was located near a small stream. Fingers of grassland spread upslope and intermingle with areas of heath. This area was herb rich (20%) with only two *Nardus* grassland indicator species present. Three negative indicators and 5% *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. This area has been semi-improved and is closely grazed by cattle. The data for this Monitoring Stop is presented in Quadrat 3. See photo 12.

**Monitoring Stop 4:**

This Monitoring Stop was located in a semi-improved field below N4. This area was closely grazed by sheep. There is encroaching *Pteridium aquilinum*, *Cirsium arvense* and *Cirsium palustre* from the field margins. This area was herb rich (40%) with only four *Nardus* grassland indicator species present. Two negative indicators and 2% *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. The 40% herb:grass ratio was mainly based on *Trifolium repens* cover. This area is located on mineral soil. The data for this Monitoring Stop is presented in Quadrat 4. See photo 15.

Other species present in the field include *Cerastium fontanum*, *Prunella vulgaris*, and *Ranunculus repens*.

**Monitoring Stop 5:**

This Monitoring Stop was located above a copse of *Quercus* trees and beside an area of *Fagus sylvatica* and *Quercus* sp. adjacent to a watercourse. This area was herb rich (20%) with only five *Nardus* grassland indicator species present. Four negative indicators and 10% *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. This data is presented in Quadrat 5. See photo 27.

Small remnants of grassland remain surrounded by slopes dominated by *Pteridium aquilinum* (c. 90% coverage) with frequent patches of *Rubus fruticosus* developing. There is occasional *Cirsium palustre* and *Juncus effusus*. There is *Prunella vulgaris*, *Euphrasia* sp., and *Filipendula ulmaria* in the vicinity of the Monitoring Stop. *Dactylorhiza fuchsii* was also present as was some *Lolium perenne*.

**Monitoring Stop 6:**

This Monitoring Stop was located upslope of Monitoring Stop 5 on steeper ground. Patches of *Crataegus monogyna* separate them. This area was herb rich (40%) with only nine *Nardus* grassland indicator species present. Only one negative indicators and no *Pteridium aquilinum*/scrub encroachment resulted in a 'Pass' for this Monitoring Stop. The data for this Monitoring Stop is presented in Quadrat 6. See photo 28.

Additional species recorded on flatter ground above the Monitoring Stop include *Pedicularis sylvatica*, *Achillea millefolium*, *Cirsium palustre*, *Vaccinium myrtillus* and *Rumex acetosa*.

**Monitoring Stop 7:**

This Monitoring Stop was conducted in an area described as species rich *Nardus* grassland. This was one of the locations where *Pseudorchis albida* was found in 1991. This area was herb poor (5%) with only four *Nardus* grassland indicator species present. One negative indicator and no *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. The data for this Monitoring Stop is presented in Quadrat 7. See photo 31.

The sward here had been recently mown in an attempt to control the spread of *Ulex europaeus* on the slopes and is grazed by cattle. The sward was dominated by *Agrostis capillaris*, *Holcus lanatus* and *Anthoxanthum odoratum* with frequent spreading dense patches of *Luzula sylvatica*. *Potentilla erecta* was occasional.

**Monitoring Stop 8:**

This Monitoring Stop was located on an east facing slope in an area previously described as species-rich *Nardus* grassland. The whole slope has been reseeded with *Lolium perenne* and is heavily grazed. There are large areas of *Cirsium arvense* beginning to dominate the sward in places. The sward is composed of *Lolium perenne*, *Holcus lanatus*, *Cirsium arvense*, and *Trifolium repens* with occasional *Cerastium fontanum* and *Rumex acetosa*. This area was thus herb poor (5%) with no *Nardus* grassland indicator species present. Three negative indicators and no *Pteridium aquilinum*/scrub encroachment resulted in a 'Fail' for this Monitoring Stop. This data is presented in Quadrat 8. See photo 33.

Patches of *Juncus effusus* with thatches of *Luzula sylvatica* and occasional *Potentilla erecta*, *Agrostis capillaris* and *Nardus stricta* provide an indication of the former presence of the priority grassland habitat within the site.

## **Silvermine Mountains**

### **SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Rosaleen Dwyer            11/07/2006  
Faith Wilson  
Willie Crowley

**Total Site Area (Ha):** 24.82

**Area of Priority Grassland (N2000) (Ha):** Area estimated to be very small.

**Area of Priority Grassland 2006 (Ha)\*:** 1

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**                      **Discovery Sheet No:**            **6" Sheets:**  
Tipperary                      59                                      TI026.

**Digital Aerial Photos (Tile Nos.):**  
O4451-c.

**Other Aerial Photographs:**  
None.

### **SITE DESIGNATIONS**

**SAC Site Code:**  
000939

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

This small site is situated on the northern slopes of the Silvermine Mountains, 1 km south-east of Silvermines village. It slopes steeply uphill from 240 m in the north-west corner to 400 m at the southern boundary. The geology of the area is sandstone of different ages - the older Silurian on the central part of the mountain while the outer parts are composed of yellowish and red sandstones of Devonian age.

The site is of interest as it supports species-rich *Nardus* grasslands on siliceous substrates, an EU Habitats Directive Annex I priority habitat.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the species-rich *Nardus* grassland as follows: This grassland occurs in two separate locations on either side of the road which cuts through the site. Typical species associated with the habitat and recorded at the site include Heath Bedstraw (*Galium saxatile*), Sheep's Fescue (*Festuca ovina*), Bitter Vetch (*Lathyrus montanus*) Milkwort (*Polygala serpyllifolia*), Lesser Butterfly-orchid (*Platanthera bifolia*), Greater Butterfly-orchid (*P. chlorantha*), Lousewort (*Pedicularis sylvatica*), Tormentil (*Potentilla erecta*), Mat Grass (*Nardus stricta*) and Small White Orchid (*Pseudorchis albida*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: The species-rich *Nardus* grassland is seen on either side of the road which cuts through the site. The underlying geology is sandstone. Though the area of habitat is very small in extent (4 ha) there is a very diverse flora present including nationally important populations of *Pseudorchis albida* - a diagnostic species of the habitat. (This is a Red Data Book species and is legally protected (Flora Protection Order, 1987)). Other characteristic species present include *Galium saxatile*, *Festuca ovina*, *Lathyrus montanus*, *Platanthera bifolia*, *Platanthera chlorantha*, *Potentilla erecta*, *Pedicularis sylvatica* and *Nardus stricta*.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the area of species-rich *Nardus* grassland was seen to be very limited. It was seen occur mainly in the grassland area close to the public carpark and in very narrow strips along the edges of the roadway which bisects the site. A fruiting head of *Pseudorchis albida* was found in the grassland close to the carpark, an area previously described as supporting an important population of this species.

The following indicator species were encountered during the site visit: *Agrostis capillaris*, *Anthoxanthum odoratum*, *Danthonia decumbens*, *Festuca ovina*, *Galium saxatile*, *Luzula multiflora*, *Pedicularis sylvatica*, *Potentilla erecta*, *Rhytidadelphus squarrosus*, and *Succisa pratensis*.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was first surveyed during the 1995 NHA Survey. There are only general notes available on the habitats present within the site which are not marked on the map. The site was also surveyed during the rare plant survey by R. Fitzgerald in 1991 when the population of *Pseudorchis albida* was surveyed.

## **SITE MONITORING AND MANAGEMENT UNITS**

Four Monitoring Stops were initially conducted within the site. The results of the assessment for Structures and Functions is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b.

It can be seen from Table 1b that one of the Stops was not included in the assessment of Structures and Functions. Stop 3 presented a very degraded grassland, showing signs of previous disturbance and improvement. Only 3 of 9 target indicator species were recorded and 3 negative indicator species were also noted to occur in excessive quantities. Subsequent to the field survey, digital 1995 and 2000 aerial photographs became available and an examination of these photographs indicate that the current habitat more than likely existed at that location when the site was first designated in 1999. For this reason, Stop 3 is not included in the assessment process.

Of the 3 Stops assessed for Structures and Functions, only 1 was seen to pass the assessment process, resulting in an overall failure of the Structures and Functions of the 6230 habitat at the Silvermines cSAC.

The location of the Monitoring Stops is presented on Map 2 while a full description of the vegetation occurring at each Monitoring Stop is presented in Appendix II. Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other issues such as damaging activities or encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	4
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	1
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 02
Stop 02	2	Fail	Structures and Functions	Map 02
Stop 03	3	Fail	Not used in assessment	Map 02
Stop 04	4	Fail	Structures and Functions	Map 02

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 4 separate management units. In effect, this means that each separate area in which a Stop was placed was treated as a separate Management Unit.

Management Unit 1 contains Stop 1. This is a narrow strip of grassland on a high bank at the side of the road.

Management Unit 2 contains Stop 2. This is a gently sloping area of grassland adjacent to the public car park. A hedge divides the grassland into two but as access is open between the two fields, it is treated as single unit.

Management Unit 3 contains Stop 3. This area appears to have been species-rich *Nardus* grassland in the past but is now tightly grazed by sheep. Species diversity is low and there are indications of previous agricultural improvements.

Management Unit 4 contains Stop 4. Like Stop 1, Stop 4 is located on an elevated bank close to the edge of the roadway. Wet grassland with areas of standing water occurs immediately west of the Stop.



## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

The extent of the 6230 habitat at this site was seen to be very limited. One area which may have supported species-rich grassland in the past (the area of Stop 3), appears to have suffered from overgrazing by sheep (142) and significant levels of fertiliser application (120). Both of these activities have resulted in low species diversity and a loss of habitat. In addition, stock feeding (171) occurs in this area, leading to a degree of disturbance by animals. The remains of silage bales also occur. Further west of Stop 3, a comparison of 1995, 2000, and 2005 aerial photographs indicate that scrub and Bracken (954) has also spread in the locality, with the loss of grassland habitat. Agricultural improvement through fertilising (120) also appears to have occurred at Stop 4.

The field close to the public car park remains the only significant area of 6230 habitat. This field appears to be managed by grazing (140) but grazing pressures appear to be light. Heath communities are scattered across the field and seedlings of scrub species are spreading (954). 6230 habitat also occurs in narrow strips along the edge of the roadway, on elevated dry banks which do not appear to be subject to any management (141).

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
171	Animal breeding: stock feeding	-1	C
954	Biocœnotic evolution: invasion by a species	-1	B
120	Fertilisation	-1	C
140	Grazing	1	C
141	Grazing: abandonment of pastoral systems	-1	C
142	Grazing: overgrazing by sheep	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

A loss of species-rich *Nardus* grassland has occurred at this site. Given that the original extent of this habitat was small to begin with, any further loss needs to be prevented. Issues of overgrazing and the application of fertiliser in the vicinity of Stop 3 should be assessed, with the objective of reversing the damage done at that location. Further west of Stop 3, a comparison of 1995, 2000, and 2005 aerial photographs indicate that scrub and Bracken has also spread in the locality. Urgent management of these issues is required to prevent further grassland losses in this location.

The field close to the car park remains as the only significant example of species-rich

Nardus grassland. However, grazing patterns here appear to be too light. Stocking levels and grazing patterns should be reassessed in this field to promote the correct conditions for the population of *Pseudorchis albida* which has previously been recorded from this locality.

The only other area where 6230 habitat occurs is in a narrow strip along the west side of the roadway which bisects the site. *Pseudorchis albida* was recorded from this location in 1991 and photographs in the site file show a much more open habitat than exists today. Today, scrub and rank grassland predominates along much of the side of the road. Management of this area needs to be reassessed to promote the correct conditions for the orchid.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6230 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

0.6ha of habitat 6230 was mapped at the very north-east of the SAC. However, elements of the habitat were found in a mosaic with wet grassland and scrub along both side of the road cutting through the site (particularly on the western side where Monitoring Stop 1 and 4 were carried out). Thus the extent of habitat 6230 at the Silvermine Mountains SAC can be considered to approximately 1ha (4% of the SAC).

The NATURA 2000 Explanatory Notes estimate the extent to be 4ha and state that it is found "on either side of the road which cuts through the site" Thus it would appear that the NATURA figure was an overestimate, as there has been no loss in the extent of the habitat in the intervening years. The Conservation Assessment for the Extent of the habitat is thus given as Favourable.

### ***Structure and Functions:***

Of the 4 Monitoring Stops assessed, one Stop was not included in the assessment of Structures and Functions. On analysis, Stop 3 was considered not to be 6230 habitat. It is also assumed, following a reassessment of 1995 and 2000 aerial photographs, that 6230 habitat did not occur at this location when the site was first designated in 1999. There are no previous notes available, however, to confirm this.

Of the remaining 3 Stops, only one, Stop 1, passed the assessment of Structures and Functions. Stop 1 was seen to contain good herb cover (60%), 10 indicator species, and no negative indicator species or scrub/Bracken. However, as up to 20% cover of plant litter was noted, the grazing levels at this location appear too light. This could result in the development of rank grassland with the loss of 6230 habitat.

Stop 2 failed as a result of an insufficient number of indicator species. Only 7 species were recorded, 2 short of the target number of 9. This area was previously highlighted as a location for the orchid *Pseudorchis albida* and a fruiting head was noted in the vicinity on the day of survey. However, the slopes in this area are showing signs of undergrazing and urgent management is needed to maintain the correct conditions for this species.

While Stop 4 had sufficient herb content (30%) and indicator species (9), an excessive cover of negative indicator species resulted in a failure of the Structures and Functions at this Stop. The excessive cover of *Cynosurus cristatus*, *Ranunculus repens*, and *Trifolium repens* all point to a degree of agricultural improvement at this location.

Due to the failure of the Structures and Functions assessment, this attribute is described as being Unfavourable - bad for the Silvermines cSAC.

### ***Future Prospects:***

Given that the total area of species-rich grassland on this site is quite small in extent, the management and maintenance of the remaining areas is essential to protect the habitat. However, the condition of the remaining areas of grassland was seen to be poor, with only 1 of the 3 Stops assessed for this attribute passing the assessment. Undergrazing, overgrazing, and the application of fertilisers have caused both a deterioration in quality and a loss in habitat extent. Further deterioration at the site of *Pseudorchis albida* by the car park will be detrimental.

However, as the areas in question are small in extent, changes made to their management should show perceptible results in a relatively short space of time. In addition, habitat quality at the site of *Pseudorchis albida* has not yet resulted in the complete loss of this species.

Therefore, the Future Prospects for the site are described as being Unfavourable - inadequate. This would improve if efforts were to be focussed on implementing remedial measures in the small areas of grassland remaining.

#### **Conservation Assessment:**

The presence of the orchid *Pseudorchis albida* was central to the listing of species-rich *Nardus* grassland as a qualifying interest at this site. Populations of national interest were recorded as occurring at two locations in the site in 1991: Site A was located in the field close to the public car park at the northern end of the site; Site B occurred as a narrow strip of grassland along the western side of the roadway which bisects the site.

The subsequent NHA survey undertaken in 1995 provides a generic description of the grassland on the site referring to "Unimproved grassland dominates the lower fields adjacent to the car park and about half of the land on the western side of the road". No specific descriptions or locations are described.

During the 2006 survey, areas of upland grassland were seen to occur at both of these locations. These grasslands exhibited varying degrees of agricultural improvement, causing the Structures and Functions of the habitat to be described as Unfavourable - bad. Current management practices are also seen to be insufficient, resulting in a description of Unfavourable - inadequate for the Future Prospects of the grassland.

As a result of the failure of the Structures and Functions assessment, the overall Conservation Assessment for the 6230 habitat at this site is described as being Unfavourable - bad (see Table 3).

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
Extent			

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

Note 1:

This area is a mosaic of wet and dry heath communities. Species occurring include *Molinia caerulea*, *Erica cinerea*, *Calluna vulgaris*, *Potentilla erecta*, *Deschampsia flexuosa*, *Hypochoeris radicata*, *Polygala serpyllifolia*, and *Juncus bulbosus*. Young shrubs of *Ulex europaeus* are scattered.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Stop is located on a gradual slope facing north northwest. The Stop was placed on a dry ridge which occurs close to the edge of the roadway. Towards the north west, the ridge drops and grades to soils which are dominated by *Holcus lanatus* and some *Ranunculus repens*.

Within the Stop, herb content is high at 60% and 10 indicator species were recorded (see relevé 1 for details). No negative indicator species were recorded and scrub/Bracken did not occur.

The Structures and Functions at Stop 1 are deemed to 'Pass'.

### Monitoring Stop 2:

This Stop is located in the grassland area close to the public carpark where *Pseudorchis albida* was recorded in 1991 by R. Fitzgerald. The grassland has scattered patches of *Ulex* spp. and *Calluna vulgaris* throughout this area. *Pteridium aquilinum* also occurs but in low percentage cover. Wetter channels running downslope are vegetated by *Juncus effusus* and *Molinia caerulea*, with wetter areas holding standing water and being more representative of wet grassland communities.

Within the Stop, herb content is good (40%) but only 7 indicator species were recorded. No negative indicator species were recorded and scrub/Bracken did not occur. Also occurring within the Stop are *Juncus acutiflorus*, *Holcus lanatus*, *Plantago lanceolata*, and *Vaccinium myrtillus*.

Outside the Stop, *Vaccinium myrtillus* occurs and where the slope increases upslope, *Pedicularis sylvatica* and *Calluna vulgaris* are also present. Additional species in the vicinity include *Juncus effusus*, *Rumex acetosa*, *Molinia caerulea*, and *Lathyrus montanus*. Although the season was too late to detect flowering *Pseudorchis albida*, a fruiting spike of this species was recorded.

Due to the insufficient number of indicator species recorded, this Stop is deemed to 'Fail' its assessment of Structures and Functions.

**Monitoring Stop 3:**

This area occurs on steeply sloping ground, dropping in height away from the roadway. Access by machinery has caused a degree of disturbance and *Juncus buffonius* is frequent on the disturbed ground. Some scrub has been removed from rocky outcrops but Gorse and Bracken is encroaching from the hedgerows. Sheep grazing is tight, resulting in a very low sward (<5cm). A house ruin with an abandoned garden occurs close to the Stop.

Within the Stop, herb content is very low (10%) and only 3 indicator species were recorded (these were 3 grass species). 3 negative indicator species also occurred, in quantities which are in excess of the target of 10% cover. No Bracken/scrub occurred within the Stop.

Due to the low herb content, the insufficient number of indicator species, and the presence of excessive percentages of negative indicator species, this Stop is deemed not to be species-rich *Nardus* grassland habitat but to be more representative of an improved upland sheep pasture. An examination of 1995 aerial photographs suggests that this may have been the status of the habitat at that time, the period during which the site was first described during the NHA survey. There are no NHA noted which directly refer to this location.

For the purposes of this project, this Stop is therefore not included in any assessment.

**Monitoring Stop 4:**

This Stop is located in an area which is characterised by a mosaic of wet grassland and drier areas of species-rich *Nardus* grassland.

Within the Stop, herb content is good (30%) and 9 indicator species occur. 3 negative indicator species occur, in percentages which exceed the target of 10% set for this attribute. No scrub/Bracken was noted. The relevé data for this Monitoring Stop is presented in Quadrat 2.

Additional species recorded in the area of the Stop include *Dactylorhiza fuchsii*, *Ranunculus acris*, *Ranunculus repens*, *Cynosurus cristatus*, *Senecio aquaticus*, *Stellaria graminea*, *Trifolium repens*, *Prunella vulgaris*, *Poa pratensis*, *Rumex acetosa*, *Juncus acutiflorus*, and *Deschampsia caespitosa*.

Due to the excessive cover of negative indicator species, this Stop is deemed to 'Fail' the assessment of Structures and Functions.

**Keeper Hill****SITE DETAILS**

**Surveyed By:**                **Survey Dates:**  
Faith Wilson                20/07/2006  
Willie Crowley

**Total Site Area (Ha):** 418.53

**Area of Priority Grassland (N2000) (Ha):** Area not given.

**Area of Priority Grassland 2006 (Ha)\*:** <1

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:**                        **Discovery Sheet No:**        **6" Sheets:**  
Tipperary                        59                                TI032.

**Digital Aerial Photos (Tile Nos.):**

O4509-a, O4509-b, O4509-c, O4509-d, O4569-a, O4569-b

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

001197

**Priority Grassland Habitat Type:**        6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).



## **SITE DESCRIPTION**

Keeper Hill or Slievekimalta is situated between the Silvermine and Slieve Felim Mountains 13km south of Nenagh. Reaching an altitude of 695m, this rounded, rather steep peak of Old Red Sandstone is notably higher than any of the surrounding upland areas. The site includes the summit and slopes above 250m which have not yet been afforested. The site is of interest mainly due to the presence of intact blanket bog and species-rich *Nardus* grassland, both priority habitats under the EU Habitats Directive.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the species-rich *Nardus* grassland as follows; Upland grassland occurs on mineral soils on the lower slopes and is especially well-developed on the southern and northern slopes. Here species-rich *Nardus* grassland occurs, with Sheep's Fescue (*Festuca ovina*), Mat-grass (*Nardus stricta*), Common Bent (*Agrostis capillaris*), Tormentil (*Potentilla erecta*) and Heath Bedstraw (*Galium saxatile*). In wetter areas, rushes (*Juncus effusus* and *J. articulatus*) become dominant.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Originally it was intended that Keeper Hill be part of a much larger complex where Bolingbrook Hill, Anglesey Road, Silvermines and Mother Mountain sites were to have been the other components (C. O' Criodain, pers. comm.). Very good representations of this habitat are present in those sites. However Keeper Hill is now a single site. The only reference to *Nardus* grassland is in the context of upland grassland on mineral soil which forms a mosaic with heath, rushes and gorse. The species list is not rich in diversity and seems to be indicative of well grazed areas.

#### *Description based on the 2006 Survey :*

The species-rich *Nardus* grassland within this site is restricted to very small areas of grassland between clumps of *Juncus effusus*. The following indicator species were recorded during the present survey in 2006 - *Anthoxanthum odoratum*, *Festuca ovina*, *Rhytidiadelphus squarrosus*, and less frequently *Agrostis capillaris*, *Galium saxatile*, *Nardus stricta*, *Pedicularis sylvatica*, *Potentilla erecta* and *Succisa pratensis*. Most of these areas were on peaty substrate as opposed to mineral soils.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1995 NHA Survey. There are only general notes on the habitats within the site in the NHA field card with more specific notes that relate to site boundaries.

The site was subsequently revisited in 2001 by NPWS staff to investigate the quality of alpine heath within the site. This visit concentrated on the summit plateau, some gullies and the cliff known as 'Eagle's Nest' at the north-west of the site.

A MPSU management plan is available for the site and identified the areas of species rich Nardus grassland were located on the southern slopes of the site.

## SITE MONITORING AND MANAGEMENT UNITS

Following a review of the NHA site pack, the MPSU management habitat map and discussions with M. Dromey who has personal knowledge of the site, a single survey area at Bunkimalta was selected for the site visit. Four Monitoring Stops were conducted within this area in the site and their locations are depicted on Map 2.

All of the Monitoring Stops were used to assess the Structures and Functions of the species-rich *Nardus* grassland within the site. All stops failed, resulting in an overall fail for the Structures and Functions of the species-rich *Nardus* grassland within the site (see Table 1a). Detailed information on each of the Monitoring Stops is presented in full in Appendix 2.

The site was treated as two management units and a summary of the Monitoring Stops and Management Units they were assigned to is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	2
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	0
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Not used in assessment	Map 2
Stop 02	1	Fail	Not used in assessment	Map 2
Stop 03	2	Fail	Not used in assessment	Map 2
Stop 04	2	Fail	Not used in assessment	Map 2

The site was treated as two separate management units - the field systems east and the field systems west of the river which divides this area. Stock have access from one field to the next in these management units.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

It is questionable as to whether or not species-rich *Nardus* grassland habitat was ever present to any great extent within the site. Much of the slopes were dominated by *Juncus effusus* which would indicate wetter conditions than that required by the habitat. The condition of the noted species-rich *Nardus* grassland within the site is generally poor. Some small areas of agricultural improvement (120) were noted within the site and undergrazing (149) is allowing *Ulex europaeus* to spread along these slopes (954). Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	C
120	Fertilisation	-1	C
149	Grazing: undergrazing	-1	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

It is thought unlikely that this site contains any extensive areas of species-rich *Nardus* grassland and it is recommended that the site is reassessed and given a representivity ranking of D for this habitat in the NATURA 2000 forms and database.

## CONSERVATION STATUS

### ***Extent:***

Although some characteristics of Species-rich Nardus Grassland were noted during the survey, no significant areas of the habitat were seen to occur at Keeper Hill. In total, nine positive indicator species were recorded from within the 4 Monitoring Stops on Keeper Hill, with seven species being the highest number recorded in any one Stop (Stop 1).

Two of the Stops (Stop 1 and Stop 3) were located on peaty soils and these two Stops supported the highest number of indicator species (7 and 6 respectively). However, these areas would probably be more correctly classed as heath (see Notes 4 and 5). Stop 2 contained only four positive indicator species and was located in a small isolated area of mineral soil further up the slope to Monitoring Stop 1. This area was characterised by clumps of *Juncus effusus*. Stop 4, which contained only two positive indicator species was located on mineral soil close to the bottom of the slopes of the SAC within the system of semi-enclosed fields. These fields, in general, were not characteristic of Species-rich Nardus Grassland and were often dominated by *Juncus* spp. (see Note 1, 2, 6 and 7).

Thus, it is considered that there is no significant area of Species-rich Nardus Grassland at Keeper Hill and an estimate of <1ha is given for the extent of the habitat. The NATURA 2000 Explanatory Notes do not indicate that the habitat occurs on the site and state that "the only reference to Nardus grassland (in the site files) is in the context of upland grassland on mineral soil, which forms a mosaic with heath, rushes and gorse". This is the mosaic that was described during the current survey (see Notes 1, 7). Thus, technically, there has been no decrease in extent of the habitat at Keeper Hill since the site was designated and Extent is therefore described as being Favourable.

However, as no significant area of Species-rich Nardus Grassland occurs within the site, it is recommended that the site is given a representivity ranking of D for this habitat

### ***Structure and Functions:***

All four of the Monitoring Stops failed resulting in an overall 'Fail' for the Structures and Functions of species-rich Nardus grassland within the site. Monitoring stops failed due to a combination of reasons including poor herb cover (Monitoring Stops 1, 2 and 3), lack of indicator species of Nardus grassland (Monitoring Stops 2, 3 and 4), and presence of negative indicators (Monitoring Stops 1, 2 and 4). Scrub/*Pteridium aquilinum* encroachment was not an issue within the site but the dominance of *Juncus effusus* indicated that these slopes are probably too wet to support species-rich Nardus grassland.

Since Species-rich Nardus Grassland is considered not to occur to any great extent on Keeper Hill, the Structure and Functions of the habitat cannot be assessed accurately. Under the current project protocols however, the failure of all four Monitoring Stops results in a description of Unfavourable - bad for the assessment of Structures and Functions.

### ***Future Prospects:***

The Future Prospects for species-rich Nardus grassland within the site is poor given the wet nature of these slopes and the peaty soils. This is a natural condition of this part of the site

and is unlikely to be reversed by any management measures.

Since Species-rich *Nardus* Grassland is considered not to occur to any great extent and given the natural processes operating on the site, the Future Prospects of the habitat are described as being Unfavourable - bad.

### **Conservation Assessment:**

Although some characteristics of Species-rich *Nardus* Grassland were noted during the survey, no significant areas of the habitat were seen to occur at Keeper Hill. In addition, the NATURA 2000 Explanatory Notes do not indicate that the habitat occurs on the site and state that "the only reference to *Nardus* grassland (in the site files) is in the context of upland grassland on mineral soil, which forms a mosaic with heath, rushes and gorse". This is the mosaic that was described during the current survey, with a resulting estimate of <1ha for the extent of the habitat on the site. It is assumed that no loss of habitat has occurred.

While the assessment of the Structures and Functions of the habitat were seen to result in a failure for this attribute, it is doubtful whether the habitat assessed can be truly described as being species-rich *Nardus* grassland. The abundance of *Juncus effusus* across much of the site and the widespread occurrence of true heath communities makes a fair assessment of the 6230 habitat difficult. It is also doubtful that a change in management practices would alter this in favour of species-rich grassland. The Future Prospects for the limited extent of the habitat at this site are therefore not good.

While the results of the current survey suggest that the overall Conservation Status of the 6230 habitat at Keeper Hill must be described as being Unfavourable - bad (see Table 3), it is probably more correct to state that the Conservation Status of this habitat at this site is not currently possible to determine. This is due mainly to the fact that the habitat is present at such a limited extent in a complicated mosaic with other habitat types.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
		Future Prospects	
		Structure and Function	
Extent			

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This note was located on the lower slopes of Keeper Hill above the SAC boundary. This field is dominated by *Juncus effusus*, *Cynosurus cristatus*, *Holcus lanatus*, *Senecio jacobaea* and *Cirsium palustre*, with occasional *Prunella vulgaris*, *Bellis perennis*, *Agrostis capillaris*, *Trifolium repens*, *Ranunculus acris*, *Epilobium* sp. and *Cerastium* sp. This area is on mineral soil which is heavily poached. This is bounded to the north by a line of *Ulex europaeus* scrub.

**Note 2:**

This note was taken in the field north of N1 above the line of *Ulex europaeus* scrub. This field has a similar dominance of *Juncus effusus* with regular patches of *Ulex europaeus* scrub spreading from the southern and western field boundaries. There is occasional *Leontodon hispidus*, *Anthoxanthum odoratum*, *Potentilla erecta*, *Holcus lanatus*, *Cirsium palustre*, *Carex flacca*, *Succisa pratensis*, *Trifolium repens*, *Carex binervis*, *Rumex* sp. and *Senecio jacobaea*. This field becomes less dominated by *Juncus* towards the northern boundary where *Festuca ovina*, *Danthonia decumbens*, *Agrostis capillaris*, *Pedicularis palustris* and *Potentilla erecta* are more frequent. Both of these fields are currently grazed by cattle and deer and are located on mineral soil.

**Note 3:**

This note was taken on a steeper slope of the hillside above Monitoring Stop 1. There are more frequent open patches of grassland here between the clumps of *Juncus effusus*. These are tending to become heathy with *Calluna vulgaris*, *Vaccinium myrtillus* and *Juncus squarrosus* present. There is dense cover of *Rhytidiadelphus squarrosus* in this area with *Succisa pratensis*, *Leontodon hispidus*, *Potentilla erecta*, *Pedicularis sylvatica*, *Carex echinata*, *Anthoxanthum odoratum*, *Nardus stricta*, *Carex binervis* and *Molinia caerulea*.

Further up slope there are occasional patches of *Sphagnum* sp., *Molinia caerulea*, *Juncus acutiflorus/subnodulosus* and *Rumex acetosa* located on peaty soil. See photo 4.

**Note 4:**

This is an area of heath dominated vegetation located between both rivers on the south facing slope of Keeper Hill. The heath is dominated by *Vaccinium myrtillus* (>50cm high), *Calluna vulgaris* and *Juncus effusus* with frequent *Juncus squarrosus*. *Polygala serpyllifolia* and *Potentilla erecta* are also present. There are frequent patches of *Ulex europaeus* extending up the slopes from the river margins. This area appears currently ungrazed.

## Note 5:

This is a grazed sward of *Molinia caerulea*, *Nardus stricta*, *Calluna vulgaris*, *Vaccinium myrtillus*, *Potentilla erecta*, with occasional *Eriophorum vaginatum*, *Anthoxanthum odoratum* and *Juncus effusus* on peaty soil. There is abundant *Rhytidiadelphus squarrosus* and *Juncus squarrosus*. *Ulex europaeus* scrub is spreading up the slope in this area.

## Note 6:

This area was similar to that described in Note 2. It is dominated by *Juncus effusus* growing on mineral soil and is less poached than N2. There is significant encroachment by *Ulex europaeus*.

## Note 7:

This is a *Juncus effusus* dominated field with occasional grassy patches with *Juncus squarrosus*, *Potentilla erecta*, *Succisa pratensis*, *Pedicularis sylvatica*, *Nardus stricta*, occasional *Calluna vulgaris*, *Agrostis capillaris*, *Rhytidiadelphus squarrosus*, *Cirsium palustre*, *Leontodon hispidus*, *Trifolium pratense*, *Bellis perennis*, *Plantago lanceolata*, *Cirsium palustre*, *Prunella vulgaris* and *Trifolium repens*. This area was closely grazed with frequent *Ulex europaeus* scrub.



## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop was located in the area defined in the MPSU habitat map as species rich *Nardus* grassland. This is a sward dominated by *Juncus effusus* (75%) on peaty soils. Seven indicator species were recorded in a herb poor sward (5%), with two negative indicator species present and no encroachment by scrub, resulting in a 'Fail' for the Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 1. See photo 3.

Other species present in the immediate vicinity of the Monitoring Stop include *Juncus squarrosus*, *Leontodon hispidus*, *Calluna vulgaris*, *Eriophorum* sp., *Luzula sylvatica* and *Vaccinium myrtillus*.

### Monitoring Stop 2:

This Monitoring Stop was located on an area of mineral soil. This small area is visible on the OSI 2000 aerial photograph as a small distinct patch of green. This area was dominated by *Juncus effusus* with frequent patches of open grassland. *Juncus effusus* was c.20% cover within the Monitoring Stop. The sward was tightly grazed and there was frequent *Luzula* sp. in the vicinity. Four indicator species were recorded in a herb poor sward (10%), with two negative indicator species present and no encroachment by scrub, resulting in a 'Fail' for the Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 2. See photo 5.

*Ulex europaeus* scrub is encroaching up the slope and the area of species-rich *Nardus* grassland appears to be restricted to the area of mineral soil which is located on either side of the stream which bisects these southern slopes.

### Monitoring Stop 3:

This Monitoring Stop was located within the eastern section of the south facing slopes east of the eastern river in the area defined as species rich *Nardus* grassland in the MPSU habitat map. Six indicator species were recorded in a herb poor sward (15%), with one negative indicator species and no encroachment by scrub, resulting in a 'Fail' for the Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 3. See photo 10.

Outside the Monitoring Stop the sward is lightly grazed and dominated by *Rhytidiadelphus squarrosus* with occasional *Sphagnum* sp. and *Luzula sylvatica*, with frequent *Galium saxatile*, *Molinia caerulea*, *Festuca ovina*, closely grazed *Vaccinium myrtillus* and some clumps of *Nardus stricta*. There are frequent clumps of *Juncus effusus* and *Juncus squarrosus* outside the Monitoring Stop. The Monitoring Stop was located on peaty soil.

**Monitoring Stop 4:**

This Monitoring Stop was located in the field below Note 5 on mineral soil. This is a closely grazed sward with frequent clumps of *Juncus effusus* and encroaching *Ulex europaeus* scrub. Only two indicator species were recorded in a herb rich sward (50%), with four negative indicator species present and no encroachment by scrub, resulting in a 'Fail' for the Monitoring Stop. The relevé data for this Monitoring Stop is presented in Quadrat 4. See photo 16.

Additional species present in the vicinity of the Monitoring Stop include *Plantago lanceolata*, *Prunella vulgaris*, *Leontodon hispidus*, *Ranunculus repens*, *Cirsium palustre* and *Ulex europaeus*. Signs of improvement include *Trifolium repens*, *Lolium perenne*, *Cynosurus cristatus* and *Bellis perennis*.

## **Wicklow Mountains**

### **SITE DETAILS**

**Surveyed By:**                      **Survey Dates:**

**Total Site Area (Ha):** 32558

**Area of Priority Grassland (N2000) (Ha):** Area unknown.

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Wicklow	50	DU025, DU024, DU027, DU027a,
	56	WI002, WI003, WI005, WI006, WI007,
	62	WI010, WI011, WI012, WI016, WI017,
		WI018, WI022, WI023, WI028, WI029.

### **Digital Aerial Photos (Tile Nos.):**

O3514-a, O3514-b, O3514-c, O3514-d, O3515-a, O3515-b, O3515-c, O3515-d, O3516-c, O3563-b, O3563-d, O3564-a, O3564-b, O3564-c, O3564-d, O3565-a, O3565-b, O3565-c, O3565-d, O3566-a, O3566-b, O3566-c, O3566-d, O3612-b, O3612-d, O3613-a, O3613-b, O3613-c, O3613-d, O3614-a, O3614-b, O3614-c, O3614-d, O3615-c, O3615-d, O3667-a, O3667-c, O3667-d, O3668-a, O3668-b, O3668-c, O3668-d, O3669-a, O3669-b, O3669-c, O3669-d, O3670-a, O3670-b, O3670-c, O3670-d, O3671-a, O3671-b, O3671-c, O3671-d, O3725-b, O3725-d, O3726-a, O3726-b, O3726-c, O3726-d, O3727-a, O3727-b, O3727-c, O3727-d, O3728-a, O3728-b, O3728-c, O3728-d, O3729-a, O3729-b, O3729-c, O3729-d, O3730-a, O3783-a, O3783-b, O3783-c, O3783-d, O3784-a, O3784-b, O3784-c, O3784-d, O3785-a, O3785-b, O3785-c, O3785-d, O3786-a, O3786-b, O3786-c, O3786-d, O3787-a, O3787-c, O3841-a, O3841-b, O3842-a, O3842-b, O3842-c, O3842-d, O3843-a, O3843-b, O3843-c, O3843-d, O3844-a, O3844-b, O3844-c, O3844-d, O3845-a, O3845-c, O3898-b, O3898-d, O3899-a, O3899-b, O3899-c, O3899-d, O3900-a, O3900-b, O3900-c, O3900-d, O3901-a, O3901-b, O3901-c, O3901-d, O3902-a, O3902-b, O3902-c, O3902-d, O3903-a, O3903-c, O3954-b, O3955-a, O3955-b, O3955-c, O3955-d, O3956-a, O3956-b, O3956-c, O3956-d, O3957-a, O3957-b, O3957-c, O3957-d, O3958-a, O3958-b, O3958-c, O3958-d, O3959-a, O3959-b, O3959-c, O3959-d, O4012-d, O4013-a, O4013-b, O4013-c, O4013-d, O4014-a, O4014-b, O4014-c, O4014-d, O4015-a, O4015-b, O4015-c, O4015-d, O4016-a, O4016-b, O4071-b, O4071-d, O4072-a, O4072-b, O4072-c, O4072-d, O4073-a, O4073-b, O4073-c, O4073-d, O4074-a, O4074-c, O4074-d, O4130-b, O4131-a, O4131-b, O4131-c, O4131-d, O4132-a, O4132-b, O4132-c, O4190-b, O4191-a.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

002122

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

This site is a complex of upland areas in Counties Wicklow and Dublin, flanked by Blessington Reservoir to the west and Vartry Reservoir in the east, Cruagh Mt. in the north and Lybagh Mt. in the south. Most of the site is over 300m, with much ground over 600m and the highest peak of Lugnaquilla at 925m.

The Wicklow Uplands comprise a core of granites flanked by Ordovician schists, mudstones and volcanics. The form of the Wicklow Glens is due to glacial erosion.

The Wicklow Mountains are drained by several major rivers including the Dargle, Liffey, Dodder, Slaney and Avonmore. The river water in the mountain areas is often peaty, especially during floods.

The topography is typical of a mountain chain, showing the effects of more than one cycle of erosion. The massive granite has weathered characteristically into broad domes. Most of the western part of the site consists of an elevated moorland, covered by peat. The surrounding schists have assumed more diverse outlines, forming prominent peaks and rocky foothills with deep glens. The dominant topographical features are the products of glaciation. High corrie lakes, deep valleys and moraines are common features of this area.

The substrate over much of the area is peat, usually less than 2m deep. Poor mineral soil covers the slopes and rock outcrops are frequent

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows - in places the heath grades into upland grassland on mineral soil, some examples of which correspond to the E.U. Habitats Directive Annex I priority habitat species-rich *Nardus* grassland.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - upland grassland on mineral soil occurs within this site (see NHA notes, Brunker 1950, T. Doherty pers. comm.), though how much of it could be assignable to this habitat is not known. As is usual for this habitat it could be expected to occur above area which are regularly farmed and below the peat based habitats (heaths and bog). A key diagnostic species is *Pseudorchis albida*. Brunker noted the presence of this species at several locations within the SAC as follows: sparingly by the Liffey between Athdown and Ballysmuttan; at Luggala near the lake; at Oldbridge below Lough Dan; damp meadow on the west side of Lough Dan and at the mouth of the Inchavore River; below the fall in Glenmacnass. While it has not been recorded at any of these stations in recent times, it is likely that there has been no real search. Several of these sites are still known to be intact though it is likely that some have been altered by forestry and perhaps other landuses (T. Doherty pers. comm.).

Grassland merging with heath or gorse scrub is considered fairly widespread through

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the lower areas of the site. Species associated with Nardus grassland occur, including Nardus stricta, Galium saxatile, Festuca ovina, Potentilla erecta, Agrostis capillaris and Carex spp.

Note that the manual mentions a corresponding habitat in the NVC - CG11 Festuca ovina - Agrostis capillaris- Alchemilla alpina grass heath. Such a vegetation type appears to occur at Lough Ouler as Note 8 of the NHA return refers to 'flat grassy areas on the ridge have Agrostis sp. and Anthoxanthum interspersed with more heathy areas'.. and Alchemilla alpina present in small amount'. While no survey has been carried out for species-rich Nardus grassland it is considered that it certainly occurs on part of the siliceous substrates in this very large site. Further survey urgently needed.

*Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

**Previous surveys of relevance to the priority grassland habitats within the site:**

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.



**FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE****Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

**Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*

**Bolingbrook Hill****SITE DETAILS**

<b>Surveyed By:</b>	<b>Survey Dates:</b>
Rosaleen Dwyer	13/07/2006
Faith Wilson	19/07/2006
Willie Crowley	

**Total Site Area (Ha):** 206.02

**Area of Priority Grassland (N2000) (Ha):** 26.

**Area of Priority Grassland 2006 (Ha)\*:** 30

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

<b>County:</b>	<b>Discovery Sheet No:</b>	<b>6" Sheets:</b>
Tipperary	59	TI026, TI027, TI032, TI033.

**Digital Aerial Photos (Tile Nos.):**

O4451-c, O4451-d, O4452-c, O4510-a, O4510-b, O4510-c, O4510-d, O4511-a, O4511-d.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

002124

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

Situated approximately 6 km south-east of Silvermines Village, this upland site comprises Bolingbrook Hill and the nearby eastern slopes of Silvermine Mountains in Curryquin and Mucklin townlands. Most of the land is above 270 m and the highest point is at 404 m.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: Unimproved, species-rich upland grassland covers the lower slopes of Bolingbrook Hill and much of Curryquin. The dominant grasses found are Mat-grass (*Nardus stricta*), Bent grasses (*Agrostis* spp.) and Crested Dog's-tail (*Cynosurus cristatus*). This grassland type is listed as a priority habitat on Annex I of the EU Habitats Directive. Moss and Bracken (*Pteridium aquilinum*) cover is extensive. The herb component is diverse and many fields have Gorse (*Ulex* sp.) scrub or scattered Hawthorn (*Crataegus monogyna*) shrubs.

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: The species-rich *Nardus* grassland occurs in separate areas within the upland grassland of the site - at the east of Bolingbrook Hill and north of Curryquin at the west of the site. The underlying geology of these areas is sandstone. The habitat is distinguished from other areas of grassland by the species community and the fact that it is not severely over-grazed. It is found in a mosaic with a diversity of vegetation communities (scrubby, bog, flushed and heathy areas in addition to the predominant community of damp and less damp grassland). Characteristic species present include *Galium saxatile*, *Festuca ovina*, *Succisa pratensis*, *Potentilla erecta*, *Pedicularis sylvatica* and *Nardus stricta*. Though the area of the habitat is quite small in extent there is a rather diverse flora present though no orchids have been listed. However the site was surveyed in December. The orchids may be present but further survey work will need to be carried out to determine this. Though small the quality of the habitat at Bolingbrook Hill is good.

#### *Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1995 NHA Survey and at a subsequent visit in 1997. Both general habitat notes and more site specific notes describing "upland grassland" were recorded.

## SITE MONITORING AND MANAGEMENT UNITS

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2.

Of the 12 Monitoring Stops assessed, 10 were seen to fail the assessment process (see Table 1a). Six management units were noted. A summary of the Monitoring Stops and the management units they were assigned to is presented in Table 1b.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	6
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	2
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Map 2
Stop 02	2	Fail	Structures and Functions	Map 2
Stop 03	3	Fail	Structures and Functions	Map 2
Stop 04	4	Fail	Structures and Functions	Map 2
Stop 05	5	Fail	Structures and Functions	Map 2
Stop 06	5	Fail	Structures and Functions	Map 2
Stop 07	5	Fail	Structures and Functions	Map 2
Stop 08	5	Pass	Structures and Functions	Map 2
Stop 09	5	Fail	Structures and Functions	Map 2
Stop 10	5	Pass	Structures and Functions	Map 2
Stop 11	6	Fail	Structures and Functions	Map 2
Stop 12	6	Fail	Structures and Functions	Map 2

The site is divided into separate polygons, Curryquin in the west being the larger with Bolingbrook Hill itself located in the east.

Four Monitoring Stops were conducted in Curryquin and these were considered to be in four different Management Units as each was under a different management regime.

Eight Monitoring Stops were conducted on Bolingbrook Hill, six of which were considered to be within the same Management Unit. These were all located in a series of fields in the NW of the area, which were not stock-proof and appeared to be under a similar management regime. Two Stops located in the SE of Bolingbrook Hill were considered to be in another separate Management Unit.



## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

In general, the areas of habitat 6230 surveyed in Bolingbrook Hill SAC were in poor condition. Although grazing (140) levels were adequate in places, much of the area surveyed in the Curryquin section of the site was suffering from lack of management and was thus becoming encroached by bracken (954). Indeed, according to Fossitt (2000), the habitat category 'Dense Bracken' (HD1) occurs when bracken cover exceeds 50% and this is already the case in areas in and around Stop 03, Stop 04 and Note 10. Currently parts of this site appear to be unmanaged and thus this spread of bracken is most likely a consequence of reduced grazing pressures (149) at the site. There may be a small amount of scrub encroachment occurring also on the NW of Bolingbrook Hill itself in the area of Stop 05, 06 and 10.

A degree of fertilising (120) has also occurred within the SAC with many areas noted (e.g. Stops 01, 02, 09, 11 and 12; Notes 01, 02, 04, 05 and 08) as being agriculturally improved to some extent. Despite showing a degree of fertilisation, some of these areas (e.g. Stop 02) still support the target number of species. Nonetheless, the degree of fertilisation has been substantial enough for many of the areas surveyed to fail in their assessment of Structure and Functions as a result of an increased frequency of negative indicators and/or a lack of positive indicator species and/or a low herb cover.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
120	Fertilisation	-1	B
140	Grazing	1	B
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

A loss of species-rich *Nardus* grassland has occurred at this site due to both agricultural abandonment and agricultural improvement. One area (NHA Note 9) that was potentially species-rich *Nardus* Grassland in the past has been excluded from the site since designation. Although this area was said in 1995 "to have been subject to improvement in the past", it now appears from aerial photos (2000 series) to have been more intensively improved and is no longer likely to support the habitat. Elsewhere in the Bolingbrook Hill section of the site, a less severe 'improvement' of areas of species-rich *Nardus* grassland is evident. On the Curryquin part of the site the loss in extent of the habitat has

occurred mainly because of abandonment and consequently encroachment by bracken.

Thus, the issues of undergrazing and the application of fertiliser need to be addressed at this site with the objective of reversing the damage done at the site

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6230 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

28ha of the habitat was mapped at the site with a further 5ha mapped as dense bracken still retaining elements of the habitat. Thus a figure of 30ha is estimated for the extent of the habitat at Bolingbrook Hill SAC.

The NATURA 2000 Explanatory Notes estimate that 26ha of the habitat are present within the site. However, this is likely to have been an under-estimation as the NHA notes do not indicate that any species-rich *Nardus* grassland occurs in the NW of Bolingbrook Hill where nearly 15ha of the habitat was mapped as such during the current survey. Thus over the remainder of the site there has been a loss in extent of ca. 10ha (or ca. 40%) of habitat 6230 due in part to bracken encroachment and in part to agricultural improvements.

Because the loss in extent may be as high as 40%, which is much greater than 1% per year, the Conservation Assessment of the extent of habitat 6210 at Bolingbrook Hill SAC is thus considered to be Unfavourable - bad.

### ***Structure and Functions:***

Of the 12 Stops assessed for Structures and Functions, only two stops passed. These two Stops (Stops 08 and 10) were located within Management Unit 5 where four other Stops were located, all of which failed due to small-scale levels of agricultural improvement resulting in an increased number and frequency of negative indicator species. Indeed, two (Stops 05 and 07) of the Stops that failed in this area of the site had the required number of positive indicator species with the orchid *Platanthera chlorantha* also recorded within Stop 07. Stop 09, which was located in the most agriculturally improved field, had the lowest number of positive indicator species (five) recorded in this area.

The grassland in Management Unit 6, in the south-east of Bolingbrook Hill is currently in very poor condition with only five and two positive indicator species recorded in the two Stops conducted in this area (Stops 11 and 12). Numerous negative indicator species, seven in Stop 11 (six at or above the target cover values) and six in Stop 12, were also recorded within these Stops. These species (*Cirsium vulgare*, *Cynosurus cristatus*, *Senecio jacobea*, *Ranunculus repens*, *Trifolium repens* (>10%), *Holcus lanatus* (>30%) and *Bellis perennis*) all indicate a level of agricultural improvement. Furthermore, the area in which Monitoring Stop 11 was conducted was badly poached at the time of the survey.

The four Stops conducted in the Curryquin section of the SAC all failed with six to nine positive indicator species recorded within these Stops. The Stop with the required number of positive indicator species (Stop 02) failed because of a high cover of *Trifolium repens* indicating agricultural improvement in the area. This area is essentially a mosaic of wet heath and species-rich *Nardus* grassland. Stop 01, which had seven positive indicator

species also failed because of a cover of *Trifolium repens* of greater than 10%. Scrub and bracken encroachment from the field margins was also noted in this area. Stop 03 supported six positive indicator species and was located in a field that is now seriously encroached by bracken with a cover of 20-30% of bracken recorded in the Stop itself. Stop 04 passed on all attributes except it fell one species short of the target number of positive indicator species with only eight recorded. No current management was obvious in this field and it may thus be undergoing the early stages of succession into rank grassland/bracken encroachment.

Thus in summary, seven of the twelve Stops failed to reach the target number of positive indicator species and eight failed as a result of an excessive cover of negative indicator species. Only one Stop (Stop 09) failed because of a low herb cover (10%) with one also failing due to bracken encroachment.

Therefore, it can be seen that the condition of the species-rich *Nardus* grassland at this site is in poor condition and thus the Structures and Functions of the habitat at this site is described as being Unfavourable - bad.

#### ***Future Prospects:***

Although the condition of the species-rich *Nardus* grassland is poor at this site, many of the Stops still support a good variety of the indicator species, suggesting that the condition of the grassland is recoverable given adequate time and proper management.

An adequate grazing regime needs to be invoked in parts of Curryquin where bracken encroachment is a serious problem (see Stop 03 and Note 10). The application of fertilisers across Bolingbrook Hill also needs to be halted. These conditions require the NPWS to be active on the ground in reaching agreements with landowners on management regimes. If this can be achieved the future prospects for most of the site are good. However, the field (NHA Note 09), which has been excluded from the SAC, in the SE of Bolingbrook Hill since the time of designation (and appears from the aerial photographs to have subsequently been reseeded) is unlikely to ever be recovered. Thus, overall the future prospects for species-rich *Nardus* grassland at the site are considered to be Unfavourable - inadequate.

#### ***Conservation Assessment:***

The determination of the overall Conservation Assessment for a site should take into account the results of the assessment of Extent, Structures and Functions. If one 'Unfavourable - bad' assessment results, the consequence should be an overall Conservation Assessment of Unfavourable - bad.

For the 6230 habitat in the Bolingbrook Hill cSAC, the assessment of Future Prospects was determined to be Unfavourable - inadequate. The Extent and Structures and Functions, however, were described as being Unfavourable - bad, due to the ca. 40% loss in extent and to due to the fact that over 75% of the Stops were deemed to Fail the assessment. This automatically defines the overall Conservation Assessment to be Unfavourable - bad (see Table 3).

Although the quality of the species-rich *Nardus* grassland is currently poor, it should be realised that considering the lack of sites designated for this habitat type, the 30ha occurring within this site accounts for a substantial proportion of the species-rich *Nardus* grassland within SACs in Ireland. Therefore, every attempt should be made to improve the condition of the habitat at this site.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	



## APPENDIX 1 - 2006 SITE NOTES

*The locations of these Site Notes are shown on Map 2.*

### Note 1:

This is a semi-improved pasture grazed by cattle (fresh cowpats are frequent throughout). Species present include *Lolium perenne*, *Holcus lanatus*, *Agrostis stolonifera*, *Trifolium repens*, *Senecio jacobaea*, *Cerastium fontanum*, *Dactylis glomerata*, *Cynosurus cristatus*, *Potentilla anserina*, *Plantago lanceolata*, *Cirsium arvense*, and *Rumex obtusifolius*. Bracken is encroaching from the field corners which also contain *Ulex* scrub.

### Note 2:

This is similar to N1 but *Rumex obtusifolius* is more abundant and Bracken is denser on the slopes. A trackway through the Bracken leads to the upper slopes (N21 in the NHA notes). Along the sides of the trackway and where Bracken cover is light, the vegetation is more species rich, including species such as *Achillea millefolium*, *Viola* spp., *Galium saxatile*, *Prunella vulgaris*, *Plantago lanceolata*, *Hypochoeris radicata*, *Rumex acetosa*, *Rhinanthus minor*, and *Agrostis canina*. As the trackway reaches the upper slopes, Bracken cover becomes denser before opening out onto northeast-facing slopes where Stop 1 is located.

### Note 3:

Small area of badly poached ground. *Nardus* grassland indicator species occur here on the tops and sides of the standing hummocks of soil e.g. *Potentilla erecta*, *Succisa pratensis*, *Pedicularis sylvatica*, *Festuca ovina*. Also occurring in this disturbed area are *Calluna vulgaris*, *Rumex acetosa*, *Hypochoeris radicata*, *Holcus lanatus*, *Molinia caerulea*, *Carex echinata*, *Anthoxanthum odoratum*, *Carex binervis*, *Juncus buffonius*, and *Euphrasia* spp. (see P002).

### Note 4:

This is a well-grazed semi-improved field with *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Holcus lanatus*, *Achillea millefolium*, *Conopodium majus*, *Ranunculus bulbosus*, *Ranunculus repens*, *Lotus corniculatus*, *Rumex acetosa*, *Trifolium repens*, *Cirsium palustre*, and *Senecio jacobaea*. Scattered throughout are mature *Ulex* shrubs. No young seedlings were noted, suggesting that current grazing patterns are maintaining

### Note 5:

This field has a similar species composition to that in N4 but, apart from some light grazing by rabbits, it currently is not being grazed by larger animals. Tractor tracks traverse this field so it may be managed by mowing.

The grassland occurs as a narrow strip of approximately 10m wide between the *Ulex* scrub at the base of the field and a band of *Juncus effusus* on the higher slope. *Agrostis capillaris* is abundant and Bracken is also seen to be encroaching.

\*Relevé 1 is located in this field to represent this type of semi-improved grassland.

## Note 6:

This is a herb-rich, unimproved meadow on neutral soil. 3 horses were grazing the area at the time of surveying. The field is situated on a gently sloping site and vegetation was approximately 30cm high. Bracken was seen to be encroaching from the field margins where *Ranunculus repens* and *Rumex obtusifolius* also occur.

\*Relevé 2 is located in this field to represent herb-rich, unimproved, neutral meadow.

## Note 7:

\*Relevé 3 was placed in this location and it represents 'Species-rich *Nardus* Grassland' which was noted to occur on dry mounds of soil less than 5m<sup>2</sup> in size. These mounds occurred in a field with vegetation similar to that described in N6, although species-richness in N7 was not as great as in N6.

## Note 8:

This area has species similar to that described in N6 but unlike N6, this area is very tightly grazed by cattle. Vegetation was less than 3cm high and species richness was lower than N6. *Senecio jacobaea* and *Cirsium palustre* are also more frequent across this area.

## Note 9:

This describes a heathy northeast-facing bank. Vegetation is tall (40-50cm) and consists of *Calluna vulgaris*, *Vaccinium myrtillus*, *Succisa pratensis*, *Potentilla erecta*, *Luzula multiflora*, *Lathyrus montanus*, *Hypochoeris radicata*, *Festuca rubra*, *Agrostis canina*, *Lotus corniculatus*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Hieracium pilosella*.

The remainder of this field was flatter and is dominated by *Holcus lanatus*, *Agrostis canina*, and *Anthoxanthum odoratum*. The field appears to be unmanaged either by grazing or mowing. *Rubus fruticosus* agg. is spreading and *Juncus effusus* patches are frequent.

## Note 10:

This area shows a tall, unmanaged vegetation dominated by grasses such as *Holcus lanatus*, *Anthoxanthum odoratum*, *Arrhenatherum elatius*, *Agrostis* spp., and *Dactylis glomerata*, with scattered *Juncus effusus* and *Rumex obtusifolius* also occurring. Bracken is also seen to be spreading. There are no indications of recent management in this location.



## Note 11:

This area is an interesting mosaic of 'Species-rich *Nardus* Grassland' and neutral soil with meadow species on sloping ground intersected by wet flushes and wet grassland.

The *Nardus*-grassland element is represented by *Potentilla erecta*, *Succisa pratensis*, *Achillea millefolium*, *Agrostis capillaris*, *Juncus squarrosus*, and *Pedicularis sylvatica*. This grades into grassland with elements of the grassland described in N6 with abundant *Euphrasia* spp. and occasional *Platanthera chlorantha*, *Conopodium majus*, and *Lotus corniculatus*.

The wet flushes and wet grassland contain *Jun ac*, *Rumex acetosa*, *Holcus lanatus*, *Stellaria graminea*, *Galium saxatile*, *Hydrocotyle vulgaris*, *Potentilla palustris*, *Lychnis flos-cuculi*, *Senecio aquaticus*, *Ranunculus flammula*, and *Triglochin palustris*.

## Note 12

Higher up the slopes above monitoring stop 6 are clumps of *Nardus stricta*. *Platanthera chlorantha*, *Achillea millefolium*, *Primula veris*, *Carex* sp., *Cynosurus cristatus*, *Carex flacca*, *Juncus acutiflorus/subnodulosus*, *Carex pulicaris*, *Juncus buffonius* and *Calluna vulgaris* are also present on mineral soil.

## Note 13

At approximately 1000' on the upper slopes of Bolingbrook Hill the *Nardus* grassland merges with wet heath on a peaty soil. The vegetation here is dominated by *Eriophorum angustifolium*, *Calluna vulgaris*, *Potentilla erecta*, *Molinia caerulea* and clumps of *Juncus* sp. *Carex echinata*, *Nardus stricta*, *Pedicularis sylvatica*, *Polygala serpyllifolia*, *Rhytidiadelphus squarrosus*, *Sphagnum* sp., *Vaccinium myrtillus*, *Carex binervis* and *Juncus squarrosus* are also present.

## Note 14:

These slopes are on mineral soil but still have a heathy element. *Molinia caerulea*, *Calluna vulgaris*, *Succisa pratensis*, *Juncus squarrosus*, *Potentilla anserina*, *Carex binervis*, *Eriophorum* sp., *Agrostis capillaris*, and *Juncus effusus* are all present. The lower slopes of this area are dominated by *Ulex europaeus* scrub.

Immediately to the south west (within 5m of this location) is grassland with *Dactylorhiza fuchsii* in what appears to be a flushed area with frequent *Salix* sp. This area is wet underfoot.

## Note 15:

This is a closely grazed field with *Agrostis capillaris*, *Rhytidiadelphus squarrosus*, *Succisa pratensis*, *Pedicularis sylvatica*, *Potentilla erecta*, *Anthoxanthum odoratum* and *Festuca ovina*. The top north east of the field which is fenced off by an electrical fence is dominated by a sward of *Juncus effusus* which is also scattered throughout the field. Other species present in this area include *Senecio jacobaea*, *Bellis perennis*, *Ranunculus repens*, *Carex flacca* and *Cynosurus cristatus*. This area is currently grazed by goats.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

The slopes on which Monitoring Stop 1 are located show some minor improvement. Species-richness is better than in the lower fields described in N1 but the higher northwest corner of this field indicates more improvement and disturbance close to the field entrance gap.

The Monitoring Stop has good herb cover and the required number of indicator species. However, the cover of *Trifolium repens* is high at 20%, resulting in a Fail for this attribute at this location. There was no Bracken recorded in the Monitoring Stop or across most of the field. However, Gorse and Bramble are encroaching into this field from the field margins.

Sandstone outcrops occur at the break of slope and these rocks are covered in a dry heath-type vegetation of low-growing *Calluna vulgaris*, *Vaccinium myrtillus*, *Succisa pratensis*, *Molinia caerulea*, *Potentilla erecta*, *Anthoxanthum odoratum*, and *Juncus squarrosus*. This vegetation shows signs of grazing (horse droppings were noted on the upper slope).

An area of animal poaching occurs on one of the slopes in this field. *Nardus* grassland indicator species occur here on the tops and sides of the standing hummocks of soil e.g. *Potentilla erecta*, *Succisa pratensis*, *Pedicularis sylvatica*, *Festuca ovina*. Also occurring in this disturbed area are *Calluna vulgaris*, *Rumex acetosa*, *Hypochoeris radicata*, *Holcus lanatus*, *Molinia caerulea*, *Carex echinata*, *Anthoxanthum odoratum*, *Carex binervis*, *Juncus buffonius*, and *Euphrasia* spp.

Scattered throughout the rest of this field are *Platanthera chlorantha*, *Conopodium majus* and occasional *Senecio jacobaea*.

### Monitoring Stop 2:

This Stop is located in a gently sloping area where the soil is tending towards a peaty nature. *Juncus effusus* occurs along damp drainage areas down the slopes. The field is well-grazed with frequent fresh cow pats scattered throughout.

9 indicator species were recorded in Stop 2. However, the cover of *Trifolium repens* was noted to exceed the target value of 10% and therefore the Stop fails on this attribute. Grazing pressure is deemed to be at a medium level in this field.

The vegetation described in Stop 2 occurs in a mosaic with wet heath grassland. Tightly cropped *Calluna vulgaris* occurs in peaty patches across the slope with *Vaccinium myrtillus*, *Juncus squarrosus*, *Potentilla erecta*, *Molinia caerulea*, *Polygala serpyllifolia*, *Pedicularis sylvatica*, *Hylocomnium splendens*, and *Sphagnum capillifolium*.

**Monitoring Stop 3:**

This Stop is located on a gentle sloping bank facing east/southeast. The vegetation on this bank is tall (50cm) and the bank, as well as the surrounding field, appears to have been unmanaged for some time. Bracken and Bramble is encroaching from the field edges and has already occupied patches of ground on the flatter areas.

Herb cover is low (30%) and only 6 indicator species were recorded. The lack of management at this location is reducing the species richness and allowing encroachment by Bracken and Bramble.

**Monitoring Stop 4:**

This Stop is located on a gentle slope facing east/southeast. It is the only Stop to Pass on all attributes. 8 positive indicator species were recorded and negative indicators (*Juncus effusus*) were not deemed to be a problem at this time. Bracken or scrub encroachment was also seen not be an issue.

There were few signs of current management but sward structural features suggest that recent management has been sufficient to result in a positive score for this area.

**Monitoring Stop 5:**

This Monitoring Stop was conducted on the north west facing slope of Bolingbrook Hill. The overall impression for this field is that it is not species-rich *Nardus* grassland but there is a good diversity of species recorded within the Monitoring Stop. *Senecio jacobaea*, *Holcus lanatus* and *Trifolium repens* are frequent elsewhere in the field with occasional *Cirsium palustre*, *Euphrasia* sp., *Prunella vulgaris*, *Conopodium majus*, *Lotus corniculatus*, *Plantago lanceolata*, *Bellis perennis*, *Ranunculus repens*, *Hieracium pilosella* also present within or immediately adjacent to the Monitoring Stop. Occasional patches of *Juncus effusus* also present.

The grazing regime is currently light but the level of poaching would indicate a higher grazing level in the past. There are occasional patches of *Ulex europaeus* scrub spreading from the top of the field. *Pedicularis sylvatica* and *Vaccinium myrtillus* were present on areas of thin soil surrounding rocky outcrops. This grassland was located on mineral soil.

**Monitoring Stop 6:**

This Monitoring Stop was conducted on the north west facing slope of Bolingbrook Hill on mineral soil above a bank of *Ulex europaeus* scrub. *Juncus effusus* clumps are a common feature of this field covering c.20 - 30% of it. There are occasional outcrops of sandstone. There are small clumps of grazed *Vaccinium myrtillus*, *Prunella vulgaris*, *Leontodon hispidus*, and *Rumex acetosa*.

Outside the Monitoring Stop *Cynosurus cristatus* and *Pteridium aquilinum* are rare. There is some sparsely scattered *Ulex europaeus* and *Crataegus monogyna*. *Ranunculus repens*, *Bellis perennis* and *Conopodium majus* are present in the sward.

This Stop was deemed to have failed as there was insufficient positive indicator species present and too many negative indicators.

**Monitoring Stop 7:**

This Monitoring Stop was conducted on the north west facing slope of Bolingbrook Hill on a grass dominated slope surrounded by areas dominated by *Juncus effusus*. There are small amounts of *Nardus stricta*, *Euphrasia* sp., *Calluna vulgaris*, *Juncus acutiflorus/subnodulosus*, *Deschampsia caespitosa*, and *Leontodon hispidus*.

*Holcus lanatus* was present outside the Monitoring Stop as was *Lathyrus montanus*, *Luzula* sp. and occasional *Prunella vulgaris*. This area is currently lightly grazed by sheep.

**Monitoring Stop 8:**

This Monitoring Stop was conducted on the west north west facing slope of Bolingbrook Hill which is grass dominated with frequent *Juncus effusus* and is quite moss rich. This area is currently grazed by goats. The lower slopes have frequent *Juncus effusus*. The upper slopes are bisected by a small flushed area near an old drain with *Juncus* sp., *Mentha aquatica*, *Lychnis flos-cuculi*, *Epilobium* sp., and *Succisa pratensis* on peaty soils. There is some encroachment of scrub from the field boundary.

Additional species present include *Carex* sp., *Calluna vulgaris*, *Danthonia decumbens* and *Vaccinium myrtillus* along the ditch bank above the Monitoring Stop where it is drier. There is some poaching damage. *Viola riviniana* was present in the lower part of the field.

**Monitoring Stop 9:**

This Monitoring Stop was conducted on a grass dominated sward which was semi-improved and closely grazed. There were numerous thatches of grass on the surface. This area was grazed by cattle and goats and had few herbs present. *Rumex acetosa* was frequent.

**Monitoring Stop 10:**

This Monitoring Stop was located amidst clumps of *Ulex europaeus* scrub and was quite species rich with frequent *Dactylorhiza fuchsia* and occasional clumps of *Juncus effusus*.

Species present in this area include *Conopodium majus*, *Luzula* sp., *Carex* sp., *Senecio jacobaea*, *Juncus buffonius*, *Prunella vulgaris*, *Calluna vulgaris*, *Viola riviniana*, *Vaccinium myrtillus*, *Cirsium palustre*, *Hypericum* sp., *Leontodon hispidus* and *Platanthera chlorantha*. This area is currently grazed by hares and there is some old poaching by cattle.

**Monitoring Stop 11:**

This Monitoring Stop was conducted on an east facing slope of Bolingbrook Hill. It is badly poached and on peaty soil. Species present include *Alchemilla* sp., *Prunella vulgaris*, *Trifolium repens*, *Trifolium pratense*, abundant *Euphrasia* sp., *Senecio jacobaea*, *Plantago lanceolata*, *Cynosurus cristatus*, *Holcus lanatus* and *Cirsium vulgare*. There are the remains of several ring feeders in this field.

**Monitoring Stop 12:**

This Monitoring Stop had a high herb:grass ratio of 60% but this was mainly based on the presence of *Trifolium repens*. Species present include *Cerastium fontanum*, *Hieracium pilosella*, *Prunella vulgaris*, *Trifolium pratense*, *Plantago lanceolata*, *Rumex acetosa* and *Cirsium palustre* with *Holcus lanatus* and *Cynosurus cristatus* dominating the sward. This area is based on peaty soils and was lightly grazed by cattle.

## **Anglesey Road**

### **SITE DETAILS**

**Surveyed By:                      Survey Dates:**

Rosaleen Dwyer                      12/07/2006

Rosaleen Dwyer                      18/07/2007

Faith Wilson

Faith Wilson

Willie Crowley

Willie Crowley

**Total Site Area (Ha):** 35.61

**Area of Priority Grassland (N2000) (Ha):** 11.

**Area of Priority Grassland 2006 (Ha)\*:** 5

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**County:**

Tipperary

**6" Sheets:**

TI039, TI045.

**Digital Aerial Photos (Tile Nos.):**

O4752-a, O4752-b, O4752-c, O4752-d.

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

002125

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

Anglesey Road is a steep-sided valley which extends approximately 1.8 km along the Multeen River to the north of Hollyford village. Most of the site lies between 210 and 270 m above sea level.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis describes the grassland as follows - Unimproved, species-rich upland grassland is the main habitat found. Among the common grasses are Bents (*Agrostis* spp.), Crested Dog's-tail (*Cynosurus cristatus*), Sheep's Fescue (*Festuca ovina*) and Wavy Hair-grass (*Deschampsia flexuosa*). Localised patches of heathy grassland contain Heather (*Calluna vulgaris*) and Bilberry (*Vaccinium myrtillus*). Bracken (*Pteridium aquilinum*) cover is extensive and there are scattered shrubs of Hawthorn (*Crataegus monogyna*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows - Inland grassland on mineral soil forms the largest component of the site. Within this, species-rich *Nardus* grassland is found on unimproved upland grassland. Sometimes it dominates entire fields and in other instances is found in a mosaic with a diversity of vegetation communities (scattered scrub, heath and *Pteridium aquilinum*).

Characteristic species present include *Galium saxatile*, *Festuca ovina*, *Potentilla erecta*, *Cynosurus cristatus*, *Viola* spp. and *Veronica* spp. The area is lightly grazed by cattle. Though the area of the habitat is quite small in extent, there is a rather diverse flora present, although no orchids have been listed. However, the site was surveyed in December. The orchids may be present but further survey work will need to be carried out to determine this. Though small, the quality of the habitat at Anglesey Road is good.

#### *Description based on the 2006 Survey :*

The extent of the species-rich *Nardus* grassland at Anglesey Road was seen to be limited mainly to the slopes overlooking the roadway. The habitat occurs on mineral soil and was also noted to contain minor elements of more heath-like communities. The grassland habitat on the slopes is being seriously affected by the spread of Bracken while scrub is also dense in places. In these areas, it was more usual to find indicator species scattered amongst dense patches of Bracken.

The upper slopes and summit areas also show signs of agricultural improvement and this is particularly evident on the western side of the road. Contrary to the description recorded in the NATURA 2000 form, no single area or field was found which was dominated by 6230 habitat. Nonetheless, a good range of indicator species was recorded across the site, suggesting that recovery of open grassland could be achieved with more correct management. In addition to the typical indicator species, orchids such as *Platanthera chlorantha* and *Dactylorhiza fuchsii* were also recorded.

## **BACKGROUND INFORMATION**

### **Previous surveys of relevance to the priority grassland habitats within the site:**

This site was surveyed during the 1995 NHA Survey. However, only general habitat notes referring to acid grassland were noted and no locations for the habitat were recorded on the NHA map.



## SITE MONITORING AND MANAGEMENT UNITS

Detailed information on each of the 12 Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2. Structures and Functions were assessed at all 12 Stops. Of these 12 Stops, only 3 were seen to pass the assessment, resulting in an overall failure of the Structures and Functions at this site (see Table 1a).

Seven Management Units were determined and a summary of the Monitoring Stops and Management Units they were assigned to is presented in Table 1b below.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	7
<b>Number of Monitoring Stops:</b>	12
<b>Number of Stops That Pass:</b>	3
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Pass	Structures and Functions	Map 2
Stop 02	1	Fail	Structures and Functions	Map 2
Stop 03	2	Fail	Structures and Functions	Map 2
Stop 04	3	Pass	Structures and Functions	Map 2
Stop 05	4	Fail	Structures and Functions	Map 2
Stop 06	4	Fail	Structures and Functions	Map 2
Stop 07	5	Fail	Structures and Functions	Map 2
Stop 08	5	Fail	Structures and Functions	Map 2
Stop 09	6	Fail	Structures and Functions	Map 2
Stop 10	7	Fail	Structures and Functions	Map 2
Stop 11	7	Fail	Structures and Functions	Map 2
Stop 12	7	Fail	Structures and Functions	Map 2

12 Stops were conducted within this SAC within seven different Management Units, three (MU's 04, 05 and 06) on the west side of the road and four on the east. Two Stops were conducted in MU 01, 04 and 05 with three conducted in MU 07 and one in each of the other MU's.

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

The main threats to this site are a lack of grazing resulting in encroachment by *Pteridium aquilinum* and scrub. Poaching of ground caused by stock in wet weather is also an issue. Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

Although some good examples of species-rich *Nardus* grassland were recorded at the site, in general, the areas of habitat 6230 surveyed in Anglesey Road SAC were in poor condition. Grazing (140) levels were rarely adequate, though an excessive amount of poaching and terracing was evident in the south-east of the site. Consequently much of the areas surveyed were seen to be suffering from bracken encroachment (954).

Indeed, according to Fossitt (2000), the habitat category 'Dense Bracken' (HD1) occurs when bracken cover exceeds 50% and this is already the case in many areas of the site. Currently parts of this site appear to be unmanaged and thus this spread of bracken is most likely a consequence of reduced grazing pressures (149) at the site.

A degree of fertilising (120) has also occurred within the SAC, but this appears to be limited to the flatter areas on top of the slopes and is thus having very little impact on the areas of species-rich *Nardus* grassland.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
120	Fertilisation	-1	C
140	Grazing	1	C
149	Grazing: undergrazing	-1	B

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

A loss of species-rich *Nardus* grassland has occurred at this site due to agricultural abandonment and the consequent invasion of bracken. A degree of fertilising (120) has also occurred within the SAC, but this appears to be limited to the flatter areas on top of the slopes and is thus having very little impact on the areas of species-rich *Nardus* grassland. Nonetheless, a curtailment in the use of fertilisers would benefit the condition of the *Nardus* grassland, particularly on the upper slopes. However, this benefit would be negligible if the bracken encroachment is not managed properly. Thus, the issue of undergrazing and bracken encroachment need to be addressed immediately at this site with the objective of reversing the damage already done.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6230 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

3.1ha of the habitat was mapped at the site with a further 4.7ha mapped as dense bracken still retaining elements of the habitat. Thus a figure of 5ha is estimated for the extent of the habitat at Anglesey Road. The NATURA 2000 Explanatory Notes estimate that 11ha of the habitat are present within the site, indicating that there has been a ca. 50% loss in the extent of the habitat.

While this is probably an exaggeration (the original extent is likely to have been overestimated), there has undoubtedly been a loss in extent of the habitat at the site and this has mainly been due to bracken encroachment. Because the loss in extent may be as high as 50%, which is much greater than 1% per year, the Conservation Assessment of the extent of habitat 6210 at Anglesey Road is thus considered to be Unfavourable - bad.

### ***Structure and Functions:***

Of the 12 Stops assessed for Structures and Functions, only three stops passed. These Stops (Stops 01, 04 and 07) were located within Management Units 01, 03 and 05 respectively. Although Stop 01 passed with ten positive indicator species recorded, it was noted that the Stop was conducted in a small area (10m diameter) of the slope, which was not suffering from the same degree of serious bracken encroachment as the rest of the slope. This was apparently because the area was located close to a trackway.

Stop 02, which was located within the same Management Unit (MU) only supported six of the positive indicator species and also failed on account of its cover of *Ranunculus repens*, a negative indicator species, that is likely to be present as a result of the Stop being located close to the top of the slope where a semi-improved field is located. Stop 02 also failed as a result of having a low herb cover and a high cover of bracken (10-15%).

Stop 04 (in MU 03) had the highest number of positive indicator species present (eleven) and also had a high herb cover (50%) and no scrub or bracken encroachment. Three negative indicator species (*Holcus lanatus*, *Juncus effusus* and *Arrhenatherum elatius*) were recorded within the Stop, but all of these were at very low cover values. This Monitoring Stop was considered the most representative of this habitat type on the entire site and a minor heathy element was also present here with a low cover of *Calluna vulgaris* and *Vaccinium myrtillus* recorded.

The other Stop that passed was Stop 07 (MU 05). This Stop had only eight positive indicator species, but because *Platanthera chlorantha* was also recorded, and because the Stop passed all of the other criteria, it was deemed to have passed. However, a degree of bracken encroachment as well as a number of negative indicator species were also noted within the field in which this Stop was conducted and the other Stop (Stop 08) that was

conducted within this MU failed as a result of having five negative indicator species, despite passing all of the other criteria.

Of the remaining Stops that failed, only Stops 03, 06 and 10 reached the target number of positive indicator species. Stop 03 (MU 02) had nine positive indicator species, a 30% herb cover and no negative indicator species, but failed as a result of bracken encroachment with a 20-40% cover of bracken recorded within this Stop. It was also noted that when viewed from aerial photographs (OSI 2000), this area shows signs of disturbance, perhaps as a result of scrub removal. Nonetheless, the area has re-vegetated very well and contains some good *Nardus*-grassland indicator species.

Stop 06 was located on the west of Anglesey Road towards the north of the site on the upper slopes in the area. This Stop also had nine positive indicator species, a 40% herb cover and only one negative indicator species (*Senecio jacobea*), which was recorded as rare. However, this Stop also failed because of a high cover of bracken (30-50%). The Stop located further down the slope from it (Stop 05) within the same MU (MU 04) passed on the amount of bracken within the Stop but failed because of a lack of positive indicator species (seven) and a low herb cover (20%).

Stop 10 (in MU 07), which had nine positive indicator species as well as the orchid *Dactylorhiza fuchsii* failed on account of a low herb cover (20%) and on account of its high cover of *Juncus effusus*. This may indicate that the conditions on the slope are too wet for species-rich *Nardus* grassland. Terracing was also common on the slopes in this area and some areas were badly poached with areas of bare ground common. Stops 11 and 12, which were also located in this MU failed on account of a lack of positive indicator species (six and four respectively) as well as failing on account of low herb cover (20% and 15% respectively) and a high cover of the negative indicator species *Holcus lanatus* and *Juncus effusus*.

Stop 09 (MU 06) failed on all of the criteria assessed with only seven positive indicator species recorded as well as a low herb cover (15%), a high cover of bracken (30-40%) and a high cover of negative indicator species with *Arrhenatherum elatius* and *Juncus effusus* recorded as occasional.

Thus in summary, five of the twelve Stops failed to reach the target number of positive indicator species and six failed as a result of an excessive cover of negative indicator species. Six Stops also failed because of a low herb cover and four failed due to bracken encroachment.

### ***Future Prospects:***

Although the condition of the species-rich *Nardus* grassland is poor at this site, many of the Stops still support a good variety of the indicator species (four was the lowest number recorded) suggesting that the condition of the grassland is recoverable given adequate time and proper management.

Most of the site is suffering from bracken encroachment and thus needs an adequate grazing regime to be invoked. Considering that the positive indicator species are still

present, it is reasonable to predict that if the bracken was removed and an adequate grazing regime started, the condition of the species-rich *Nardus* grassland would be greatly improved. However, in areas in the SE of the site, where the cover of *Juncus effusus* is high it may be that the conditions are too wet for the habitat and that good quality species-rich *Nardus* grassland is not achievable on this slope.

A small amount of fertiliser application is also occurring within the site. This is largely confined to flatter areas on top of the slopes, but is having an impact on some of the upper parts of the slopes with evidence of enrichment recorded at Stops 02 and 09. Thus the application of fertiliser, while not a major problem at the site, needs to be further limited at Anglesey Road.

Due to the significant loss of habitat which is estimated to have occurred, and taking into account the current deteriorating habitat quality and the extensive uncontrolled spread of Bracken, the Future Prospects for the 6230 habitat at this site are described as being Unfavourable - inadequate. The measures needed to improve the condition of the species-rich *Nardus* grassland at Anglesey Road require the NPWS to be active on the ground in reaching agreements with landowners on management regimes. If this can be achieved, the Future Prospects for the species-rich *Nardus* grassland at the site would improve, particularly as the good range of indicator species still occurring would suggest that recovery would be possible.

### **Conservation Assessment:**

The determination of the overall Conservation Assessment for a site should take into account the results of the assessment of Extent, Structures and Functions. If one 'Unfavourable - bad' assessment results, the consequence should be an overall Conservation Assessment of Unfavourable - bad.

For the 6230 habitat in the Anglesey Road cSAC, the assessment of Future Prospects was determined to be Unfavourable - inadequate. The Extent and Structures and Functions, however, were described as being Unfavourable - bad, due to the ca. 50% loss in extent and to due to the fact that 75% of the Stops were deemed to Fail the assessment. This automatically defines the overall Conservation Assessment to be Unfavourable - bad (see Table 3).

However, it should be realised that there are still some very good examples of species-rich *Nardus* grassland on siliceous soil present within the site, with a good range of typical indicator species and orchid species still present. The site is also unusual in the context of other Irish sites designated for this habitat category in that the habitat occurs on siliceous mineral soil at Anglesey Road and not the peaty, more organic substrates more typical of other upland sites. Therefore, remedial measures to rehabilitate the habitat at Anglesey Road are strongly recommended.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			Unfavourable - bad

	Future Prospects		
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is located above the area where Stop 1 is placed. The area of N1 is evident in the aerial photos (OSI 2000) as an improved field. The vegetation is dominated by grasses such as *Poa* spp., *Agrostis* spp., *Anthoxanthum odoratum*, and *Holcus lanatus*, with herbs such as *Rumex acetosa*, *Ranunculus repens*, *Trifolium repens*, *Veronica chamaedrys*, *Stellaria media*, and scattered *Senecio jacobaea* also occurring. This vegetation grades down from the upper flatter summit into the zone of *Pteridium aquilinum* encroachment where Stop 1 is placed.

**Note 2:**

The area along the river ravine on the eastern side of the site is mostly dominated by dense scrub of mature *Salix* spp., *Crataegus monogyna* and *Alnus glutinosa*. Occasional open grassy patches remain between the scrub and *Pteridium aquilinum*. The area at N1 is dominated by *Holcus lanatus* and *Agrostis canina*, *Agrostis capillaris*, and *Anthoxanthum odoratum*, with *Conopodium majus*, *Centaurea nigra*, *Ranunculus repens*, *Potentilla erecta*, *Rumex acetosa*, *Trifolium repens*, and *Rubus fruticosus* agg., also occurring. Cowpats were frequent in this area.

**Note 3:**

This area is similar to that described in Stop 4 in that similar indicator species are present. N3 differs however, in that the surface shows some disturbance with a few additional species present as a result of the enrichment e.g. *Plantago lanceolata*, *Centaurea nigra*, *Prunella vulgaris*, *Hypochoeris radicata*, *Lotus corniculatus*, *Dactylis glomerata*, *Holcus lanatus*, *Cirsium palustre*, and *Juncus effusus*.

A cattle track follows the edge of scrub (*Crataegus monogyna* and *Prunus spinosa*) and cowpats are frequent. *Rubus fruticosus* agg., *Ranunculus acris*, *Achillea millefolium*, *Trifolium repens*, *Fragaria vesca*, and *Veronica chamaedrys* occur along the track.

Further up on the slope, cattle poach holes have caused some damage. These localised disturbances are likely to lead to more widespread erosion on the steeper slopes. Nonetheless, vegetation cover is currently good and representative plant species still occur. Additional species such as *Lotus corniculatus*, *Dactylorhiza fuchsii*, *Jasione montana*, *Conopodium majus*, *Calluna vulgaris*, and *Ajuga reptans* occur on these upper slopes. Less disturbed areas also maintain good examples of *Nardus*-grassland.

*Rubus fruticosus* agg. is also spreading downwards from the trackway situated at the top of the break of slope.

**Note 4:**

The slopes above monitoring stop 8 are more grass dominated with abundant *Cirsium palustre* and *Senecio jacobaea*, *Holcus lanatus* (30%), *Ranunculus repens*, *Centaurea nigra*, *Trifolium repens*, *Rumex acetosa*, *Cynosurus cristatus*, *Arrhenatherum elatius*, *Lathyrus pratensis* and occasional *Holcus lanatus*. *Lathyrus montanus* was also present. This field may be influenced by the improved field upslope as *Lolium perenne* was recorded.

This note also applies to the adjacent field which was very disturbed and poached and is now dominated by *Ranunculus repens*, *Holcus lanatus*, *Senecio jacobaea*, *Centaurea nigra* and *Leontodon hispidus*.



## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Monitoring Stop is located on a steep slope facing west/northwest. It occurs within a narrow band of *Nardus*-grassland approximately 10m wide, located between encroaching *Pteridium aquilinum*. *Pteridium aquilinum* encroachment is a problem along all these slopes. The substrate on these slopes is siliceous soil. Some light grazing was evident and some light impacts from animal poaching was observed.

Within the Monitoring Stop, herb content was high at 40% and 10 indicator species were recorded. The negative indicators *Senecio jacobea* and *Trifolium repens* were noted but were not in excess of 10%. Less than 5% scrub/Bracken cover occurred.

A range of additional species were recorded within the Stop, including some species more typical of neutral-to-calcareous situations such as *Hieracium pilosella*, *Primula veris*, *Lotus corniculatus*, and *Conopodium majus*. Outside the Monitoring Stop, additional species include *Hypochoeris radicata*, *Veronica chamaedrys*, *Calluna vulgaris*, *Vaccinium myrtillus*, *Hypericum pulchrum*, *Jasione montana*, *Euphrasia* spp., and *Dactylorhiza fuchsii*.

This Stop is deemed to have passed the assessment of Structures and Functions.

### Monitoring Stop 2:

This Monitoring Stop is located on a steep slope facing south/southwest. It occupies the middle slopes, being located below a semi-improved field which occurs on the flat summit and above a zone of *Pteridium aquilinum* which is encroaching from along the roadside. Areas close to the semi-improved field are grass-dominated with few indicator species. These areas then grade into poor *Nardus*-grassland which show signs of animal disturbance and *Pteridium aquilinum* encroachment. There are also signs of erosion in Monitoring Stop 2 and in its vicinity. Large poach holes have occurred as a result of animals grazing in wet conditions.

The area of the Monitoring Stop is showing a degree of impact from the upper semi-improved summit. This has resulted in a lower herb cover (20%) and few *Nardus*-grassland indicators being recorded (6). 4 negative indicators also occur including *Ranunculus repens* (O). The encroachment of *Pteridium aquilinum* is a problem with 10% cover recorded within the Stop and 15% cover outside. Also occurring within the Stop are *Plantago lanceolata*, *Hypochoeris radicata*, *Veronica chamaedrys*, and *Centaurea nigra*.

Due to the low herb cover, the insufficient number of positive indicator species, the presence of negative indicators, and the excessive cover of *Pteridium aquilinum*, the Structures and Functions of the grassland are deemed to have failed.

### Monitoring Stop 3

When viewed from aerial photographs (OSI 2000), this area shows signs of disturbance, perhaps as a result of scrub removal. Nonetheless, the area has re-vegetated very well and contains some good *Nardus*-grassland indicator species.

Within the Stop, herb cover is good (30%) and 9 indicator species occur. No negative indicator species were recorded but *Pteridium aquilinum* is seriously spreading in the area. This species accounts for 20% cover within the Stop and 40% cover in the vicinity of the Stop. Also occurring within the Stop are *Festuca rubra* and *Luzula sylvatica*.

The area shows signs of cattle tracks and poach holes. However, grazing patterns appear not to be consistent as 30% cover of plant litter was recorded. *Pteridium aquilinum* is rapidly encroaching and there are also occasional tussocks of *Juncus effusus*. Occasional, mature, shrubs of *Crataegus monogyna*, *Salix* spp., and *Alnus glutinosa* remain scattered across the slope.

Although sufficient herb over and indicator species occur, the excessive cover of *Pteridium aquilinum* results in a Fail for the Structures and Functions at this Stop.

### Monitoring Stop 4:

This Monitoring Stop was the most representative of this habitat type on the entire site. The Stop is located on a low bank close to the road, on a gentle slope which faces west/northwest. The area appears to be relatively undisturbed apart from some minor poach holes towards the base of the slope where the vegetation grades to a wet grassland. Grazing appears to be maintaining a low sward (10cm) with very little plant litter remaining (<5cm).

Herb cover is good at this Monitoring Stop (50%) and 11 indicator species were recorded. *Pteridium aquilinum* is not encroaching in this location and while 3 negative indicators were noted, overall percentage cover was not excessive enough to result in a Fail for Structures and Functions at this location.

Also occurring within the Stop were *Calluna vulgaris* and *Vaccinium myrtillus*. *Dactylorhiza fuchsii* was frequent across the area but was not recorded within the Stop.

This Stop was deemed to have passed the assessment of Structures and Functions.

**Monitoring Stop 5:**

This Monitoring Stop is located on a gentle slope which faces eastwards. Grazing levels appear light to moderate and some poach holes occur. However, damage is not significant and good vegetation cover occurs. Encroachment by *Pteridium* is a problem on the middle and upper slopes but fertilisers appear to have been applied on the lower slopes in the past. This is where the Monitoring Stop is located.

Within the Stop, species diversity was not high. Herb content was low at 20% and only 7 indicator species were recorded. In addition, 3 negative indicators were recorded but cover was not seen to be excessive. *Pteridium aquilinum* is not an issue in the vicinity of this Monitoring Stop but it will encroach from the lower slopes if not checked.

Also occurring within the Stop were *Festuca rubra* (F), *Plantago lanceolata* (F), and *Lotus corniculatus* (R). Outside the area of the Monitoring Stop, additional species include *Hypochoeris radicata*, *Centaurea nigra*, *Ranunculus acris*, *Dactylorhiza fuchsii*, *Prunella vulgaris*, and *Hypericum pulchrum*.

In shadier places amongst *Pteridium aquilinum*, soil is more heathy and supports species such as *Achillea millefolium*, *Calluna vulgaris*, *Potentilla erecta*, *Galium saxatile*, *Festuca ovina*, *Viola* spp., and *Agrostis canina*. Spikes of *Platanthera chlorantha* are scattered throughout.

Due to the low herb content and the insufficient number of positive indicator species, this Stop is deemed to have failed its assessment of Structures and Functions.

**Monitoring Stop 6:**

This is located higher up on the same slopes as Monitoring Stop 5. This part of the slope is steep and vegetation has grown dense and comparatively tall. Cattle tracks are evident and a degree of poaching has occurred. *Rubus fruticosus* agg. and *Pteridium aquilinum* are encroaching and occasional low shrubs of *Salix* spp. occur.

Nonetheless, herb cover is good (40%) and the required number of *Nardus*-grassland indicators were recorded (9). Only 1 negative indicator was noted but *Pteridium aquilinum* encroachment is a problem, occupying 30% within the Stop and up to 50% in the vicinity. This density verges on the habitat category of Dense Bracken as described by Fossitt (2000).

Also occurring within the Stop are *Prunella vulgaris*, *Centaurea nigra*, *Avenula pubescens*, and *Dactylis glomerata*. Outside the Stop, in areas where Bracken has become dense, *Calluna vulgaris* and *Vaccinium myrtillus* occur on acid soil. *Dactylorhiza fuchsii* and *Platanthera chlorantha* are also scattered amongst the encroaching *Pteridium aquilinum* across the slopes.

The excessive cover of Bracken has resulted in a Fail for the Structures and Functions at this Stop.

**Monitoring Stop 7:**

This Monitoring Stop was located on a steep south-west facing terraced slope above a watercourse. The area is currently heavily grazed by cattle and there is some poaching of the slopes. Encroachment by *Pteridium aquilinum* is an issue on the lower slopes and there are two very deeply rutted channels running transversely across the slope.

Within the Stop, herb cover was high at 40% and 8 indicator species were recorded, one short of the target set for this attribute. While 2 negative indicators were recorded, *Cynosurus cristatus* and *Juncus effusus*, cover was not seen to be in excess of 10%. Likewise, the cover of *Pteridium aquilinum* did not exceed the target of 10% set for this attribute.

There was a range of additional species also recorded in this Stop, including a few species more typically found in more base-rich or neutral situations e.g. *Carex flacca*, *Hieracium pilosella*, *Sanguisorba minor*, *Primula veris*, and *Lotus corniculatus*.

Outside the Stop, *Pedicularis sylvatica* was noted and there was frequent *Senecio jacobaea* on the lower slopes where large areas of exposed bare ground occurred. Tangles of *Rubus fruticosus*/*Ulex europaeus* scrub are also present. *Ranunculus repens* and *Cirsium palustre* are common on the upper slopes which appear to have been semi-improved in the past.

As the target number of 9 positive indicator species was not reached (only 8 were recorded), this would normally result in a Fail result for the Structures and Functions at this Stop. However, the failure to reach the target number of indicator species may sometimes be overlooked if there are other features present which reflect the good quality or value of the habitat. The other three assessed criteria passed the assessment for this Stop, reflecting the general quality of the grassland in the area. In addition, the orchid *Platanthera chlorantha* occurred within the Stop and another indicator species, *Pedicularis sylvatica*, occurred just outside the Stop.

For these reasons, the Stop is deemed to have passed the assessment of Structures and Functions..

**Monitoring Stop 8:**

This Monitoring Stop was located on a gradually sloped south-west facing slope above a watercourse. The area is currently ungrazed and c20% of the slope is encroached by *Pteridium aquilinum* which is currently found mainly on the lower slopes. There is some signs of old poaching activity by cattle but the site remains relatively undisturbed.

Within the Stop, herb content is good at 30% but only 8 indicator species were recorded. 5 negative indicator species occur which, collectively, occupy 10% of the ground cover. No scrub/Bracken occurs within the Stop but *Pteridium aquilinum* reaches to 30% cover in a larger area of 5m<sup>2</sup>.

In addition to the 8 indicator species, also occurring are *Prunella vulgaris*, *Plantago lanceolata*, *Carex flacca*, *Lotus corniculatus*, *Primula veris*, *Centaurea nigra*, *Leontodon hispidus*, and *Ranunculus acris*. Some of these species are more typical of neutral-to-calcareous soil situations.

Below the Monitoring Stop, *Danthonia decumbens*, *Hieracium pilosella*, *Conopodium majus*, *Dactylorhiza fuchsii*, and *Blechnum spicant* are present. *Pteridium aquilinum* and *Rubus fruticosus* are encroaching from this area.

The field between this and Monitoring Stop 7 is grass dominated and less species rich. *Holcus lanatus* and *Anthoxanthum odoratum* dominate in that field and there are occasional patches of *Filipendula ulmaria* present.

Due to the insufficient number of positive indicator species and the excessive number and cover of negative indicator species, this Stop is deemed to have failed the assessment of Structures and Functions.

**Monitoring Stop 9:**

This Monitoring Stop was located on the steep, east-facing slope of the valley. *Pteridium aquilinum* encroachment threatens >50% of this field which is quite poached with some large areas of bare soil. There are some small patches of *Ulex europaeus*/*Crataegus monogyna* scrub developing.

The indicator species are present in low numbers beneath the sward of *Pteridium* but are obviously threatened by this encroachment. Scrub encroachment also threatens the future of grassland on these slopes, as can be seen on the opposite side of the valley which is now scrub dominated.

Within the Stop, herb content was low at 15% and only 7 indicator species were recorded. 6 negative indicator species occurred, exceeding the 10% cover target set. Cover of *Pteridium aquilinum* was also too high at 35%. Also occurring within the Stop were species such as *Prunella vulgaris*, *Plantago lanceolata*, *Lotus corniculatus*, *Centaurea nigra*, *Leontodon hispidus*, and *Trifolium pratense*.

On the upper slopes above the area of the Monitoring Stop, there are clumps of *Juncus effusus*, *Senecio jacobaea*, and *Cirsium palustre*. This flatter summit area is heavily grazed with a lower herb:grass ratio and appears to have been enriched.

Due to the failure of each of the 4 assessed criteria, this Stop is deemed to have failed the assessment of Structures and Functions at this location.

**Monitoring Stop 10:**

This Monitoring Stop was located on the steeply terraced slopes looking north-west across the valley. The ground here is extremely steep. There are occasional patches of *Ulex europaeus* in the vicinity. Some of the terraces are regularly used by animals resulting in heavy poaching and areas of bare ground. *Juncus* is very common on these terraces where it is tending to dominate.

Within the Stop, herb cover was insufficient at 20% but 9 indicator species were recorded nonetheless. However, 3 negative indicator species occur, with *Juncus effusus* presenting in excess of the 10% cover target set for this species. Up to 30% cover was recorded for *Juncus effusus*. No scrub/Bracken was recorded within the Stop.

Also occurring within the Stop were *Prunella vulgaris*, *Plantago lanceolata*, *Centaurea nigra*, *Leontodon hispidus*, *Blechnum spicant*, and *Calluna vulgaris*. The orchid, *Dactylorhiza fuchsii*, was occasional in the Stop. Outside the Stop, *Polygala serpyllifolia* was noted.

Above the area where the Monitoring is positioned, the summit of the slopes is improved with *Lolium perenne*, *Cynosurus cristatus* and abundant *Trifolium repens*. *Ranunculus acris* and *Trifolium pratense* were also present.

Due to the insufficient herb cover and the excessive cover of negative indicator species, this Stop is deemed to have failed the assessment of Structures and Functions.

**Monitoring Stop 11:**

This Monitoring Stop was conducted in a grass-dominated sward of *Agrostis capillaris* and *Holcus lanatus*. *Potentilla erecta* and *Lathyrus montanus* were found beneath this dominant canopy which was species poor. There was no evidence of terracing within this field unlike the adjoining field although it too is steep in places and it was currently ungrazed.

Within the area of the Stop, herb content was low at 20% and only 6 indicator species were recorded. The percentage cover of the negative indicator species, *Holcus lanatus*, was also in excess of the target 30%. There was no scrub/Bracken within the Stop and no additional species occurred.

Due to the low herb cover, the insufficient number of positive indicators, and the excessive cover of a negative indicator species, this Stop is deemed to have failed the assessment of Structures and Functions.

**Monitoring Stop 12:**

This Monitoring Stop was similar to Monitoring Stop 11 but had abundant *Juncus effusus* and grasses and was species-poor. This field was currently ungrazed but there were significant areas of poached soil underfoot.

Within the Stop, herb cover was low at 15% and only 4 indicator species were recorded. While there was no scrub/Bracken recorded, there was excessive cover of the negative indicator *Juncus effusus*. No additional species were recorded within the Stop.

Due to the low herb cover, the insufficient number of positive indicators, and the excessive cover of a negative indicator species, this Stop is deemed to have failed the assessment of Structures and Functions.



**Moanour Mountain****SITE DETAILS**

**Surveyed By:** Rosaleen Dwyer  
Willie Crowley

**Survey Dates:** 14/07/2006

**Total Site Area (Ha):** 47.38

**Area of Priority Grassland (N2000) (Ha):** 15.

**Area of Priority Grassland 2006 (Ha)\*:** 2

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

**SITE LOCATION INFORMATION**

**County:** Tipperary

**Discovery Sheet No:** 66

**6" Sheets:** TI066, TI073.

**Digital Aerial Photos (Tile Nos.):**

O5237-d, O5299-b.

**Other Aerial Photographs:**

None.

**SITE DESIGNATIONS**

**SAC Site Code:**

002257

**Priority Grassland Habitat Type:** 6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

## **SITE DESCRIPTION**

Situated approximately 7 km south west of Tipperary town, this site lies on the north-western slope of Moanour Mountain, an outlying ridge of the Galtee Mountains. It lies entirely above the 220 m contour line, with a maximum height of 335 m. The site represents probably the only part of this mountainous ridge that retains semi-natural vegetation, the remainder having been afforested.

### **Description of the Priority Grassland Type:**

#### *Description given in the Site Synopsis :*

The site synopsis for the site describes the grassland as follows: The lower western part of the site is dominated by acid grassland on mineral soil which corresponds to the habitat species-rich *Nardus* grassland, a habitat that is listed on Annex I of the E.U. Habitats Directive with priority status. This is characterised by the presence of Heath Bedstraw (*Galium saxatile*), Sheep's Fescue (*Festuca ovina*), Tormentil (*Potentilla erecta*) and Mat Grass (*Nardus stricta*), as well as such species as Common Bent (*Agrostis capillaris*), Green-ribbed Sedge (*Carex binervis*) and Pill Sedge (*C. pilulifera*).

#### *Description given in the NATURA 2000 explanatory forms:*

The explanatory notes that accompany the NATURA 2000 form describe the grassland as follows: Upland grassland on mineral soil occurs in the western and especially the north-west part of the site. It is mainly below the 900 ft contour. In places it merges with dry heath or gorse scrub. The grassland is considered to qualify as species-rich *Nardus* grassland owing to the presence of *Galium saxatile*, *Festuca ovina*, *Potentilla erecta* and *Nardus stricta*, as well as such species as *Agrostis capillaris*, *Carex binervis* and *Carex pilulifera*. Also present are *Ulex gallii*, *Juncus squarrosus* and a range of bryophytes including *Hypnum jutlandicum*, *Rhytidiadelphus squarrosus* and *Dicranum scoparium*. Though small in area, this example is fairly representative of the habitat.

#### *Description based on the 2006 Survey :*

During the 2006 survey, the extent of the 6230 habitat was seen to occur mainly in a mosaic with other habitat types (wet and dry heath, and gorse scrub). These areas are concentrated on the lower slopes along the western and north western end of the site. As altitude increases, heath habitats, both wet and dry types, predominate, with very small examples of 6230 habitat occurring along the drier edges of the *Juncus effusus* flushes which drain the slopes.

Insufficient grazing pressures have resulted in a low herb content but numbers of indicator species remain high overall. Indicator species recorded include *Agrostis capillaris*, *Danthonia decumbens*, *Festuca ovina*, *Galium saxatile*, *Juncus squarrosus*, *Luzula multiflora*, *Nardus stricta*, *Polygala serpyllifolia*, *Potentilla erecta*, *Rhytidiadelphus squarrosus*, and *Anthoxanthum odoratum*. Other species occurring reflect the heath-like nature of much of the lower slopes. These include *Festuca rubra*, *Calluna vulgaris*, *Vaccinium myrtillus*, *Carex binervis*, *Molinia caerulea*, *Sphagnum capillifolium*, and *Hylocomnium splendens*. Both *Ulex gallii* and *Ulex europeus* occur.

**BACKGROUND INFORMATION****Previous surveys of relevance to the priority grassland habitats within the site:**

This site was previously known as Slievenamuck Grassland but its name was changed to Moanour Mountain by M.Wyse-Jackson following a visit and survey by him in 2000. The survey was in response to an appeal by the landowner to have the site designated as an SAC.

The indicative location of any relevant NHA notes for the site (where shown on the original NHA site map) have been digitised and are shown on the current overview of the site on Map 1.

## SITE MONITORING AND MANAGEMENT UNITS

Structures and Functions were assessed at 4 Monitoring Stops. The results of this assessment is presented in Table 1a below while a summary of the Monitoring Stop results and Management Units they are assigned to is presented in Table 1b. It can be seen from Table 1a that all 4 Stops failed the assessment process, due mainly to low herb content and/or excessive cover of scrub species.

A summary of the vegetation recorded at each Monitoring Stop is presented in Appendix II and the GPS location of each Stop is presented on Map 2.

Site notes, additional to the Monitoring Stop notes, were also recorded. These describe other areas of grassland which were not included in the monitoring assessment. They may also record other areas in the site, apart from the Monitoring Stops, which presented with noted damaging activities such as encroachment by scrub or bracken. Other notable features of the site may also be recorded by a site note. These notes are presented in Appendix I and their GPS locations are presented on Map 2.

A photographic record of the site was also created. Normally, a photograph was taken to record the vegetation at each Monitoring Stop. On occasions, additional photographs were taken to record the general landscape or additional features of interest in the vicinity of the Stop. The locations of relevant photographs are shown on Map 3.

A number of relevées were recorded within the site, either at Monitoring Stop locations or in other areas of grassland habitat. These are recorded in full in the Grasslands Monitoring Project Database and are not presented in this summary report. However, general lists of noted species occurring at the Monitoring Stops are normally presented in the Monitoring Stop records in Appendix II. The GPS location of any recorded relevé is presented on Map 3.

**Table 1a. Summary of the number of Monitoring Stops conducted within the site and the overall assessment of Structures and Functions for the priority grassland habitat type:**

<b>Number of Management Units:</b>	1
<b>Number of Monitoring Stops:</b>	4
<b>Number of Stops That Pass:</b>	0
<b>Result of Assessment:</b>	Fail

**Table 1b. Details of the Management Units, the results of Monitoring Stops and their locations in the**

<b>Stop Number:</b>	<b>Management Unit No.:</b>	<b>Result for the Stop:</b>	<b>Stop Assessed For:</b>	<b>Map 2 Sheet No.</b>
Stop 01	1	Fail	Structures and Functions	Map 2
Stop 02	1	Fail	Structures and Functions	Map 2
Stop 03	1	Fail	Structures and Functions	Map 2
Stop 04	1	Fail	Structures and Functions	Map 2

Based on the current observed management regime and current field boundaries, the grassland habitats represented by the Monitoring Stops were assigned to 1 Management Units. The one landowner owns this site and current management pressures are light,

## FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE

### Overview of Threats\* or Impacts on the Site:

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

Two main activities were seen to be currently impacting on this site. When first described in 2000, the northern and north western boundary areas were described as being 'overgrazed, but not badly so'. During the 2006 survey, some evidence of grazing by sheep (140) was noted but pressures now appear to be very low. At each of the Monitoring Stops assessed, grass species dominated and sward height was relatively high (between 30-40cm). This suggests an issue of insufficient or under-grazing (149).

The other impact on the site is the spread of gorse (954), mostly *Ulex gallii*. Scrub is spreading, particularly along the north western and western boundaries. This has resulted in the fragmentation of the grassland habitat. Wherever dense scrub has restricted access, levels of sheep grazing have obviously dropped and grassland quality has deteriorated.

Part of the Ballyhoura Way walking trail (622) crosses the site at the north western corner. Very little impact from this activity was noted.

**Table 2. Intensity and Impacts of various activities on the priority grassland habitats within the site.**

Code*	Activity	Impact**	Intensity***
954	Biocœnotic evolution: invasion by a species	-1	A
140	Grazing	1	C
149	Grazing: undergrazing	-1	B
622	Outdoor sports & leisure activities: walking, horseriding & non-motorised vehi	0	C

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

### Management Issues:

The 2 main management issues requiring immediate attention are the currently insufficient grazing levels and the spread of gorse scrub. Overgrazing was highlighted as a potential problem in 2000 but the current light levels are also seen not to be suitable. Species diversity remains high for the moment but this will decrease rapidly if grass species are allowed to dominate at the levels recorded during the 2006 (80-85%). Currently, no large area of 6230 habitat remains, it occurs in a mosaic with gorse scrub and with dry heath. Slightly higher stocking levels or more effective grazing patterns could improve the situation.

Related to this issue of undergrazing is the spread of gorse scrub in the northern and western parts of the site. Fragmentation of the grassland habitat has occurred and the dense scrub restricts access by sheep to these areas. The longer such areas remain

ungrazed, the greater chance that further areas of 6230 will be lost. Immediate management protocols need to be put in place to cut back mature scrub and to control young seedlings. Higher sheep stocking levels could aid in this process.

## CONSERVATION STATUS

### ***Extent:***

The extent of the habitat type 6230 within this site was digitised using a combination of information gathered during the ground survey (mapping notes and post-processed GPS points taken using a Trimble GeoExplorer 2005 series) and analysis of geo-referenced ortho-rectified aerial photographs (2000 series) in ArcView GIS 3.2.

During the current survey, no significant area of 6230 habitat, occurring on its own, was found at Moanour Mountain. However, 9.8ha was mapped as a mosaic of Ulex scrub, dry heath and Species-rich Nardus Grassland. Ulex scrub dominated this 9.8ha and it was estimated that Species-rich Nardus Grassland accounted for a maximum of 20% (2ha) of the mosaic. Thus the extent of habitat 6230 at Moanour Mountain can be considered to be approximately 2ha (4% of the SAC).

The Natura 2000 Explanatory Notes estimate the extent to be 15ha. However, under the criteria used to delimit the habitat during the current project, that figure is likely to have been an over-estimation. Nevertheless, the lack of any substantial area of habitat 6230 recorded during the current project indicates that there has been a decline in extent of the habitat, most probably due to undergrazing which facilitates the spread of scrub. This is also indicated on the aerial photographs for this site where scrub cover appears to have increased. This results in a Conservation Assessment of Unfavourable - bad for Extent at Moanour Mountain.

### ***Structure and Functions:***

All 4 Monitoring Stops were assessed for the condition of Structures and Functions. All 4 Stops were seen to fail this assessment, based on a low herb content and the presence of gorse scrub. Herb content ranged between 15-20%, short of the target of 25% which was set for this attribute. Despite the low herb content, the target for indicator species (9) was met at each Stop, although occurrences were low. This is also seen in the height of the sward which averaged at 40cm over all Stops. In addition, cover of plant litter was also high, reaching up to 20% in Stops 2 and 4. Undergrazing is believed to be a factor in the excess of plant litter.

No negative indicator species were recorded at any of the Stops but cover of gorse scrub was seen to be a factor at two locations, Stops 3 and 4 along the northern boundary. At both of these Stops, gorse registered 10% cover within the Stop but this rose to 40% outside both assessed areas.

Due to the 100% failure rate for the assessment of Structures and Functions, this attribute is described as being Unfavourable - bad at this site.

### ***Future Prospects:***

The Extent of the 6230 habitat at this site is difficult to accurately determine as it was seen to occur in a mosaic with dry heath and gorse scrub. It is believed, however, that the Extent may have been higher in the past but has been diminished in recent years due to incorrect grazing pressures.

The current condition of the remaining grassland was seen to be challenged. All four Monitoring Stops failed the assessment of Structures and Functions, implying the Future Prospects would be bad. The excess of grass cover in conjunction with high sward height and high percentages of plant litter, point to further potential losses in the near future. This is a particular problem along the northern and western boundaries where gorse scrub has spread in recent years. The spread of gorse has restricted sheep access into pockets of grassland areas, causing these areas to further suffer from insufficient grazing levels.

Immediate management needs to be put in place to reverse the fragmentation of the grassland habitat which has occurred and to reduce the encroachment of gorse. Also, as good numbers of indicator species still remain, the rehabilitation and re-establishment of good quality 6230 habitat should not be too difficult. In addition, as this site was initially designated in response to an appeal by the landowner for SAC status, changes in management protocols should be easily implemented. Discussions with the landowner on the day of survey indicated continued support for the habitat and the status of the designation.

Therefore, although the current assessment of Structures and Functions has failed badly, revised management protocols are believed to be possible. If implemented as soon as possible, re-establishment of good quality grassland is believed possible. For these reasons, the Future Prospects of the 6230 habitat at this site are described as being Unfavourable - inadequate and not Unfavourable - bad.

***Conservation Assessment:***

The original description of the species-rich *Nardus* grassland habitat at this site (NHA Survey 2000), describe the habitat as occurring both as a grassland unit and also in a mosaic with dry and wet heath. During the 2006 survey, no open areas of grassland were noted. The habitat now appears to exist mainly in a mosaic with heath habitats and with gorse scrub.

In 2000, a degree of overgrazing was noted along the northern boundary and the north western corner, although it was not thought to be too severe. In 2006, overgrazing was no longer seen to be a management issue and under-grazing, in fact, was seen to be a problem. Stocking levels and/or grazing patterns have changed, resulting in tall swards between encroaching gorse scrub.

The north western corner of the site is showing significant encroachment by scrub. Dense patches occur, causing any open areas of grassland to become more isolated from grazers. Species diversity is still high but herb cover is low. Patches of dry heath also occurs in a mosaic with the scrub. The better examples of the grassland occur along sheep trails where grazing pressures are more concentrated.

Small areas of open grassland also occur along the western and south eastern borders to the site but, again, insufficient grazing patterns are causing a grass-dominated situation to develop in a mosaic with heath habitats.



The assessment of Structures and Functions was seen to fail badly. Extent of grassland habitat was also seen to be diminished, although it is difficult to correctly quantify this due to the mosaic nature of the site. Future Prospects are more positive, based on the positive approach of the landowner who appealed to have this site designated in the first place. It is expected that any proposals to change current management practices would be greeted in a positive manner.

Nonetheless, taking into account the Unfavourable - bad result for both Extent and Structures and Functions, the overall Conservation Assessment for the 6230 habitat on this site is described as being Unfavourable - bad (see Table 3). Immediate management action to control scrub and reassess grazing issues would improve this result relatively easily.

**Table 3. The Conservation Status Assessment of priority grassland habitats within the site.**

Favourable	Unfavourable - inadequate	Unfavourable - bad	Conservation Status Assessment
			<i>Unfavourable - bad</i>
	Future Prospects		
		Structure and Function	
		Extent	

**APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

**Note 1:**

This is an area of dry heath on a gently sloping hillside facing to the north west. *Calluna vulgaris* is abundant with frequent *Molinia caerulea*, and occasional *Juncus squarrosus*, *Agrostis canina*, *Potentilla erecta*, *Sphagnum capillifolium*, and *Anthoxanthum odoratum*. Also occurring are *Luzula multiflora*, *Erica cinerea*, and *Erica tetralix*. Young gorse seedlings and shrubs are scattered. In shallow, more low-lying channels and flat areas where water accumulates, *Tricophorum caespitosum* and *Eriophorum angustifolium* occur.

**Note 2:**

Small flushes dominated by *Juncus effusus* run downslope between the dominant heath vegetation. Some of these were dry at the time of surveying. Also occurring were *Juncus acutiflorus*, *Anthoxanthum odoratum*, *Festuca ovina*, *Agrostis capillaris*, *Juncus squarrosus*, *Potentilla erecta*, and *Carex binervis*. Along the drier edges of the flushes, on the boundary between the flush and adjacent dry heath, narrow strips of *Nardus stricta* and *Carex binervis* occur.

**Note 3:**

The vegetation in this area is a wet heath which is dominated by *Molinia caerulea*. It may be the site of old burning. *Calluna vulgaris* is present but is small and is not growing well. Also occurring are *Erica cinerea*, *Erica tetralix*, *Festuca rubra*, *Festuca ovina*, *Luzula multiflora*, *Juncus squarrosus*, and *Carex binervis*.

## APPENDIX 2 - MONITORING STOPS

*The locations of Monitoring Stops are shown on Map 2.*

### Monitoring Stop 1:

This Stop is located on the lower slopes of the hill, in an area previously described (M.Wyse-Jackson, 2000) as being a mosaic of gorse and *Nardus*-grassland. Gorse is seen to be dense in places but few young seedlings were noted. Grasses are abundant between the gorse shrubs, and are growing tall in most cases. The area has an unmanaged appearance, due perhaps to insufficient grazing coupled with the difficult access to some of the areas because of gorse.

Within the Stop, herb cover was low (20%) and did not reach the target set for this attribute (25%). Sufficient numbers of positive indicators (9) occurred, however, and no negative indicators or scrub/Bracken occurred within the Stop. Gorse cover outside the Stop increased to 20%. Also occurring with the 9 indicator species were *Festuca rubra*, *Carex binervis*, *Calluna vulgaris*, *Hylocomnium splendens*, and *Sphagnum capillifolium* (see relevé 1 for full details).

While there is evidence of some light grazing between the gorse shrubs in this area, vegetation is tall in general (40cm) and plant litter accounts for up to 10% cover.

Due to the low herb content, this Stop is deemed to fail the Structures and Functions assessment.

### Monitoring Stop 2:

On the south eastern edge of the SAC, small areas of grass-dominated vegetation occur between dry heath and scrub. The underlying soil is very peaty. Tussocks of *Juncus effusus* are scattered with shrubs of *Calluna vulgaris* and *Vaccinium myrtillus* but grassland is more open than most other locations on these lower slopes. However, grazing pressures are very light and the grass-dominated sward averages at 40cm high. Plant litter is also relatively high at 20%.

Within the Stop, herb content was low (15%) but 9 indicator species were still recorded. No negative indicator species or scrub/Bracken occurred within the Stop. In addition to the 9 indicator species, *Carex binervis*, *Festuca rubra*, and *Hylocomnium splendens* also occurred (see relevé 2 for full details).

Due to the low herb content, this Stop is deemed to fail the Structures and Functions assessment.

**Monitoring Stop 3:**

This Stop is located below the limit of the heath which dominates the upper slopes. Gorse scrub is spreading on the lower slopes, making access into some areas quite difficult. The Stop is positioned in one of the small open grassland spaces amongst the scrub. Grassland also occurs as narrow strips along the numerous sheep trails through the gorse scrub. Grazing maintains a low sward along these trails but amongst the more mature shrubs, very little grazing is possible because of access difficulties and vegetation grows to 40cm. In addition, unlike previous Stops, young Gorse seedlings were scattered throughout. This suggests that more widespread encroachment into these open grassy areas by this species is a real potential if it is not checked.

Within the Stop, herb content is low at 15% but sufficient indicator species occur (9). No negative indicator species occur but gorse scrub occupies 10% cover within the Stop, rising to 40% in a larger area of 5m<sup>2</sup>.

With additional species occurring such as *Calluna vulgaris*, *Vaccinium myrtillus*, *Carex binervis*, and *Molinia caerulea*, the soil has a more heath-like character (see relevé 3 for full details).

Due to the low herb content and the excessive cover of scrub, this Stop is deemed to fail the Structures and Functions assessment.

**Monitoring Stop 4:**

This Stop is located in an area very similar to that described in Stop 3. Small patches of ungrazed grassland occur amongst mature gorse scrub. Grasses dominate the tall vegetation (30cm high) and high percentages of plant litter (20%) occur.

Within the Stop, herb content is low at 20% but 10 indicator species are recorded nonetheless. No negative indicator species occur but gorse scrub occupies 10% cover within the Stop, rising to 40% in a larger area of 5m<sup>2</sup>. In addition to the 10 indicator species, *Calluna vulgaris*, *Carex binervis*, *Festuca rubra*, and *Molinia caerulea* also occur (see relevé 4 for full details).

Due to the low herb content and the excessive cover of scrub, this Stop is deemed to fail the Structures and Functions assessment.

## **Silvermines Mountains West**

### **SITE DETAILS**

**Surveyed By:**            **Survey Dates:**

**Total Site Area (Ha):** 675.81

**Area of Priority Grassland (N2000) (Ha):**

**Area of Priority Grassland 2006 (Ha)\*:**

*\*The methodology/approach taken to determine the extent of the priority grassland within the site in 2006 is detailed under the Conservation Status Assessment section of the report.*

### **SITE LOCATION INFORMATION**

**6" Sheets:**

**Digital Aerial Photos (Tile Nos.):**

**Other Aerial Photographs:**

### **SITE DESIGNATIONS**

**SAC Site Code:**

000000

**Priority Grassland Habitat Type:**        6230

Species rich Nardus grasslands on siliceous substrates in mountain areas (and sub-mountain areas in continental Europe).

**SITE DESCRIPTION**

Silvermines Mountains West is situated to the north of Keeper Hill, about 10 km south of Nenagh, Co. Tipperary. Reaching an altitude of 489 m, this rather steep ridge of Old Red Sandstone is visibly very prominent in the landscape as viewed from the Nenagh to Limerick road. The site includes the summit and slopes, mostly above 200 m, to the west of an extensively afforested area south of the town of Silvermines.

**Description of the Priority Grassland Type:**

*Description given in the Site Synopsis :*

*Description given in the NATURA 2000 explanatory forms:*

*Description based on the 2006 Survey :*

## **BACKGROUND INFORMATION**

**Previous surveys of relevance to the priority grassland habitats within the site:**

**SITE MONITORING AND MANAGEMENT UNITS**

Detailed information on each of the Monitoring Stops is presented in full in Appendix 2 and their locations are depicted on Map 2 (sheets X - X). A summary of the Monitoring Stops and Management Units is presented in Table 1 below.



**FACTORS AFFECTING THE CONSERVATION VALUE OF THIS SITE****Overview of Threats\* or Impacts on the Site:**

\* EU Activity Codes (which are shown in brackets) are as per NATURA 2000 Forms.

Activities noted as impacting on the conservation status of the priority grassland within the site are presented in Table 2 below.

\* EU Activity Codes as per NATURA 2000 Forms.

\*\* Intensity of the influence of an activity is rated as: A = High, B = Medium, C = Low influence and D = Unknown.

\*\*\* Impact is rated as: -2 = irreparable negative influence, -1 = repairable negative influence, 0 = neutral, +1 = natural positive influence, +2 = strongly managed positive influence

**Management Issues:**

## **CONSERVATION STATUS**

***Extent:***

***Structure and Functions:***

***Future Prospects:***

***Conservation Assessment:***

## **APPENDIX 1 - 2006 SITE NOTES**

*The locations of these Site Notes are shown on Map 2.*

## **APPENDIX 2 - MONITORING STOPS**

*The locations of Monitoring Stops are shown on Map 2.*