

National Parks and Wildlife Service

Conservation Objectives Series

Clooneen Bog SAC 002348



NPWS

An tSeirbhís Páirceanna
Náisiúnta agus Fiadhúlra
National Parks and Wildlife
Service

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Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

** indicates a priority habitat under the Habitats Directive*

002348	Clooneen Bog SAC
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7110	Active raised bogs*
7120	Degraded raised bogs still capable of natural regeneration
7150	Depressions on peat substrates of the Rhynchosporion
91D0	Bog woodland*

Please note that this SAC adjoins Lough Forbes Complex SAC (001818) and Ballykenny-Fishertown Bog SPA (004101). See map 2. The conservation objectives for this site should be used in conjunction with those for the adjacent site as appropriate. IMPORTANT: This 'Version 2' document includes 1 additional QI (7110). The conservation objectives for pre-existing QIs have generally not been updated.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	1990
Title :	The Raised Bogs of Ireland, their Ecology, Status and Conservation
Author :	Cross, J.
Series :	Report to the Minister of State at the Department of Finance. The Stationery Office, Dublin
Year :	2000
Title :	Raised bog restoration project. A continuation of the investigation into the conservation and restoration of selected raised bog sites in Ireland
Author :	Derwin, J.; Mac Gowan, F.
Series :	Unpublished report to Duchas, the Heritage Service
Year :	2006
Title :	Assessment of impacts of turf cutting on designated raised bogs
Author :	Fernandez Valverde, F.; MacGowan, F.; Farrell, M.; Crowley, W.; Croal, Y.; Fanning, M.; McKee, A-M.
Series :	Unpublished report to NPWS
Year :	2013
Title :	Results of a monitoring survey of bog woodland
Author :	Cross, J.; Lynn, D.
Series :	Irish Wildlife Manuals, No. 69
Year :	2017
Title :	National Raised Bog Special Areas of Conservation Management Plan 2017-2022
Author :	NPWS
Series :	Conservation Management Plan
Year :	2024
Title :	Clooneen Bog SAC (site code 002348) Conservation objectives supporting document - raised bog habitats. Version 2
Author :	NPWS
Series :	Conservation objectives supporting document
Year :	in prep.
Title :	Ecotope mapping within a sub-set of designated raised bogs – 2024
Author :	Crushell, P.; Crowley, W.; Delaney, E.; O'Sullivan, J.; Overy, P.; Smith, G.; Vanmechelen, A.
Series :	Unpublished report to NPWS

Other References

Year :	2011
Title :	Review and revision of empirical critical loads and dose-response relationships. Proceedings of an expert workshop, Noordwijkerhout, 23-25 June 2010
Author :	Bobbink, R.; Hettelingh, J.P.
Series :	RIVM report 680359002, Coordination Centre for Effects, National Institute for Public Health and the Environment (RIVM)
Year :	2014
Title :	Nitrogen deposition and exceedance of critical loads for nutrient nitrogen in Irish grasslands
Author :	Henry, J.; Aherne, J.
Series :	Science of the Total Environment, 470–471: 216–223

Spatial data sources

Year :	2024
Title :	Internal NPWS dataset
GIS Operations :	Modelled potential habitat and ecotope polygon clipped to the SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	7110, 7120 (Map 3, 4)
Year :	2024
Title :	Digital elevation model and drainage patterns dataset
GIS Operations :	Dataset clipped to the SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	7110, 7120 (Map 5)
Year :	2014
Title :	Scientific Basis for Raised Bog Conservation in Ireland
GIS Operations :	RBSB13_SACs_ARB_DRB dataset, RBSB13_SACs_2012_HB dataset, RBSB13_SACs_DrainagePatterns_5k dataset and RBSB13_SAC_LIDAR_DTMs dataset clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	potential 7110; digital elevation model; drainage patterns (maps 3 and 5)
Year :	Digitised 2003
Title :	Raised Bog Restoration Project 1999
GIS Operations :	Ecotope dataset clipped to SAC boundary. Appropriate ecotopes selected and exported to new dataset. Expert opinion used as necessary to resolve any issues arising
Used For :	7110 ecotopes (map 4)

Conservation Objectives for : Clooneen Bog SAC [002348]

7110 Active raised bogs*

To restore the Favourable conservation condition of Active raised bogs* in Clooneen Bog SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Restore area of Active raised bog to 8.0ha, subject to natural processes	Active raised bog (ARB) habitat across the entire high bog (HB) was mapped as 2.4ha by Crushell et al. (in prep). The area of degraded raised bog (DRB) on the HB potentially restorable to ARB by drain blocking is 4.4ha. The total potential ARB on the HB is therefore estimated to be 6.8ha. See map 3. Ecohydrological assessments of the cutover estimates that an additional 1.2ha of bog forming habitats could be restored. The long term target for ARB is therefore 8.0ha. See the supporting document for raised bog habitats for further details on this and following attributes
Habitat distribution	Occurrence	Restore the distribution and variability of Active raised bog across the SAC. See map 3 for distribution of potential ARB	DRB corresponds to those areas of high bog where the hydrology has been adversely affected by peat cutting, drainage, afforestation and other land use activities, but which are capable of regeneration to ARB within 30 years (see area target above). DRB will require restoration measures. There is also potential for ARB restoration on cutover areas of the bog (see area target above). The total extent of modelled DRB (pre-efficacy factor and including ARB) was estimated to be 9.8ha (NPWS, 2017). In 2024, 1.0ha of this was mapped as ARB. Thus, the modelled DRB (pre-efficacy factor and excluding current ARB) is estimated to be 8.8ha. Applying an efficacy factor of 50%, DRB is now estimated to be 4.4ha. See supporting document for further information on efficacy factor
High bog area	Hectares	No decline in extent of high bog, necessary to support the development and maintenance of Active raised bog. See map 4	The area of high bog within Clooneen Bog SAC in 2019 (latest figure available) was 94.0ha (Crushell et al., in prep)
Hydrological regime: water levels	Centimetres	Restore appropriate water levels throughout the site	For DRB to be restored to ARB, mean water level needs to be near or above the surface of the bog lawns for most of the year. Seasonal fluctuations should not exceed 20cm, and the mean water level should only be 10cm below the surface, for very short periods of time. Open water is often characteristic of soak systems
Hydrological regime: flow patterns	Flow direction; slope	Restore, where possible, appropriate high bog topography, flow directions and slopes. See map 5 for current situation	The restoration of DRB to ARB depends on mean water levels being near or above the surface of bog lawns for most of the year. Long and gentle slopes are the most favourable to achieve these conditions. Changes to flow directions due to subsidence of bogs can radically change water regimes and cause drying out of high quality raised bog areas and soak systems
Transitional areas between high bog and adjacent mineral soils (including cutover areas)	Hectares; distribution	Restore adequate transitional areas to support/protect the Active raised bog ecosystem and the services it provides	Clooneen Bog has been cut to some extent on all sides and recent peat-cutting has been reported (NPWS internal files). The transitional areas at Clooneen Bog SAC include a range of different habitat types (e.g. wet grassland, improved grassland, cutover bog, scrub, deciduous woodland). The total area of cutover bog within the Clooneen Bog SAC is estimated to be circa 62ha. The development of habitats within cutover areas depends on a number of factors including prevailing land-use, topography, up-welling regional groundwater, and drainage. Ecohydrological assessments have evaluated the potential for ARB restoration on cutover areas (see the note for habitat area attribute above)

Vegetation quality: central ecotope, active flush, soaks, bog woodland	Hectares	Restore 4.0ha of central ecotope/active flush/soaks/bog woodland as appropriate	At least 50% of ARB habitat should comprise of high quality ARB habitat such as central ecotope, active flush, soaks and bog woodland. The target area of Active raised bog for the site has been set at 4.0ha (see area target above)
Vegetation quality: microtopographical features	Hectares	Restore adequate cover of high quality microtopographical features	High quality microtopography (hummocks, hollows and pools) is well developed on Clooneen Bog. Typical good quality indicators and typical plant species are still found in the bog woodland, the active flush and the sub-central ecotope and throughout the entire bog
Vegetation quality: bog moss (<i>Sphagnum</i>) species	Percentage cover	Restore adequate cover of bog moss (<i>Sphagnum</i>) species to ensure peat-forming capacity	<i>Sphagnum</i> cover varies naturally across Ireland with relatively high cover in the east to lower cover in the west. Hummock forming species such as <i>Sphagnum austinii</i> and <i>Sphagnum beothuk</i> are particularly good peat formers, both of which are present on Clooneen Bog. <i>Sphagnum</i> cover and distribution also varies naturally across a site
Typical ARB species: flora	Occurrence	Restore, where appropriate, typical Active raised bog flora	Typical flora species include widespread species, as well as those with more restricted distributions but typical of the habitat's subtypes or geographical range
Typical ARB species: fauna	Occurrence	Restore, where appropriate, typical Active raised bog fauna	Typical fauna species include widespread species, as well as those with more restricted distributions but typical of the habitat's subtypes or geographical range
Elements of local distinctiveness	Occurrence	Maintain features of local distinctiveness, subject to natural processes	There is a large active flush on the northern end of the high bog indicating that there is possibly some mineral input at this point of the high bog. Bog woodland (91D0) occurs within the centre of the flush. This type of flush is a rare feature on raised bogs (Fernandez et al., 2006). A range of features may be associated with raised bogs which add to the scientific, historical, or conservation value of a bog. These can include geological, topographical, archaeological and hydrological features (e.g. soaks, lakes, flushes) and noteworthy species of flora and fauna (Cross, 1990). Notable species of flora and fauna include those listed in the Habitats and Birds Directives, Red-listed species and other rare or localised species. For this attribute, features that are particularly associated with ARB are relevant
Negative physical indicators	Percentage cover	Negative physical features absent or insignificant	Negative physical indicators include: bare peat, algae dominated pools and hollows, marginal cracks, tear patterns, subsidence features such as dry mineral mounds/ridges emerging or expanding, and burning evidence
Vegetation composition: native negative indicator species	Percentage cover	Native negative indicator species at insignificant levels	Indicators of disturbance on a raised bog include species indicative of drying out conditions such as abundant Bog Asphodel (<i>Narthecium ossifragum</i>), Deergrass (<i>Trichophorum germanicum</i>) and Hare's-tail Cottongrass (<i>Eriophorum vaginatum</i>) forming tussocks; abundant Magellanic Bog-moss (<i>Sphagnum medium</i>) in pools previously dominated by <i>Sphagnum</i> species typical of very wet conditions (e.g. Feathery Bog-moss (<i>S. denticulatum</i>)). Indicators of frequent burning events include abundant <i>Cladonia floerkeana</i> and high cover of Carnation Sedge (<i>Carex panicea</i>) (particularly in the true midlands raised bog type)
Vegetation composition: non-native invasive species	Percentage cover	Non-native invasive species at insignificant levels and not more than 1% cover	Seven individual bushes of <i>Rhododendron ponticum</i> were recorded on the high bog during the 2017 survey (NPWS internal files) and the species may be very slowly spreading, particularly in the northern part of the high bog. <i>Rhododendron</i> was recorded quite frequently in the inactive flush adjacent to the bog woodland in 2024 (Crushell et al., in prep) with some areas where there was a mix of <i>Ulex</i> and <i>Rhododendron</i> together mapped as a separate scrub polygon

Air quality: nitrogen deposition	kg N/ha/year	Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr	Change in air quality can result from fertiliser drift; adjacent quarry activities; or other atmospheric inputs. The critical load range for ombrotrophic bogs has been set as between 5kg and 10kg N/ha/yr (Bobbink and Hettelingh, 2011). The latest N deposition figures for the area around Clooneen Bog suggests that the current level is approximately 15.1kg N/ha/yr (Henry and Aherne, 2014)
Water quality	Hydrochemical measures	Water quality on the high bog and in transitional areas close to natural reference conditions	Water chemistry within raised bogs is influenced by atmospheric inputs (rainwater). However, within soak systems, water chemistry is influenced by other inputs such as focused flow or interaction with underlying substrates. Water chemistry in areas surrounding the high bog varies due to influences of different water types (bog water, regional groundwater, and runoff from surrounding mineral lands)

Conservation Objectives for : Clooneen Bog SAC [002348]

7120 Degraded raised bogs still capable of natural regeneration

The long-term aim of Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Clooneen Bog SAC

Attribute	Measure	Target	Notes
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Conservation Objectives for : Clooneen Bog SAC [002348]

7150 Depressions on peat substrates of the Rhynchosporion

Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Clooneen Bog SAC

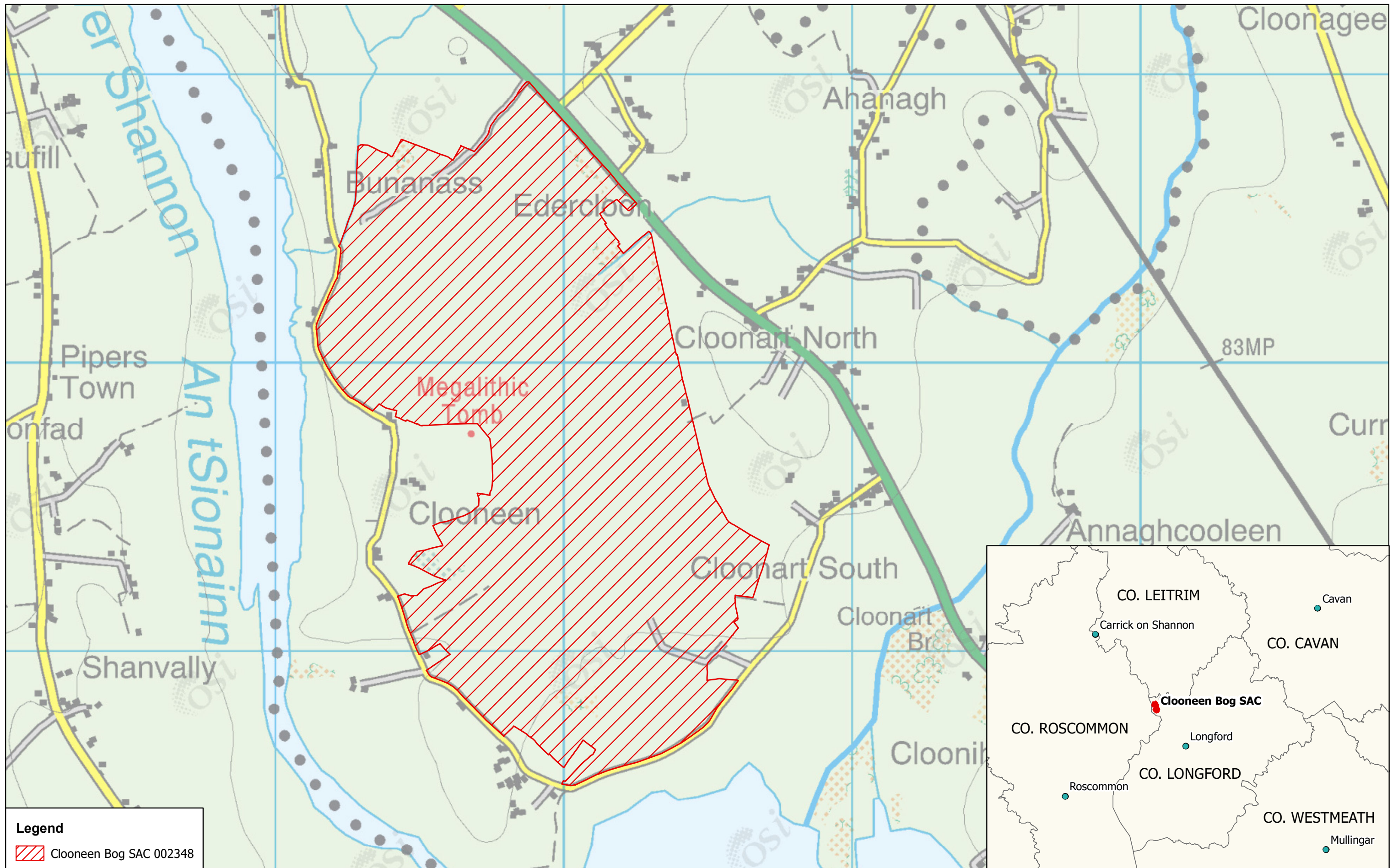
Attribute	Measure	Target	Notes
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Conservation Objectives for : Clooneen Bog SAC [002348]

91D0 Bog woodland*

To maintain the favourable conservation condition of Bog woodland in Clooneen Bog SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	This Annex I habitat is regarded as a component of the Active Raised Bog (ARB) habitat (7110) and thus, the conservation objective and supporting document for ARB (7110) are also relevant to this habitat and common attributes have not been repeated here. Cross and Lynn (2013) report the habitat area as 3.4ha (based on data from Derwin and MacGowan (2000)). However, this area may be over-estimated due to a refinement in the definition of the habitat since this site was surveyed
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 4 for location	Bog woodland is reported from an active flush in the northern part of the bog
Vegetation composition: positive indicator species	Number in a representative number of monitoring stops	Birch (<i>Betula pubescens</i>), bog moss (<i>Sphagnum</i> species) and at least five other species present	Bog woodland is typically species-poor but with a characteristic and distinctive flora. Positive indicator species are listed in bog woodland monitoring survey (Cross and Lynn, 2013)
Vegetation composition: negative indicator species	Percentage cover at a representative number of monitoring stops	Both native and non-native invasive species absent or under control. Total cover should be less than 10%	Negative indicator species include bracken (<i>Pteridium aquilinum</i>) and bramble (<i>Rubus fruticosus</i>), which can become invasive if the site begins drying out
Woodland structure: cover and height of birch	Percentage cover and metres at a representative number of monitoring stops	A minimum 30% cover of birch (<i>Betula pubescens</i>) with a median canopy height of 4m	Attribute and target based on Cross and Lynn (2013)
Woodland structure: dwarf shrub cover	Percentage cover at a representative number of monitoring stops	Dwarf shrub cover not more than 50%	Attribute and target based on Cross and Lynn (2013)
Woodland structure: ling cover	Percentage cover at a representative number of monitoring stops	Ling (<i>Calluna vulgaris</i>) cover not more than 40%	Attribute and target based on Cross and Lynn (2013)
Woodland structure: bryophyte cover	Percentage cover at a representative number of monitoring stops	Bryophyte cover at least 50%, with bog moss (<i>Sphagnum</i> spp.) cover at least 25%	Attribute and target based on Cross and Lynn (2013)
Woodland structure: tree size classes	Occurrence	Each size class present	Size classes are defined in Cross and Lynn (2013). The presence of all size classes suggests that a woodland has good structural variety with trees of varying ages
Woodland structure: senescent and dead wood	Occurrence	Senescent or dead wood present	Mature and veteran trees and dead wood are important for bryophytes, lichens, saproxylic organisms and some bird species. Their retention within a woodland is important to ensure continuity of habitats/niches and propagule sources over time. However, as birch (<i>Betula pubescens</i>) trees seldom exceed 30cm in diameter in this habitat and dead wood rots quickly and is engulfed by bog mosses (<i>Sphagnum</i> spp.), volume of dead wood may not be as high in bog woodland as in other woodland types



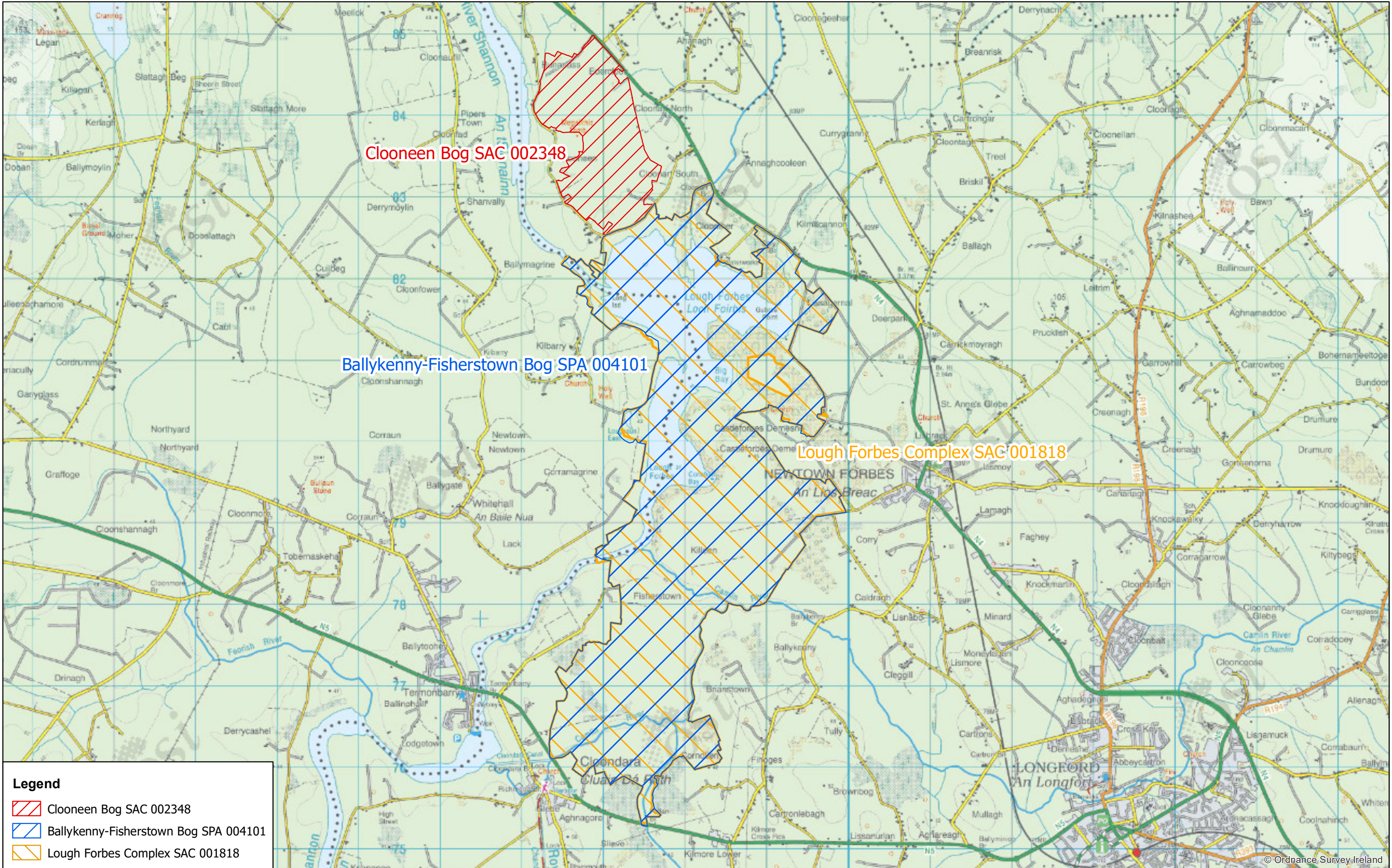
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**MAP 1:
CLOONEEN BOG SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION**

SITE CODE:
SAC 002348; version 3
CO. LONGFORD

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.
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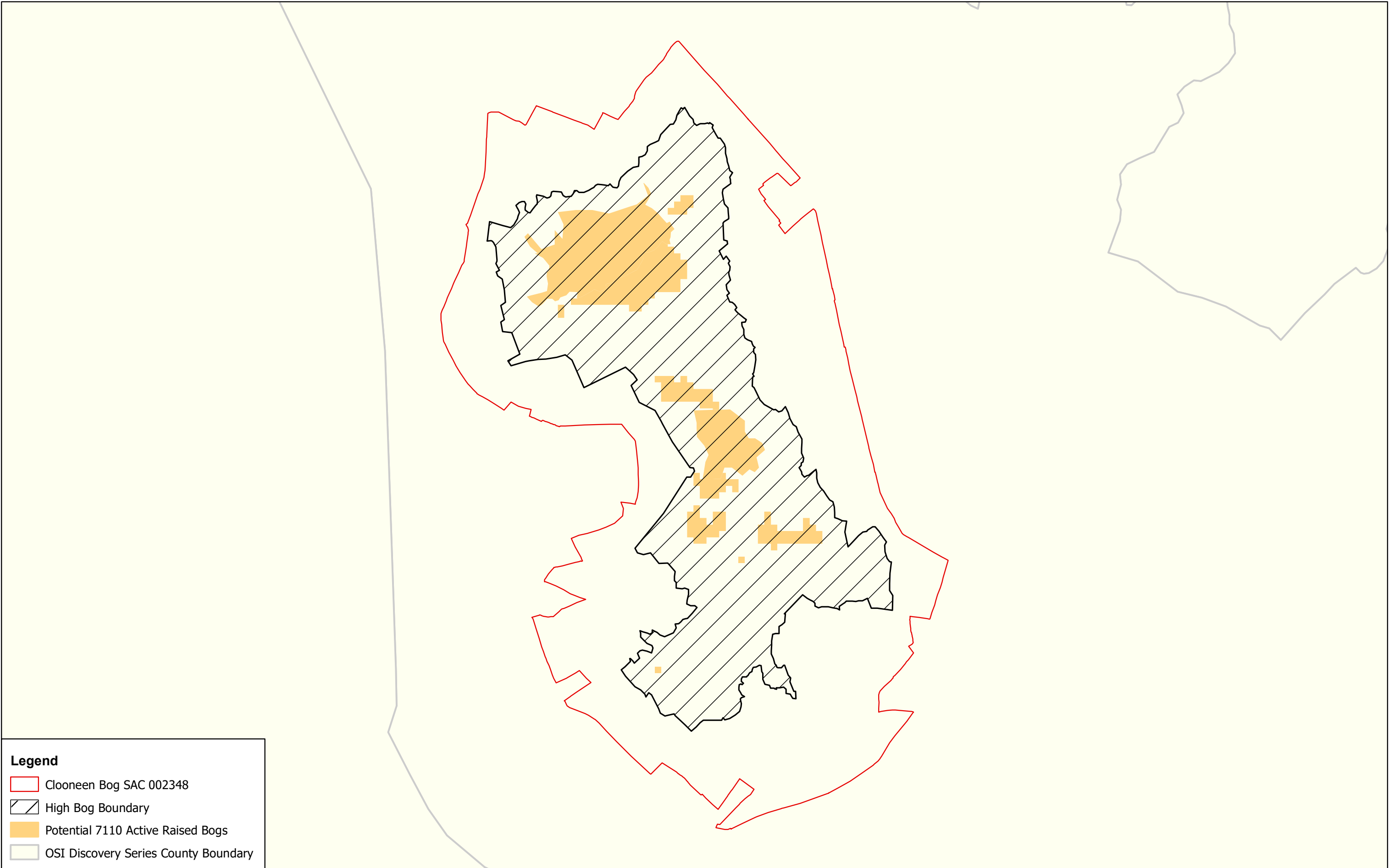


Legend

Clooneen Bog SAC 002348


Ballykenny-Fisherstown Bog SPA 004101

Lough Forbes Complex SAC 001818



Legend

- Clooneen Bog SAC 002348
- High Bog Boundary
- Potential 7110 Active Raised Bogs
- OSI Discovery Series County Boundary



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**MAP 3:
CLOONEEN BOG SAC
CONSERVATION OBJECTIVES
EXTENT OF POTENTIAL ACTIVE RAISED BOG**

Map to be read in conjunction with the NPWS Conservation Objectives Document

**SITE CODE:
SAC 002348; version 3
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0 0.125 0.25 0.5 Kilometres

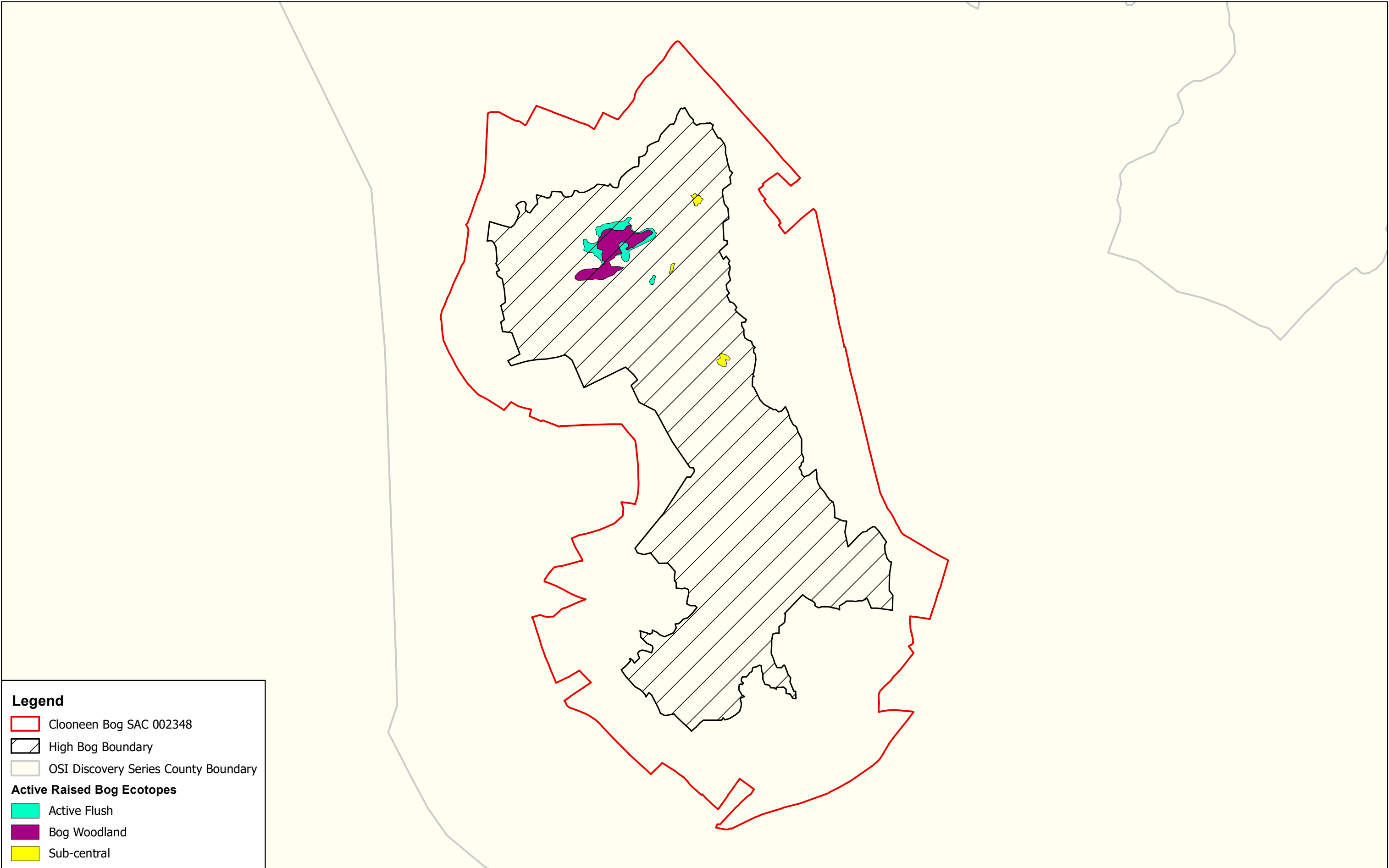


The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.
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ama atáirgeadh faoin rannán mapála Náisiúnta d'uimhir cheadúnais Táilte Éireann CYAL50351092



**Map Version 2
Date: July 2024**



Legend

Clooneen Bog SAC 002348

High Bog Boundary

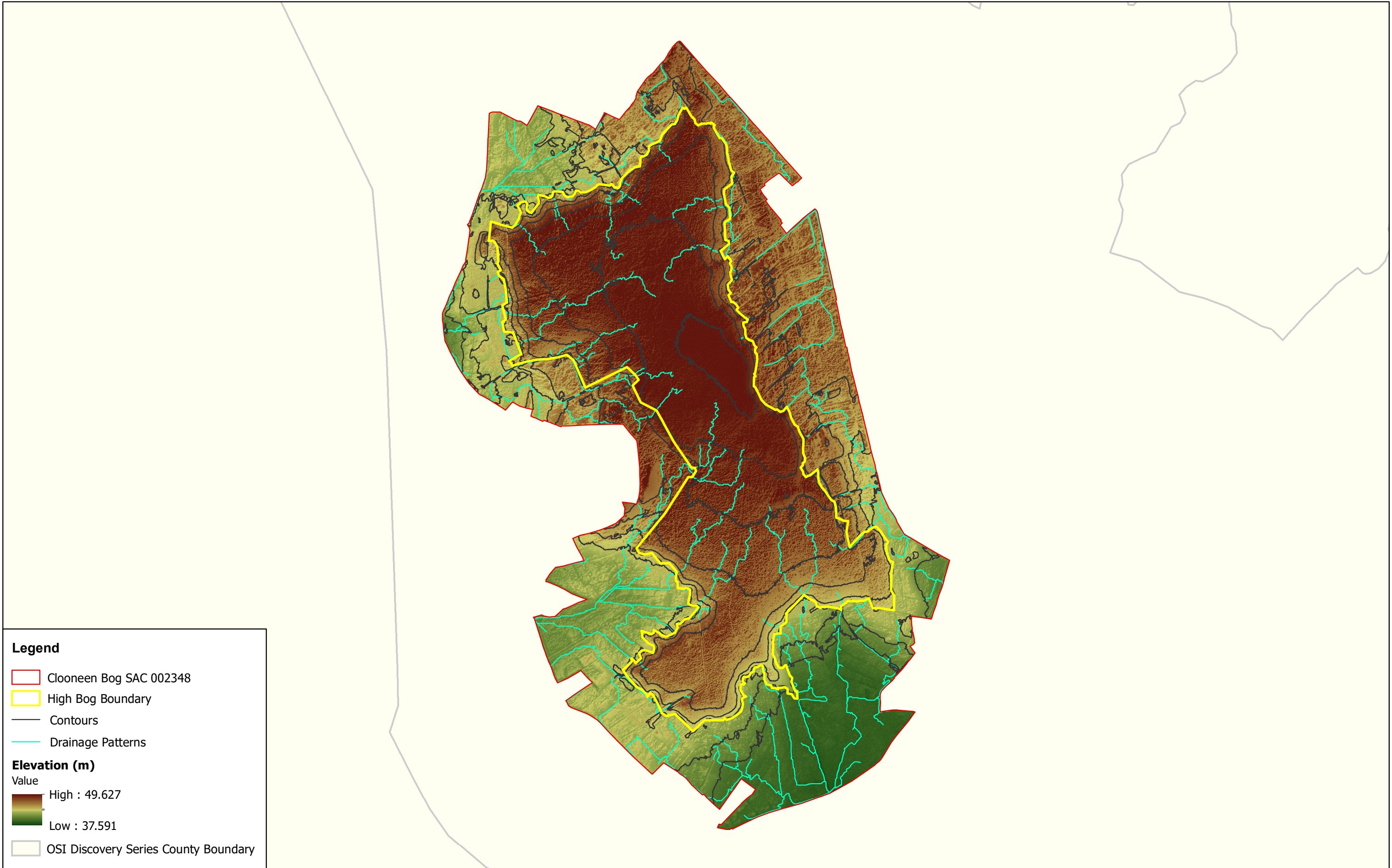
OSI Discovery Series County Boundary

Active Raised Bog Ecotopes

Active Flush

Bog Woodland

Sub-central



Legend

Clooneen Bog SAC 002348

High Bog Boundary

Contours

Drainage Patterns

Elevation (m)
Value

High : 49.627

Low : 37.591

OSI Discovery Series County Boundary