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Conservation Objectives Series

Ballynamona Bog and Corkip Lough SAC 002339

An Roinn Ealaíon, Oidhreachta,
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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***

002339	Ballynamona Bog and Corkip Lough SAC
3180	Turloughs*
7110	Active raised bogs*
7120	Degraded raised bogs still capable of natural regeneration
7150	Depressions on peat substrates of the Rhynchosporion
91D0	Bog woodland*

Supporting documents, relevant reports & publications

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

NPWS Documents

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 :	2013
Title :	Results of a monitoring survey of bog woodland
Author :	Cross, J.; Lynn, D.
Series :	Irish Wildlife Manual No. 69
Year :	2014
Title :	Raised Bog Monitoring and Assessment Survey 2013
Author :	Fernandez, F.; Connolly K.; Crowley W.; Denyer J.; Duff K.; Smith G.
Series :	Irish Wildlife Manual No. 81
Year :	2014
Title :	National raised bog SAC management plan
Author :	Department of Arts, Heritage and the Gaeltacht
Series :	Draft for consultation. 15 January 2014
Year :	2016
Title :	Ballynamona Bog and Corkip Lough SAC (site code: 2339) Conservation objectives supporting document- raised bog habitats V1
Author :	NPWS
Series :	Conservation objectives supporting document
Year :	2016
Title :	Ballynamona Bog and Corkip Lough SAC (site code: 2339) Conservation objectives supporting document- turloughs V1
Author :	NPWS
Series :	Conservation objectives supporting document

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 :	2013
Title :	Turloughs Database 2013
GIS Operations :	Site identified; clipped to SAC boundary
Used For :	3180 (map 2)
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; 91D0 (map 4)

3180 Turloughs

To restore the favourable conservation condition of Turloughs in Ballynamona Bog and Corkip Lough 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	The full extent of flooding and wetland vegetation within Corkip Lough turlough is currently unknown. See turloughs supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes	The approximate centre of Corkip Lough turlough is indicated on map 2. See turloughs supporting document for further details
Hydrological regime: flood duration, frequency, area, depth; permanently flooded area	Various	Maintain/restore appropriate natural hydrological regime necessary to support the natural structure and functioning of the habitat	Hydrological regime is sub-divided into more detailed attributes in the turloughs supporting document
Soil type: area	Hectares	Maintain variety, area and extent of soil types necessary to support turlough vegetation and other biota	See turloughs supporting document for further details
Soil nutrient status: nitrogen and phosphorus	N and P concentration in soil	Maintain/restore nutrient status appropriate to soil types	See turloughs supporting document for further details
Physical structure: bare ground	Presence	Maintain sufficient wet bare ground, as appropriate	See turloughs supporting document for further details
Chemical processes: calcium carbonate deposition and concentration	Calcium carbonate deposition rates/soil concentration	Maintain calcium carbonate deposition rate and/or soil concentration	See turloughs supporting document for further details
Water quality: nutrients; colour; phytoplankton; epiphyton	Various	Maintain appropriate water quality to support the natural structure and functioning of the habitat	Water quality is sub-divided into more detailed attributes in the turloughs supporting document
Active peat formation	Flood duration	Restore active peat formation, where appropriate	See turloughs supporting document for further details
Vegetation composition: area of vegetation communities	Hectares	Maintain area of sensitive and high conservation value vegetation communities/units	See turloughs supporting document for further details
Vegetation composition: vegetation zonation	Distribution	Maintain vegetation zonation/mosaic characteristic of the site	See turloughs supporting document for further details
Vegetation structure: sward height	Centimetres	Maintain sward heights appropriate to the vegetation unit, and a variety of sward heights across the turlough	See turloughs supporting document for further details
Typical species: terrestrial, wetland and aquatic plants, invertebrates and birds	Presence	Maintain typical species	Typical species is sub-divided into more detailed attributes in the turloughs supporting document

Fringing habitats: area	Hectares	Maintain marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations	See turloughs supporting document for further details. See also the conservation objective for Active raised bogs (7110)
Vegetation structure: turlough woodland	Species diversity and woodland structure	Maintain appropriate turlough woodland diversity and structure	See turloughs supporting document for further details

7110 Active raised bogs

To restore the favourable conservation condition of Active raised bogs in Ballynamona Bog and Corkip Lough 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 18.9ha, subject to natural processes	Active Raised Bog (ARB) habitat has been estimated to be 12.0ha. Area of Degraded Raised Bog (DRB) on the High Bog (HB) has been modelled as 1.1ha. See map 3. It is estimated that this entire area is potentially restorable to ARB by drain blocking. The total potential ARB on the HB is therefore estimated to be 13.1ha. Eco-hydrological assessments of the cutover estimates that an additional 5.8ha of bog forming habitats could be restored. The long term target for ARB is therefore 18.9ha. See raised bog supporting document 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 4 for mapped distribution in 2000	The ARB habitat at Ballynamona Bog is an active flush system that includes areas of bog woodland. DRB also occurs in parts of this flush system. There is also potential for ARB restoration on cutover areas of the bog (see area target above). Note that map 4 is likely to over-estimate the areas of active flush and bog woodland
High bog area	Hectares	No decline in extent of high bog necessary to support the maintenance and development of active raised bog. See map 3	The area of high bog within Ballynamona Bog and Corkip Lough SAC in 2012 (latest figure available) was 60.9ha (DAHG 2014)
Hydrological regime: water levels	Centimetres	Restore appropriate water levels throughout the site	For 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 should only be 10cm below the surface, except 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	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 ARB 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 active raised bog and the services it provides	ARB is threatened due to effects of burning, past drainage and peat-cutting around the margins of Ballynamona Bog. There is a very small area of natural transitional habitat remaining. Eco-hydrological assessments have evaluated the potential for ARB restoration on cutover areas (see note for habitat area attribute above). See also the conservation objective for Turloughs (3180)
Vegetation quality: central ecotope, active flush, soaks, bog woodland	Hectares	Maintain at least 12.0ha of central ecotope/active flush/soaks/bog woodland as appropriate	At least 50% of ARB habitat should comprise high quality ARB habitat such as central ecotope, active flush, soaks and bog woodland. All of the ARB that currently occurs at Ballynamona Bog corresponds with bog woodland and active flush. Target area of active raised bog for the site has been set at 18.9ha (see area target above)
Vegetation quality: microtopograph-ical features	Hectares	Restore adequate cover of high quality microtopographical features	The hummock and hollow topography typical of raised bogs is largely absent from Ballynamona Bog
Vegetation quality: bog moss (*Sphagnum*) species	Percentage cover	Restore adequate cover of bog moss (*Sphagnum*) species to ensure peat-forming capacity	*Sphagnum* cover varies naturally across Ireland with relatively high cover in the east to lower cover in the west. Hummock forming species such as *Sphagnum austinii* are particularly good peat formers. *Sphagnum* 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	Ballynamona Bog and Corkip Lough SAC has the distinctive feature of a turlough occurring alongside a midlands raised bog
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 evidence of burning
Vegetation composition: native negative indicator species	Percentage cover	Native negative indicator species at insignificant levels	Disturbance indicators include species indicative of conditions drying out such as abundant bog asphodel (*Narthecium ossifragum*), deergrass (*Trichophorum germanicum*) and harestail cotton-grass (*Eriophorum vaginatum*) forming tussocks; abundant magellanic bog-moss (*Sphagnum magellanicum*) in pools previously dominated by *Sphagnum* species typical of very wet conditions (e.g. feathery bog-moss (*S. cuspidatum*)); and indicators of frequent burning events such as abundant *Cladonia floerkeana* and high cover of carnation sedge (*Carex panicea*) (particularly in true midlands raised bogs)
Vegetation composition: non-native invasive species	Percentage cover	Non-native invasive species at insignificant levels and not more than 1% cover	Most common non-native invasive species include lodgepole pine (*Pinus contorta*), rhododendron (*Rhododendron ponticum*) and pitcherplant (*Sarracenia purpurea*)
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 5 and 10kg N/ha/yr (Bobbink and Hettelingh, 2011). The latest N deposition figures for the area around Ballynamona Bog suggests that the current level is approximately 13.7kg N/ha/yr (Henry and Ahern, 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 run-off from surrounding mineral lands)

7120 Degraded raised bogs still capable of natural regeneration

The long-term aim for 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 Ballynamona Bog and Corkip Lough SAC

Attribute	Measure	Target	Notes

7150	Depressions on peat substrates of the Rhynchosporion

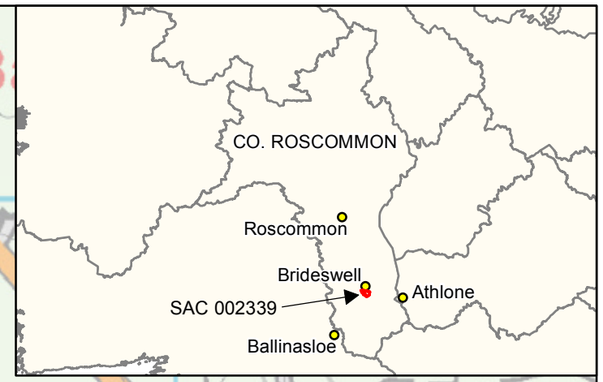
Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Ballynamona Bog and Corkip Lough SAC

Attribute	Measure	Target	Notes

91D0 Bog woodland

To restore the favourable conservation condition of Bog woodland in Ballynamona Bog and Corkip Lough 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	Bog woodland is regarded as a component of the Active Raised Bog (ARB) habitat (7110). Thus, the conservation objective and supporting document for ARB (7110) are also relevant to this habitat and common attributes have not been repeated here. Bog woodland on Ballynamona Bog was surveyed and mapped by Derwin and McGowan (2000) as 7.8ha (map 4), but note that this survey is likely to have significantly over-estimated the area of bog woodland present due to a refinement in the definition of the habitat (Fernandez et al., 2013)
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 4	Bog woodland occurs in active flushes on Ballynamona Bog (but see also note above)
Vegetation composition: positive indicator species	Number in a representative number of monitoring stops	Birch (*Betula pubescens*), bog moss (*Sphagnum* 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 (*Pteridium aquilinum*) and bramble (*Rubus fruticosus*), 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 (*Betula pubescens*) 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 (*Calluna vulgaris*) 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 (*Sphagnum* 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 (*Betula pubescens*) trees seldom exceed 30cm in diameter in this habitat and dead wood rots quickly and is engulfed by bog mosses (*Sphagnum* spp.), volume of dead wood may not be as high in bog woodland as in other woodland types



Sweat House
Pollalaher
Ballynamona
R363
Corkip Lough (Seasonal)
Corkip
House
Carrowkeeran
Skeanamuck
44
43
42
80
70
60

Legend

Ballynamona Bog and Corkip Lough SAC 002339

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MAP 1:
BALLYNAMONA BOG AND CORKIP LOUGH SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

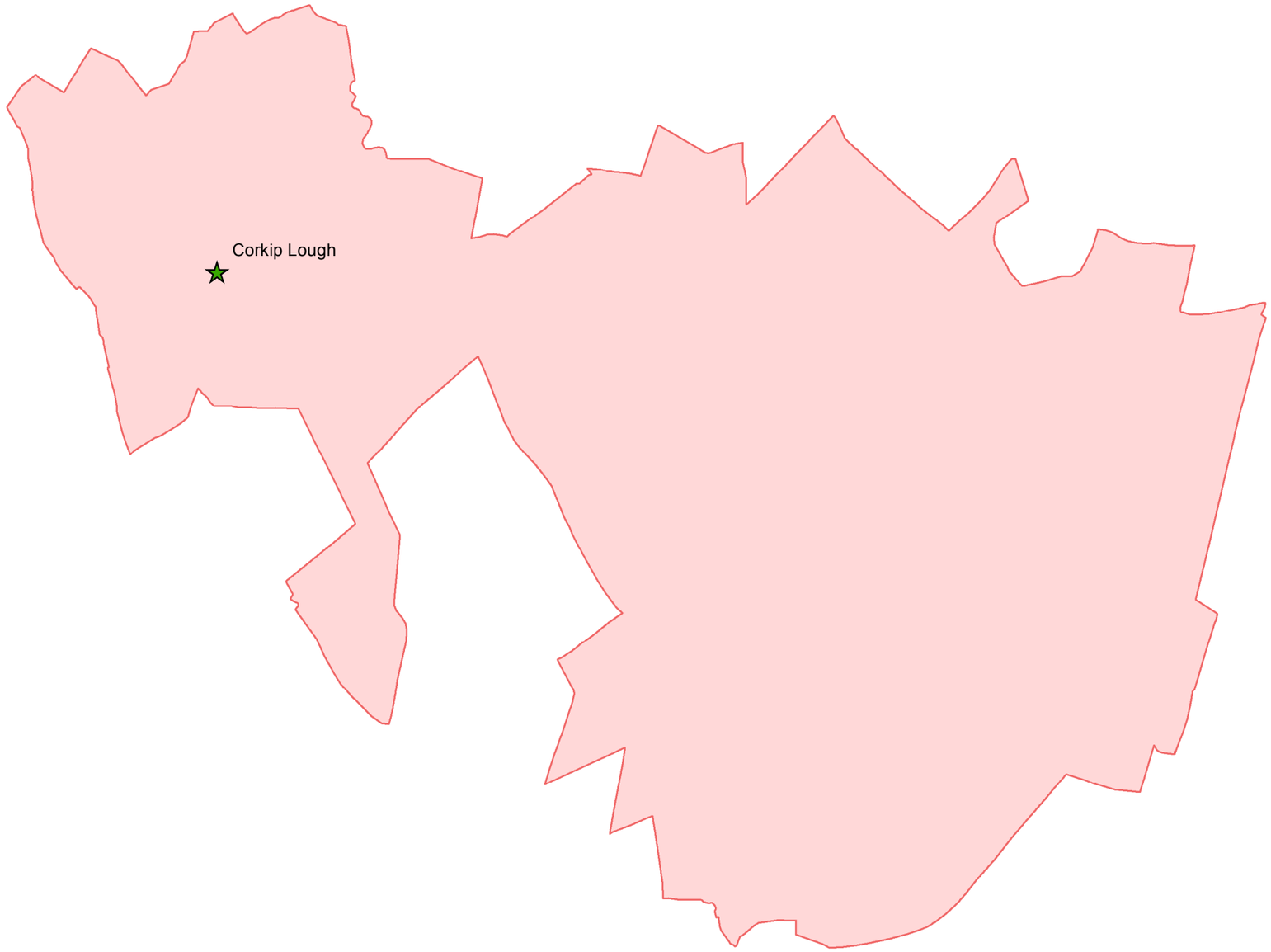
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002339; version 3. Co. Roscommon

0 90 180 270 360 450 m

N

Map Version 1
Date: July 2016



Legend

- Ballynamona Bog and Corkip Lough SAC 002339
- 3180 *Turloughs

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MAP 2:
BALLYNAMONA BOG AND CORKIP LOUGH SAC
CONSERVATION OBJECTIVES
TURLOUGHS

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

SITE CODE:
SAC 002339; version 3. Co. Roscommon

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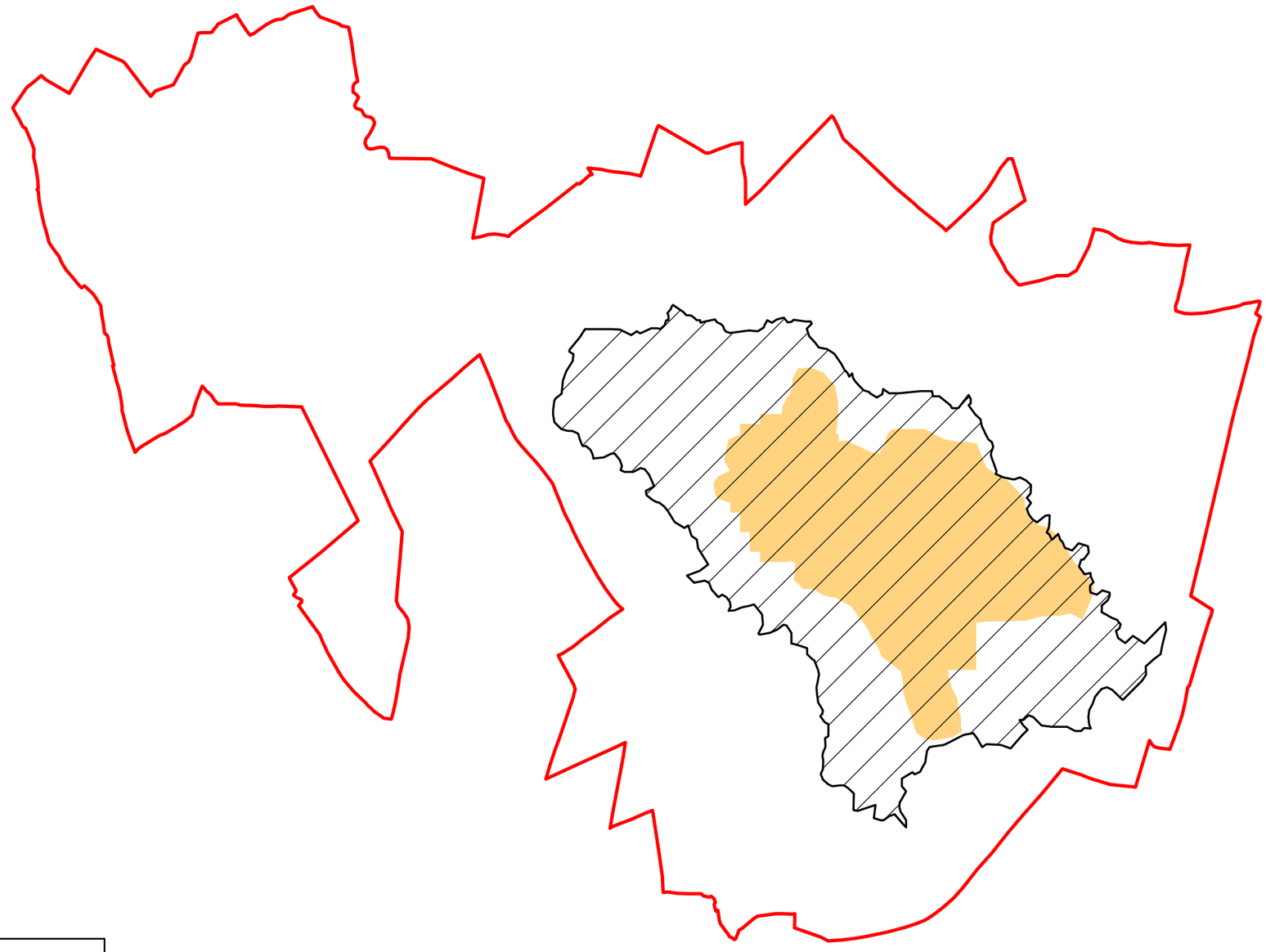
Map Version 1
Date: July 2016



Legend

- Ballynamona Bog and Corkip Lough SAC 002339
- High Bog Boundary
- Potential 7110 *Active Raised Bogs

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MAP 3:
BALLYNAMONA BOG AND CORKIP LOUGH SAC
CONSERVATION OBJECTIVES
EXTENT OF POTENTIAL ACTIVE RAISED BOGS

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

SITE CODE:
SAC 002339; version 3. Co. Roscommon

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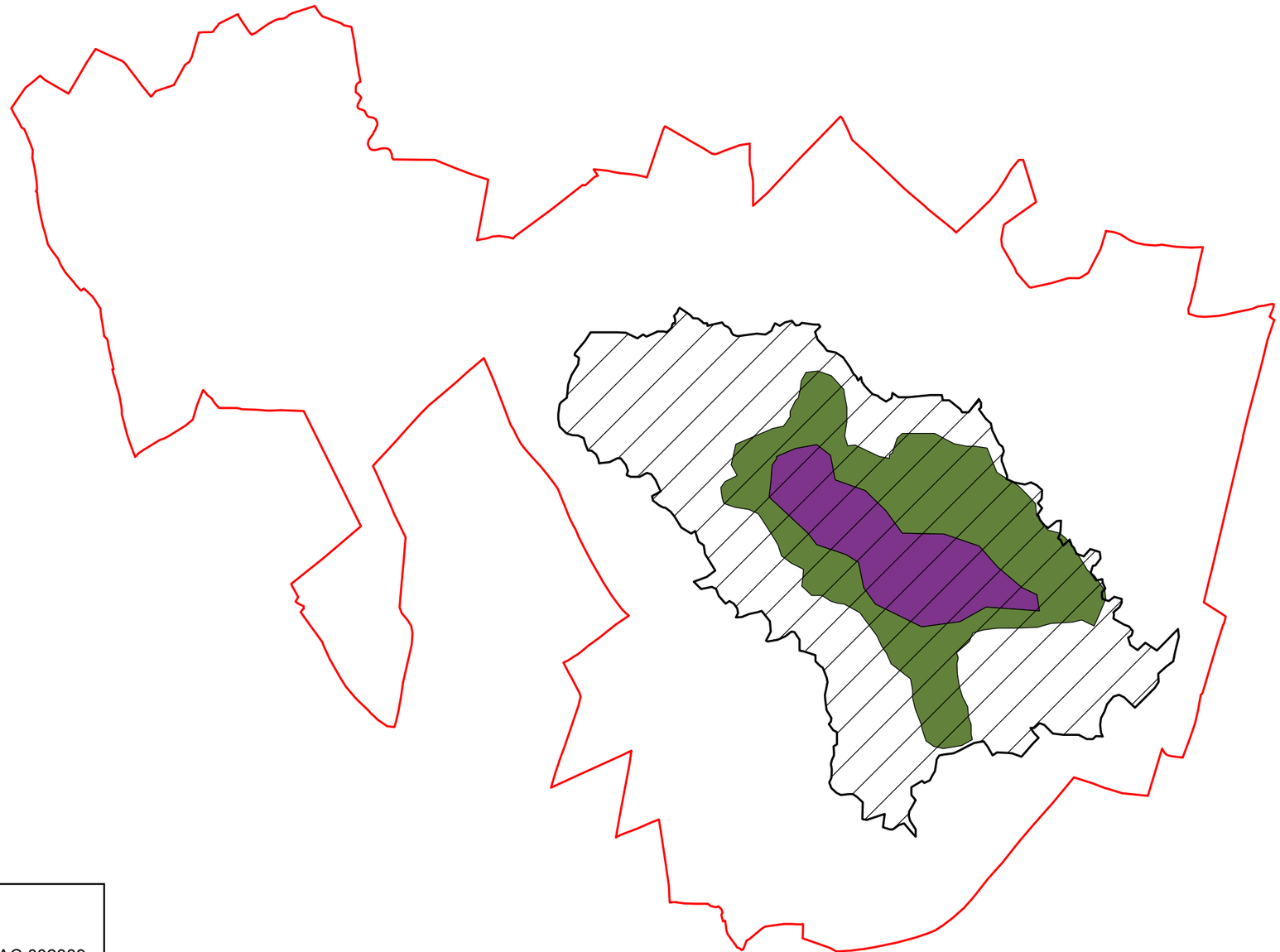
Map Version 1
Date: July 2016



Legend

- Ballynamona Bog and Corkip Lough SAC 002339
- High Bog Boundary

Active Raised Bogs Ecotopes

- Bog Woodland
- Soaks / active flush

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MAP 4: BALLYNAMONA BOG AND CORKIP LOUGH SAC CONSERVATION OBJECTIVES ACTIVE RAISED BOGS ECOTOPES

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

SITE CODE:
SAC 002339; version 3. Co. Roscommon

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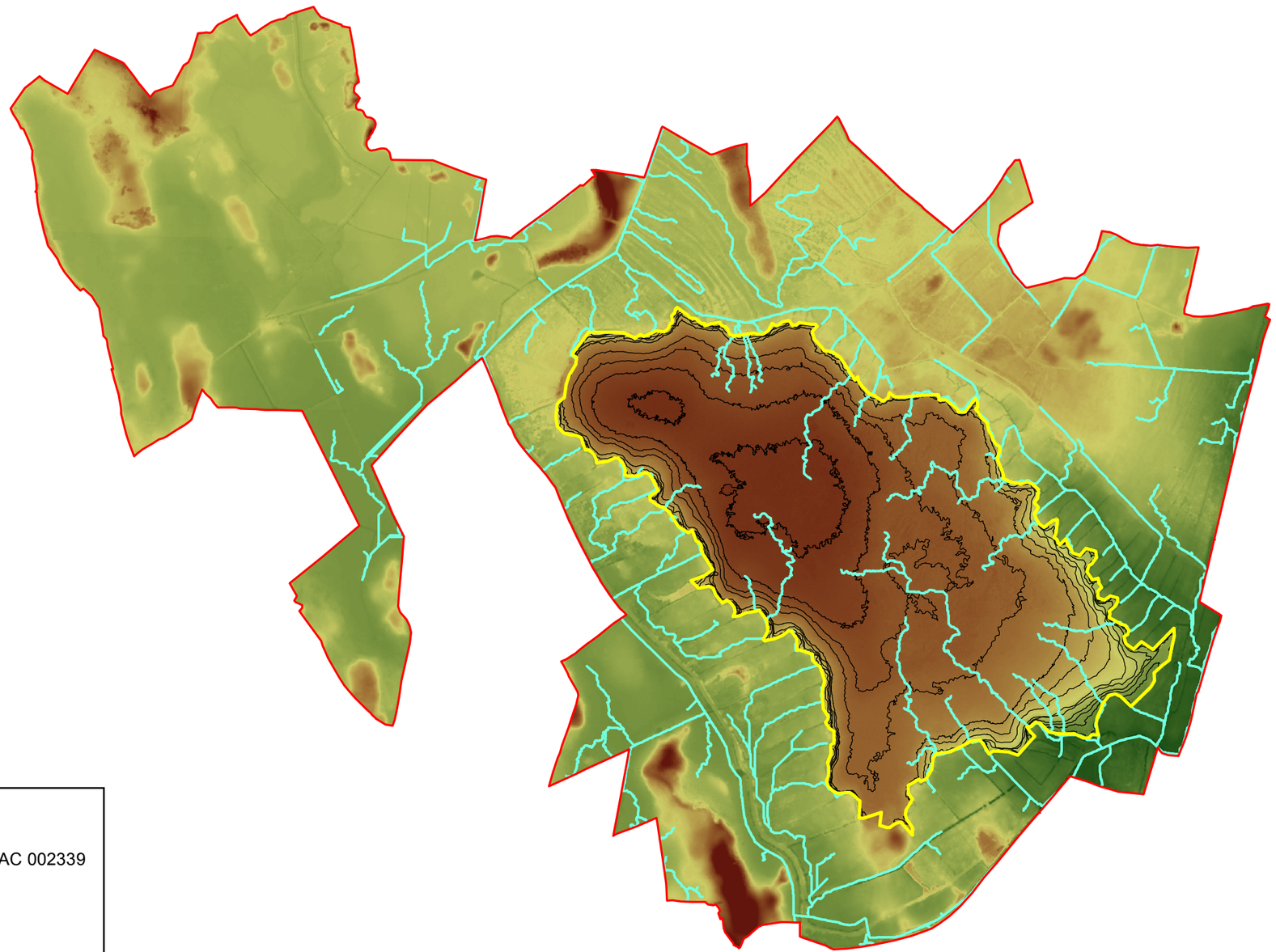
Map Version 1
Date: July 2016



Legend

- Ballynamona Bog and Corkip Lough SAC 002339
- High Bog Boundary
- Drainage Patterns
- Contours

Elevation

65.52 m

51.16 m

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MAP 5:
BALLYNAMONA BOG AND CORKIP LOUGH SAC
CONSERVATION OBJECTIVES
RAISED BOG DIGITAL ELEVATION MODEL & DRAINAGE PATTERNS

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

SITE CODE:
SAC 002339; version 3. Co. Roscommon

0 100 200 300 400 500 m

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Map Version 1
Date:July 2016