

# National Parks and Wildlife Service

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## *Conservation Objectives Series*

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Lough Lurgheen Bog/Glenamaddy Turlough SAC  
000301



*An Roinn  
Ealaíon, Oidhreachta agus Gaeltachta*  

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*Department of  
Arts, Heritage and the Gaeltacht*



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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*

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000301      Lough Lurgen Bog/Glenamaddy Turlough SAC

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3180      TurloughsE

3270      Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation

7110      Active raised bogsE

7120      Degraded raised bogs still capable of natural regeneration

7150      Depressions on peat substrates of the *Rhynchosporion*

## Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: [www.npws.ie/Publications](http://www.npws.ie/Publications)

### NPWS Documents

<b>Year :</b>	2014
<b>Title :</b>	National raised bog SAC management plan
<b>Author :</b>	Department of Arts, Heritage and the Gaeltacht
<b>Series :</b>	Draft for consultation. 15 January 2014
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<b>Year :</b>	2016
<b>Title :</b>	Lough Lurheen Bog/Glenamaddy Turlough SAC (site code: 301) Conservation objectives supporting doc- raised bog habitats V1
<b>Author :</b>	NPWS
<b>Series :</b>	Conservation objectives supporting document
<hr/>	
<b>Year :</b>	2016
<b>Title :</b>	Lough Lurheen Bog/Glenamaddy Turlough SAC (site code: 301) Conservation objectives supporting doc- turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation V1
<b>Author :</b>	NPWS
<b>Series :</b>	Conservation objectives supporting document

### Other References

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

## Spatial data sources

<b>Year :</b>	2016
<b>Title :</b>	Goodwillie (1992) Turloughs over 10 hectares: Vegetation survey and evaluation
<b>GIS Operations :</b>	Goodwillie map scanned and georectified. Turlough as outlined on map digitised. New Turlough dataset clipped to SAC Boundary. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	3180, 3270 (map 2)
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<b>Year :</b>	Digitised 2006
<b>Title :</b>	Raised Bog Restoration Project 1995/Turf Cutting Impact Assessment Project
<b>GIS Operations :</b>	Ecotope dataset clipped to SAC boundary. Appropriate ecotopes selected and exported to new dataset. Expert opinion used as necessary to resolve any issues arising
<b>Used For :</b>	potential 7110; digital elevation model; drainage patterns (maps 3 and 5)
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<b>Year :</b>	2014
<b>Title :</b>	Scientific Basis for Raised Bog Conservation in Ireland
<b>GIS Operations :</b>	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
<b>Used For :</b>	7110 ecotopes (map 4)
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**3180 Turloughs**

**To restore the favourable conservation condition of Turloughs in Lough Lurgreen Bog/Glenamaddy Turlough SAC, which is defined by the following list of attributes and targets:**

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Current mapped area is 172.0ha. See map 2. See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes	The location of Glenamaddy Turlough is shown in map 2. See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Hydrological regime: flood duration, frequency, area, depth; permanently flooded area	Various	Maintain 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 and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document
Soil type: area	Hectares	Maintain variety, area and extent of soil types necessary to support turlough vegetation and other biota	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Soil nutrient status: nitrogen and phosphorous	N and P concentration in soil	Maintain/restore nutrient status appropriate to soil types	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Physical structure: bare ground	Presence	Maintain sufficient wet bare ground, as appropriate	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Chemical processes: calcium carbonate deposition and concentration	Calcium carbonate deposition rates/ soil concentration	Maintain calcium carbonate deposition rate/soil concentration	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Water quality: nutrients; colour; phytoplankton; epiphyton	Various	Restore 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 and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document
Active peat formation	Flood duration	Maintain active peat formation	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Vegetation composition: area of vegetation communities	Hectares	Maintain/restore area of sensitive and high conservation value vegetation communities/units	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Vegetation composition: vegetation zonation	Distribution	Maintain vegetation zonation/mosaic characteristic of the site	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation 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 and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Typical species: terrestrial, wetland and aquatic plants, invertebrates and birds	Presence	Maintain/restore typical species	Typical species is sub-divided into more detailed attributes in the turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document

Fringing habitats: area	Hectares	Maintain marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation 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 and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details



**3270 Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation**

**To maintain the favourable conservation condition of Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation, which is defined by the following list of attributes and targets:**

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Mapped as 25ha, based on the approximate area of bare mud at Glenamaddy turlough from Conaghan et al. (2006). See map 2. See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes	The location of Glenamaddy Turlough and known distribution of habitat 3270 is shown in map 2. See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Hydrological regime: flood duration, frequency, area, depth; permanently flooded area	Various	Maintain 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 and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document
Soil type: area	Hectares	Maintain area and extent of soil types necessary to support the habitat	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Soil nutrient status: nitrogen and phosphorous	N and P concentration in soil	Maintain/restore nutrient status appropriate to soil types	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Physical structure: bare ground	Presence	Maintain sufficient wet bare ground	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Chemical processes: calcium carbonate deposition and concentration	Calcium carbonate deposition rates/ soil concentration	Maintain calcium carbonate deposition rate/soil concentration	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Water quality: nutrients; colour; phytoplankton; epiphyton	Various	Maintain/restore 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 and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document
Vegetation composition: area of vegetation communities	Hectares	Maintain area of sensitive and high conservation value vegetation communities/units	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Vegetation composition: vegetation zonation	Distribution	Maintain vegetation zonation/mosaic characteristic of the site	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Typical species: plants	Presence	Maintain typical species	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details
Fringing habitats: area	Hectares	Maintain marginal fringing habitats that support the structure and functions and typical species of habitat 3270	See turloughs and rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation supporting document for further details

## Conservation Objectives for : Lough Lurgen Bog/Glenamaddy Turlough SAC [000301]

### 7110 Active raised bogs

**To restore the favourable conservation condition of Active raised bogs in Lough Lurgen Bog/Glenamaddy Turlough 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 62.9ha, subject to natural processes	Active Raised Bog (ARB) habitat was mapped at 21.5ha in most recent surveys undertaken in 1994 and 2004. Area of Degraded Raised Bog (DRB) on the High Bog (HB) has been modelled as 53.2ha. See map 3. However, it is estimated that only 39.2ha is potentially restorable to ARB by drain blocking. The total potential ARB on the HB is therefore estimated to be 60.7ha. Eco-hydrological assessments of the cutover estimates that an additional 2.2ha of bog forming habitats could be restored. The long term target for ARB is therefore 62.9ha. 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 most recent distribution	ARB occurs in several areas throughout Lough Lurgen Bog East and in just one area of sub-central ecotope on Lough Lurgen Bog West. DRB occurs on both parts of the bog, which will require restoration measures
High bog area	Hectares	No decline in extent of high bog necessary to support the development and maintenance of active raised bog. See map 3	The area of high bog within Lough Lurgen Bog/Glenamaddy Turlough SAC in 2012 (latest figure available) was 613.5ha (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 the effects of drainage and peat-cutting around the margins of Lough Lurgen Bog. Semi-natural habitats continue to occur along some margins with the transition from raised bog to turlough most notable. See also the conservation objective for Turloughs (3180)
Vegetation quality: central ecotope, active flush, soaks, bog woodland	Hectares	Restore 31.5ha of central ecotope/active flush/soaks/bog woodland as appropriate	At least 50% of ARB habitat should be high quality (i.e. central ecotope, active flush, soaks, bog woodland). Target area of active raised bog for the SAC has been set at 62.9ha (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 Lough Lurgen Bog East and moderately developed on Lough Lurgen Bog West
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 austini</i> are particularly good peat formers. <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	Lough Lurgeen Bog is noted for the presence of a spring-fed lake (Lough Lurgeen), which in turn feeds into an adjacent turlough (Glenamaddy Turlough) via a stream across the 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 ( <i>Narthecium ossifragum</i> ), deergrass ( <i>Trichophorum germanicum</i> ) and harestail cotton-grass ( <i>Eriophorum vaginatum</i> ) forming tussocks; abundant magellanic bog-moss ( <i>Sphagnum magellanicum</i> ) in pools previously dominated by <i>Sphagnum</i> species typical of very wet conditions (e.g. feathery bog-moss ( <i>S. cuspidatum</i> )); and indicators of frequent burning events such as abundant <i>Cladonia floerkeana</i> and high cover of carnation sedge ( <i>Carex panicea</i> ) (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 ( <i>Pinus contorta</i> ), rhododendron ( <i>Rhododendron ponticum</i> ), and pitcherplant ( <i>Sarracenia purpurea</i> )
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 Lough Lurgeen Bog suggests that the current level is approximately 11.5kg 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 run-off from surrounding mineral lands)

**Conservation Objectives for : Lough Lurgen Bog/Glenamaddy Turlough SAC [000301]**

**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 Lough Lurgen Bog/Glenamaddy Turlough SAC

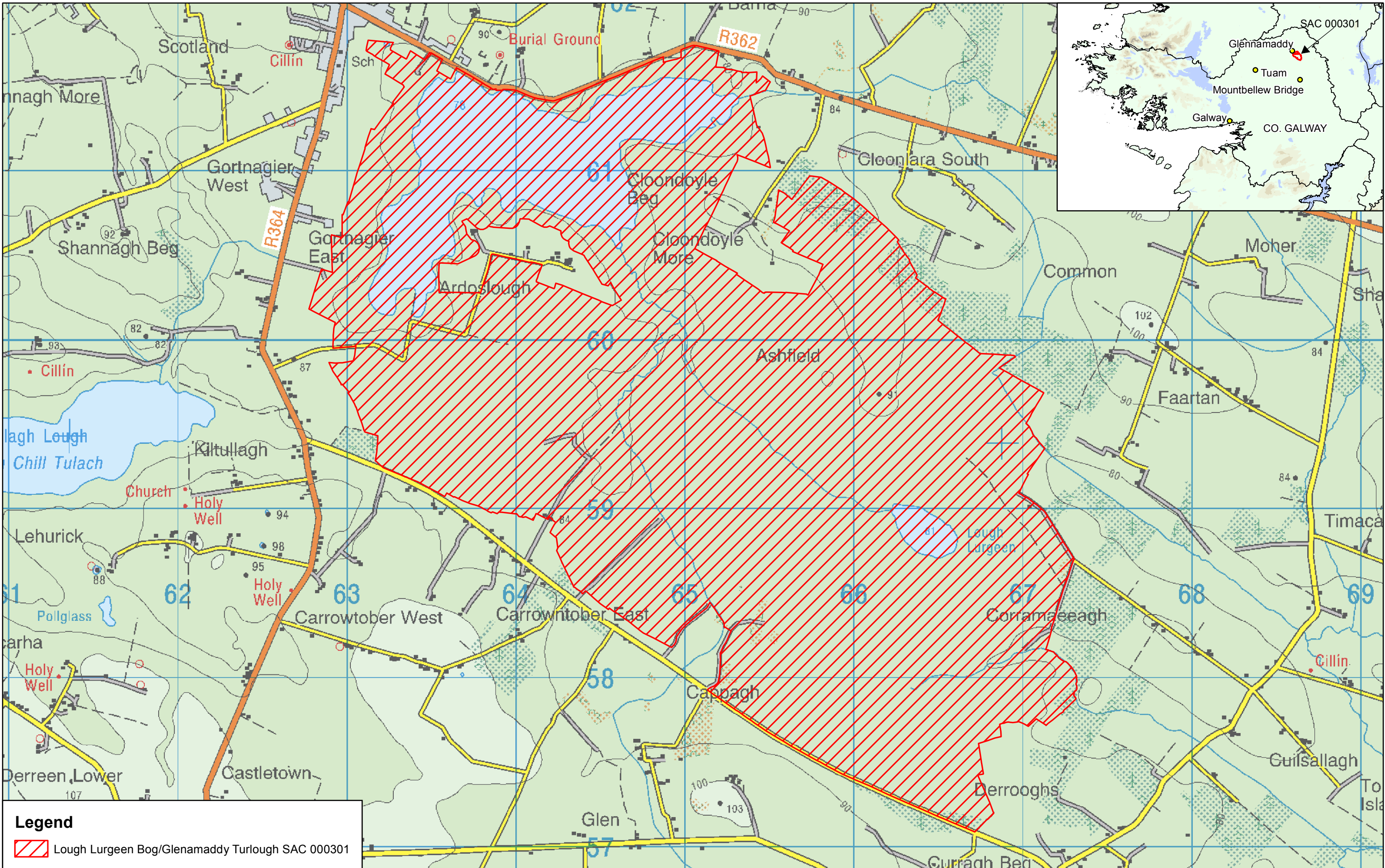
Attribute	Measure	Target	Notes
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**Conservation Objectives for : Lough Lurgen Bog/Glenamaddy Turlough SAC [000301]**


**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 Lough Lurgen Bog/Glenamaddy Turlough SAC

<b>Attribute</b>	<b>Measure</b>	<b>Target</b>	<b>Notes</b>
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**Legend**

 Lough Lurgeen Bog/Glenamaddy Turlough SAC 000301



An Roinn  
Ealaíon, Oidhreacht agus Gaeltachta  
Department of  
Arts, Heritage and the Gaeltacht

**MAP 1:**  
**LOUGH LURGEEN BOG/  
GLENAMADDY TURLOUGH SAC  
CONSERVATION OBJECTIVES  
SAC DESIGNATION**

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

**SITE CODE:**  
**SAC 000301; version 3. Co. Galway**

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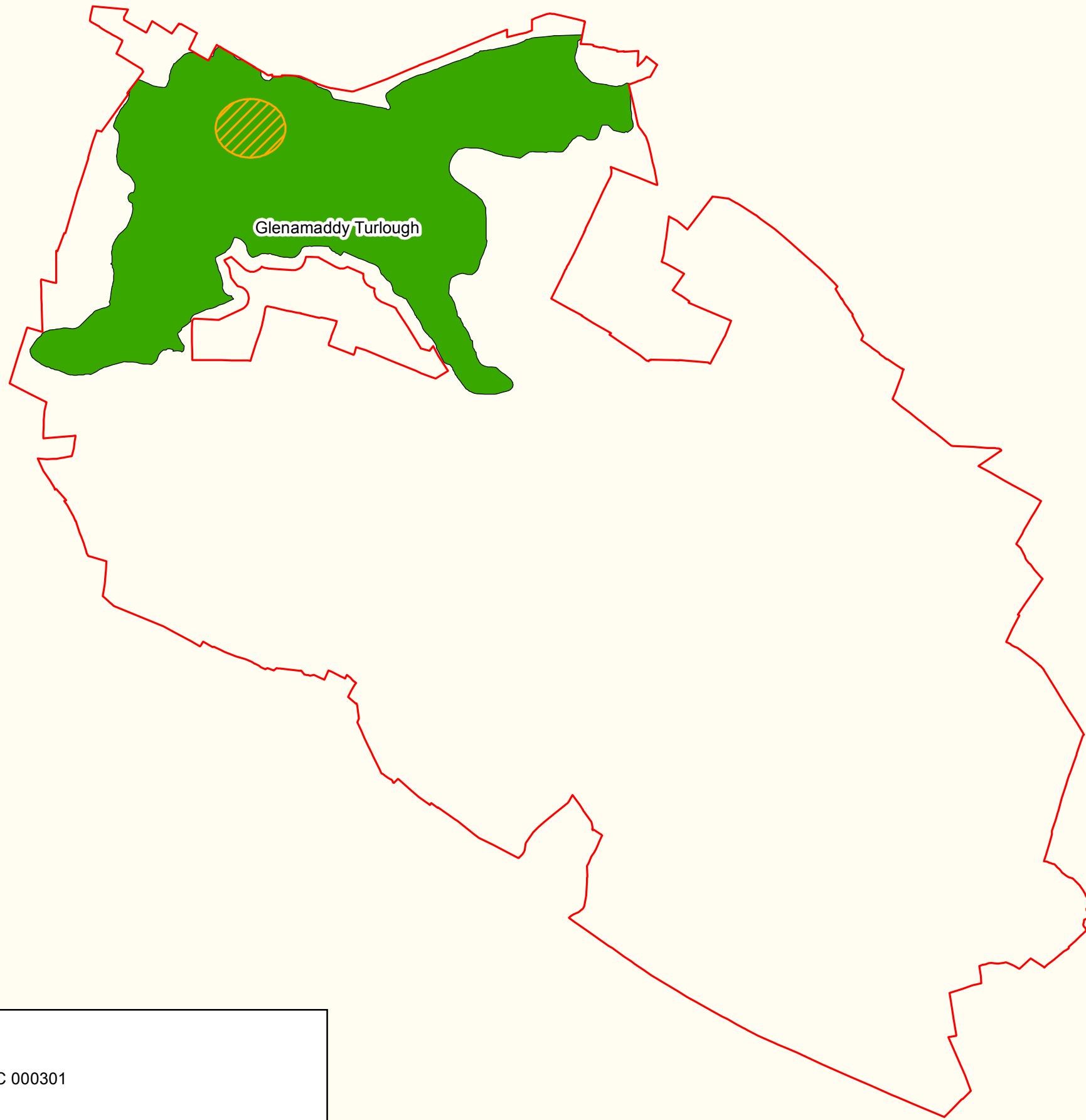
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.  
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Níl sna teorainneacha ar na léarscáilleana ach nod garshuíomhach ginearálta. Féadfar athbheithníthe a déanamh ar theorainneacha na gceantar comharthaíthe. Suirbhéarachta Ordoínáil na hÉireann Ceadúnas Uimh EN 0059216. © Suirbhéarachta Ordoínáil na hÉireann Rialtas na hÉireann.




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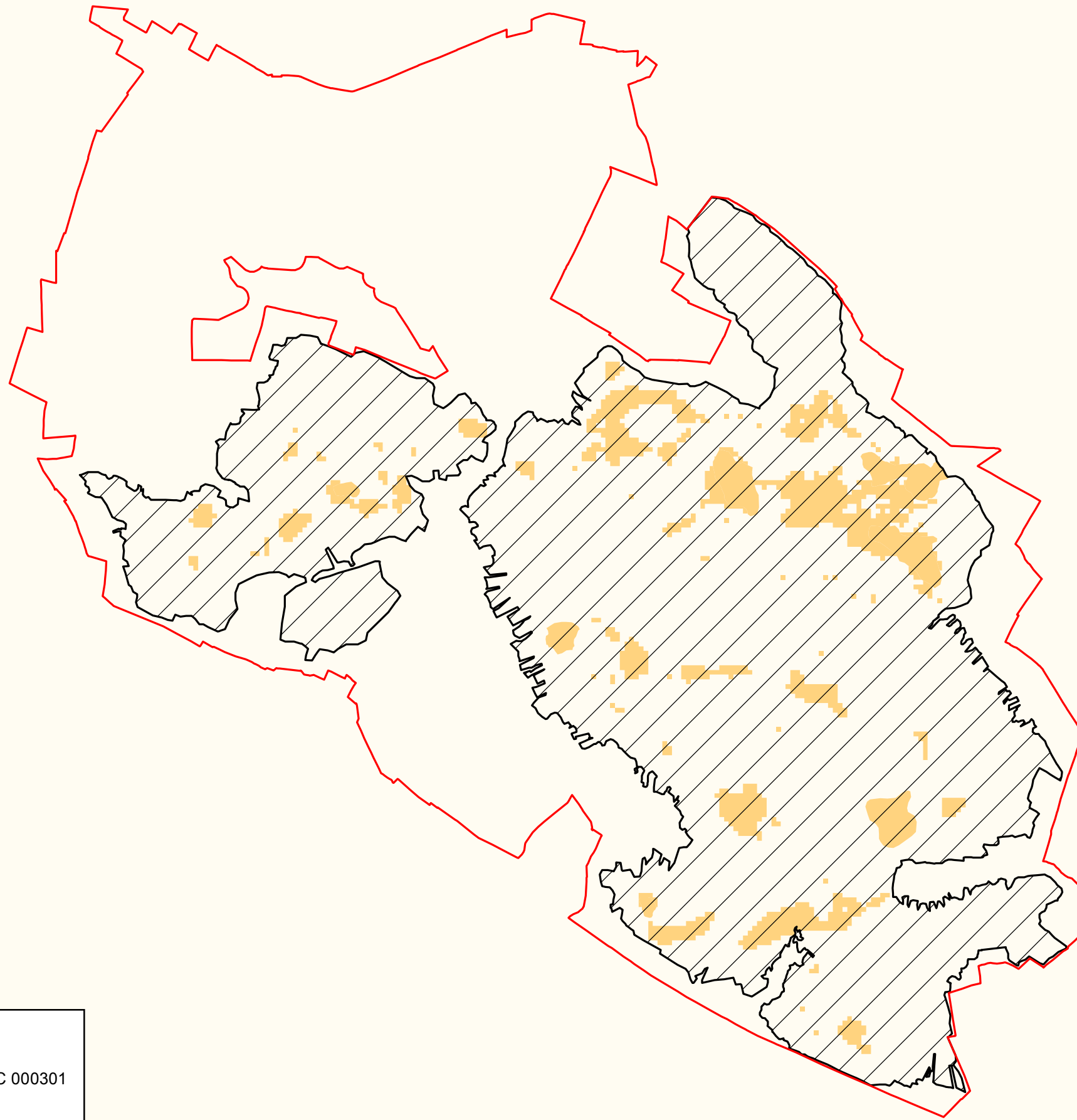


**Map Version 1  
Date: March 2016**



**Legend**

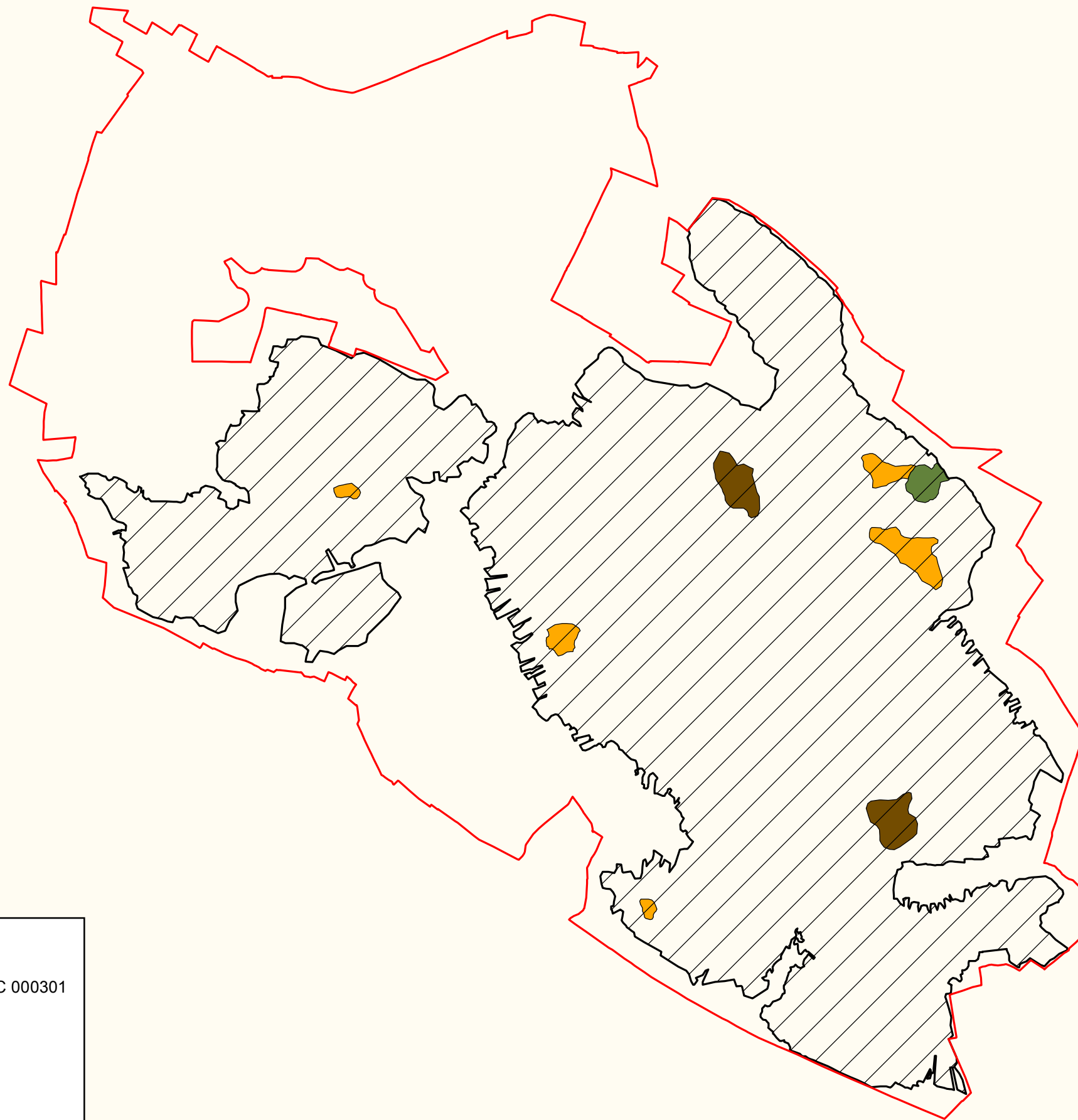
-  Lough Lurgen Bog/Glenamaddy Turlough SAC 000301
-  3180 \*Turloughs
-  3270 Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation



**Legend**

- Lough Lurgeen Bog/Glenamaddy Turlough SAC 000301
- High Bog Boundary
- Potential 7110 \*Active Raised Bogs





**Legend**

Lough Lurgen Bog/Glenamaddy Turlough SAC 000301

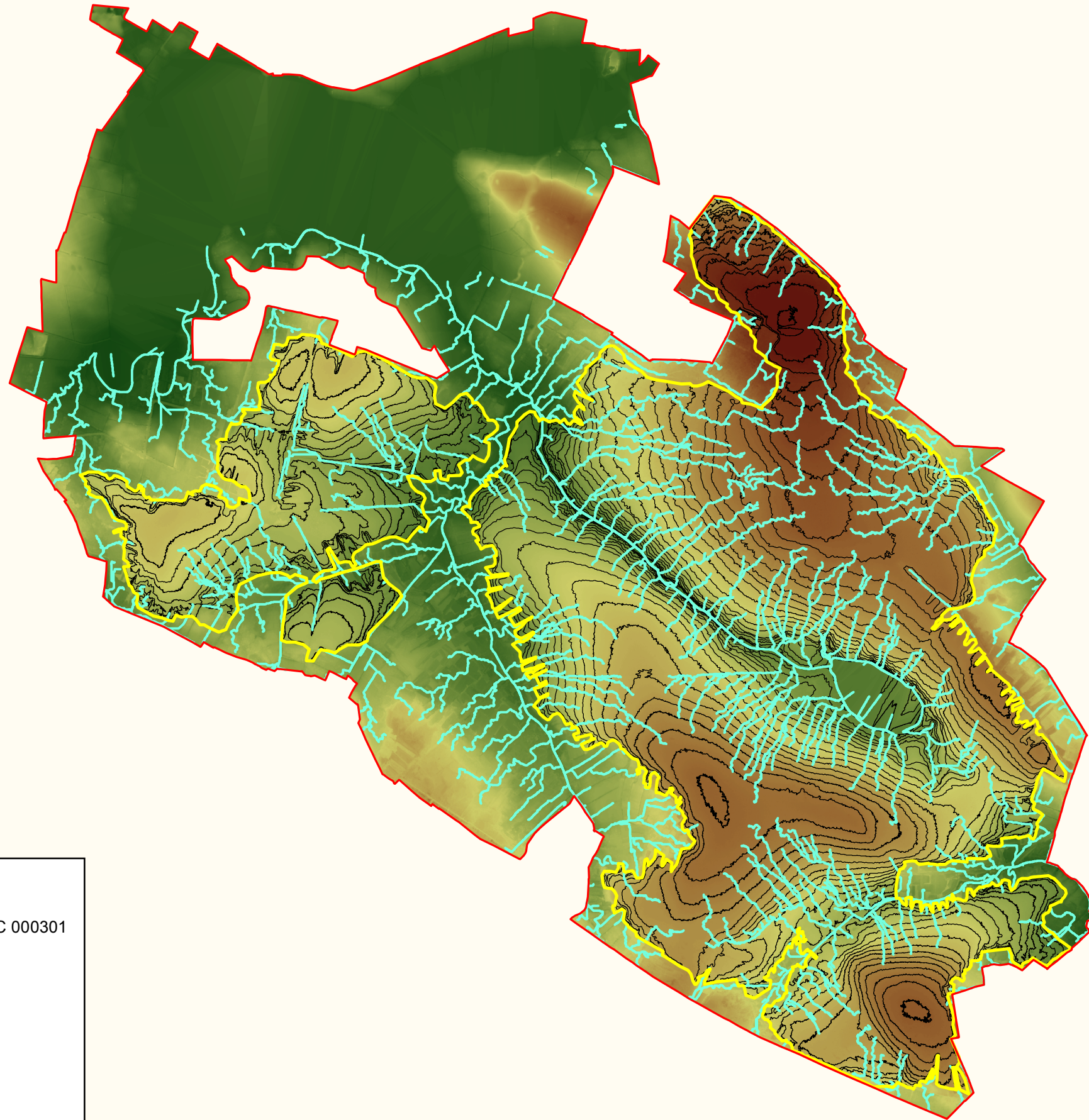
High Bog Boundary

**Active Raised Bogs Ecotopes**

Central ecotope

Soaks / active flush

Sub-central ecotope



**Legend**

- Lough Lurgeen Bog/Glenamaddy Turlough SAC 000301
- High Bog Boundary
- Drainage Patterns
- Contours

**Elevation**

