

# National Parks and Wildlife Service

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## *Conservation Objectives Series*

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### Magherabeg Dunes SAC 001766



An Roinn Ealaíon, Oidhreachta,  
Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta

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Department of Arts, Heritage,  
Regional, Rural and Gaeltacht Affairs



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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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001766	Magherabeg Dunes SAC
1210	Annual vegetation of drift lines
2110	Embryonic shifting dunes
2120	Shifting dunes along the shoreline with <i>Cladonia</i> (white dunes)
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)E
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)E
7220	Petrifying springs with tufa formation (Cratoneurion)E

## 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>	2009
<b>Title :</b>	Coastal Monitoring Project 2004-2006
<b>Author :</b>	Ryle, T.; Murray, A.; Connolly, K.; Swann, M.
<b>Series :</b>	Unpublished report to NPWS
<hr/>	
<b>Year :</b>	2013
<b>Title :</b>	Conservation status assessment for petrifying springs
<b>Author :</b>	Lyons, M.D.; Kelly, D.L.
<b>Series :</b>	Unpublished report to NPWS
<hr/>	
<b>Year :</b>	2013
<b>Title :</b>	Monitoring survey of Annex I sand dune habitats in Ireland
<b>Author :</b>	Delaney, A.; Devaney, F.M.; Martin, J.M.; Barron, S.J.
<b>Series :</b>	Irish Wildlife Manual No. 75
<hr/>	
<b>Year :</b>	2016
<b>Title :</b>	Monitoring guidelines for the assessment of petrifying springs in Ireland
<b>Author :</b>	Lyons, M.D.; Kelly, D.L.
<b>Series :</b>	Irish Wildlife Manual No. 94
<hr/>	
<b>Year :</b>	2017
<b>Title :</b>	Magherabeg Dunes SAC (site code: 1766) Conservation objectives supporting document-coastal habitats V1
<b>Author :</b>	NPWS
<b>Series :</b>	Conservation objectives supporting document

### Other References

<b>Year :</b>	2008
<b>Title :</b>	The phytosociology and conservation value of Irish sand dunes
<b>Author :</b>	Gaynor, K.
<b>Series :</b>	Unpublished Ph.D. Thesis, National University of Ireland, Dublin
<hr/>	
<b>Year :</b>	2010
<b>Title :</b>	Water quality in Ireland 2007-2009
<b>Author :</b>	McGarrigle, M.; Lucey, J.; Ó Cinnéide, M.
<b>Series :</b>	EPA, Wexford
<hr/>	
<b>Year :</b>	2015
<b>Title :</b>	The flora and conservation status of petrifying springs in Ireland
<b>Author :</b>	Lyons, M.D.
<b>Series :</b>	Unpublished Ph.D. Thesis, Trinity College Dublin

## Spatial data sources

**Year :** 2009  
**Title :** Coastal Monitoring Project 2004-2006. Version 1  
**GIS Operations :** QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising  
**Used For :** 1210, 2110, 2120, 2130, 2150 (map 2)

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**Year :** 2016  
**Title :** Point file associated with Lyons (2015)  
**GIS Operations :** Dataset created from spatial references; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising  
**Used For :** 7220 (map 3)

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**1210 Annual vegetation of drift lines**

**To maintain the favourable conservation condition of Annual vegetation of drift lines in Magherabeg Dunes 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, including erosion and succession. For the two sub-sites mapped: Magherabeg - 0.03ha; Magheramore - 0.04ha. See map 2	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009). Annual vegetation of drift lines was mapped at two sub-sites, Magherabeg (CMP site ID: 016) and Magheramore (CMP site ID: 015), giving a total estimated area of 0.07ha within Magherabeg Dunes SAC. The habitat is very difficult to measure in view of its dynamic nature which means that it can appear and disappear within a site from year to year. See the Magherabeg Dunes SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 2 for known distribution	Based on data from Ryle et al. (2009). A single clump of annual strandline vegetation at the southern extreme of Magherabeg accounts for the mapped area of 0.03ha and a further 0.04ha was recorded at Magheramore. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009). Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). The embryonic dunes at Magherabeg occur in association with drift line vegetation. See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket ( <i>Cakile maritima</i> ), sea sandwort ( <i>Honckenya peploides</i> ), prickly saltwort ( <i>Salsola kali</i> ) and oraches ( <i>Atriplex</i> spp.)	Based on data from Ryle et al. (2009). Sea rocket ( <i>Cakile maritima</i> ), sea sandwort ( <i>Honckenya peploides</i> ) and prickly saltwort ( <i>Salsola kali</i> ) were noted in the habitat in Magherabeg Dunes SAC. See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. See the coastal habitats supporting document for further details

## Conservation Objectives for : Magherabeg Dunes SAC [001766]

### 2110 Embryonic shifting dunes

**To maintain the favourable conservation condition of Embryonic shifting dunes in Magherabeg Dunes 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, including erosion and succession. For the sub-site mapped: Magherabeg - 1.71ha. See map 2	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009). Embryonic shifting dunes habitat was mapped at the sub-site Magherabeg (CMP site ID: 016) to give a total estimated area of 1.71ha within the SAC. The habitat is very difficult to measure in view of its dynamic nature. See the Magherabeg Dunes SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 2 for known distribution	Based on data from Ryle et al. (2009). See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009). Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation, resulting in increased rates of erosion. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). Magherabeg Dunes SAC supports most sand dune stages with embryonic dunes, white dunes and fixed dunes all represented. See the coastal habitats supporting document for further details
Vegetation composition: plant health of foredune grasses	Percentage cover	More than 95% of sand couch grass ( <i>Elytrigia juncea</i> ) and/or lyme-grass ( <i>Leymus arenarius</i> ) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle et al. (2009). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sand couch grass ( <i>Elytrigia juncea</i> ) and/or lyme-grass ( <i>Leymus arenarius</i> )	Based on data from Ryle et al. (2009). Species present in the embryonic dunes in the SAC include sand couch ( <i>Elytrigia juncea</i> ), sea spurge ( <i>Euphorbia paralias</i> ), marram ( <i>Ammophila arenaria</i> ), sea sandwort ( <i>Honkenya peploides</i> ) and sea rocket ( <i>Cakile maritima</i> ). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Gaynor (2008) and Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn ( <i>Hippophae rhamnoides</i> ) should be absent or effectively controlled. See the coastal habitats supporting document for further details



## Conservation Objectives for : Magherabeg Dunes SAC [001766]

### 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

To maintain the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) in Magherabeg Dunes 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, including erosion and succession. For the two sub-sites mapped: Magheramore - 0.01ha; Magherabeg - 1.80ha. See map 2	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009). Shifting dunes along the shoreline with <i>Ammophila arenaria</i> was mapped at two sub-sites, Magherabeg (CMP site ID: 016) and Magheramore (CMP site ID: 015), giving a total estimated area of 1.81ha within Magherabeg Dunes SAC. The habitat is very difficult to measure in view of its dynamic nature. See the Magherabeg Dunes SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 2 for known distribution	Based on Ryle et al. (2009). The mobile dunes at the Magherabeg sub-site form a continuous strip in excess of 10m wide, apart from the 250m stretch where the Three Mile Water River channel cuts through the strand. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009). Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Marram grass ( <i>Ammophila arenaria</i> ) reproduces vegetatively and requires constant accretion of fresh sand to maintain active growth encouraging further accretion. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). Magherabeg Dunes SAC supports most sand dune stages with embryonic dunes, white dunes and fixed dunes all represented. See the coastal habitats supporting document for further details
Vegetation composition: plant health of dune grasses	Percentage cover	More than 95% of marram grass ( <i>Ammophila arenaria</i> ) and/or lyme-grass ( <i>Leymus arenarius</i> ) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle et al. (2009). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass ( <i>Ammophila arenaria</i> ) and/or lyme-grass ( <i>Leymus arenarius</i> )	Based on data from Ryle et al. (2009). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Gaynor (2008) and Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn ( <i>Hippophae rhamnoides</i> ) should be absent or effectively controlled. See the coastal habitats supporting document for further details

## Conservation Objectives for : Magherabeg Dunes SAC [001766]

### 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

**To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation (grey dunes)\* in Magherabeg Dunes 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, including erosion and succession. For the sub-site mapped: Magherabeg - 7.93ha. See map 2	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009). Fixed coastal dunes with herbaceous vegetation was mapped at the sub-site Magherabeg (CMP site ID: 016) to give a total estimated area of 7.93ha within the SAC. See the Magherabeg Dunes SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 2 for known distribution	Based on data from Ryle et al. (2009). The fixed coastal dunes occur in a band along the length of the southern portion of Magherabeg Dunes SAC. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009). Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation resulting in increased rates of erosion. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). Magherabeg Dunes SAC supports most sand dune stages with embryonic dunes, white dunes and fixed dunes all represented. See the coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes	Based on data from Gaynor (2008) and Ryle et al. (2009). At Magherabeg, natural erosion has led to the expansion of blowouts and erosion of the seaward side of dune ridges. See the coastal habitats supporting document for further details
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward	Based on data from Gaynor (2008) and Ryle et al. (2009). Areas of the fixed dunes at Magherabeg Dunes SAC are undergoing succession to rank grassland and low scrub, with subsequent loss of flora diversity. See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney et al. (2013)	Based on data from Ryle et al. (2009). Magherabeg has a good proportion of short turf grassland with a reasonably diverse fixed dune flora including typical species such as lady's bedstraw ( <i>Galium verum</i> ), common bird's-foot trefoil ( <i>Lotus corniculatus</i> ), common restharrow ( <i>Ononis repens</i> ), wild carrot ( <i>Daucus carota</i> ), wild thyme ( <i>Thymus polytrichus</i> ) and kidney vetch ( <i>Anthyllis vulneraria</i> ). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Gaynor (2008) and Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn ( <i>Hippophae rhamnoides</i> ) should be absent or effectively controlled. Negative indicator species found throughout the fixed dunes at Magherabeg Dunes SAC include common ragwort ( <i>Senecio jacobaea</i> ), creeping thistle ( <i>Cirsium arvense</i> ), common nettle ( <i>Urtica dioica</i> ) and perennial rye-grass ( <i>Lolium perenne</i> ). Bracken ( <i>Pteridium aquilinum</i> ) and burnet rose ( <i>Rosa spinosissima</i> ) appear to be invasive throughout the fixed dunes at Magherabeg Dunes SAC. See the coastal habitats supporting document for further details

Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009). Scrub vegetation may be spreading at the landward edge of the fixed dunes where stock grazing has been discontinued. See the coastal habitats supporting document for further details
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**2150 Atlantic decalcified fixed dunes (Calluno-Ulicetea)**

**To maintain the favourable conservation condition of Atlantic decalcified fixed dunes (Calluno-Ulicetea)\* in Magherabeg Dunes 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 including erosion and succession	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009). No area was mapped for Atlantic decalcified dune habitat at Magherabeg Dunes SAC by the CMP, but it is potentially present as evidenced by the occurrence of European gorse ( <i>Ulex europaeus</i> ), in mosaic with fixed coastal dunes with herbaceous vegetation. Thus, the total area of the qualifying habitat within the SAC is unknown. See the Magherabeg Dunes SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes	Based on data from Ryle et al. (2009). This habitat is characterised by the presence of European gorse ( <i>Ulex europaeus</i> ), which occurs on the inland side of the fixed dunes in Magherabeg Dunes SAC. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009). Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation resulting in increased rates of erosion. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). Magherabeg Dunes SAC supports most sand dune stages with embryonic dunes, white dunes and fixed dunes all represented. See the coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of the dune habitat, subject to natural processes	Based on data from Gaynor (2008) and Ryle et al. (2009). See the coastal habitats supporting document for further details
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward	Based on data from Gaynor (2008) and Ryle et al. (2009). Areas of the fixed dunes at Magherabeg Dunes SAC are undergoing succession to rank grassland and low scrub, with subsequent loss of flora diversity. See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney et al. (2013)	Based on data from Gaynor (2008) and Ryle et al. (2009). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Gaynor (2008) and Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn ( <i>Hippophae rhamnoides</i> ) should be absent or effectively controlled. See the coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009). Scrub vegetation may be spreading at the landward edge of the fixed dunes where stock grazing has been discontinued. See the coastal habitats supporting document for further details

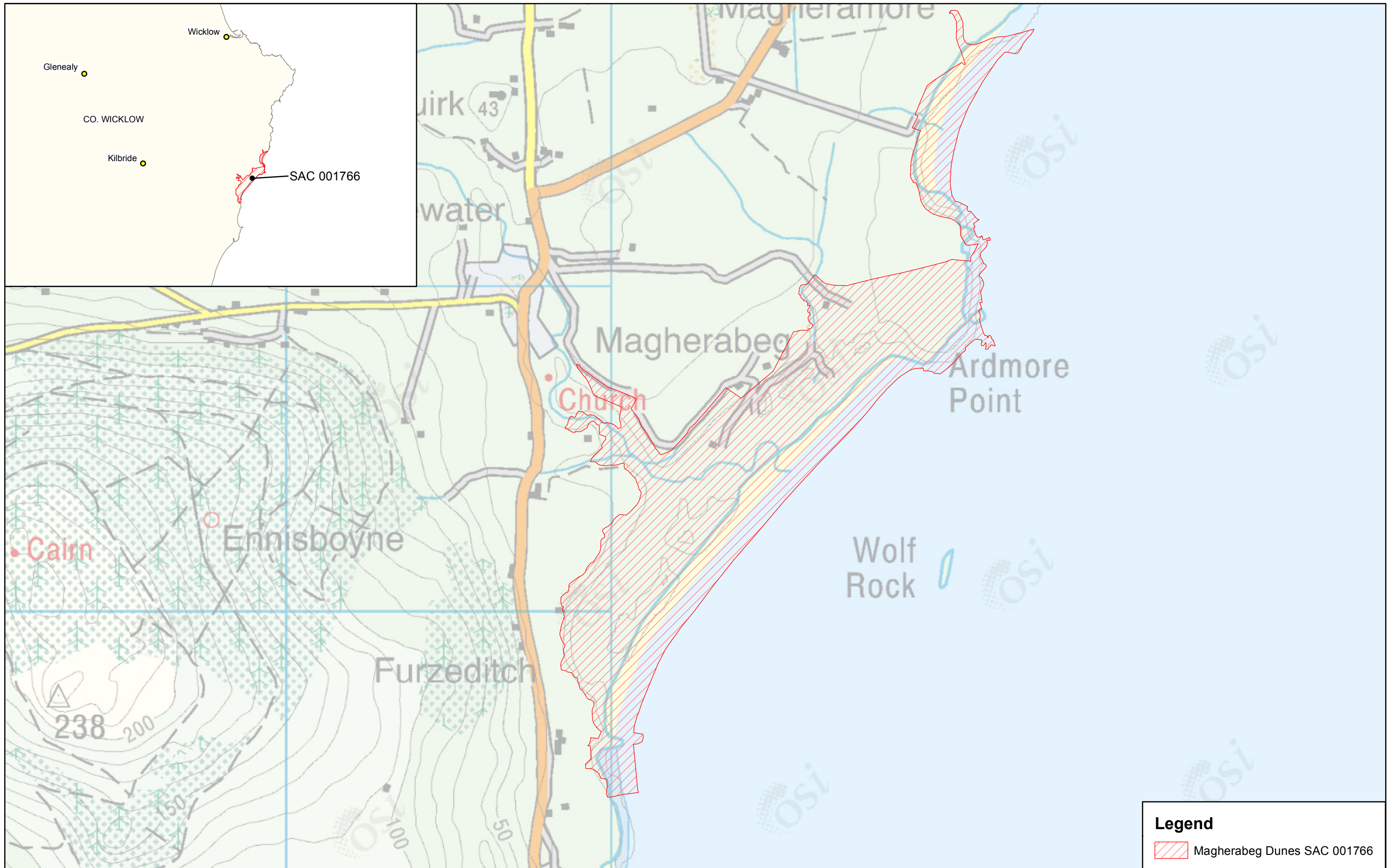
## Conservation Objectives for : Magherabeg Dunes SAC [001766]

### 7220 Petrifying springs with tufa formation (Cratoneurion)


To restore the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion) in Magherabeg Dunes SAC, which is defined by the following list of attributes and targets:


Attribute	Measure	Target	Notes
Habitat area	Square metres	Area stable or increasing, subject to natural processes	A total of 275m <sup>2</sup> of this habitat was recorded at three locations within Magherabeg Dunes SAC at Ardmore Point by Lyons (2015) (see map 3). The first (site ID: PS091a) was recorded as tufa-forming seepage and dry, inactive tufa on rocky shore with an area of c.25m <sup>2</sup> , the second (site ID: PS091b) as tufa-forming seepages from coastal cliffs with an area of c.200m <sup>2</sup> and the third (site ID: PS091c) has been described as a spring line with tufa cascades and stream crust tufa over coastal rocks with an area of c.50m <sup>2</sup>
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 3 for point locations	This habitat has been recorded at three locations at Ardmore Point within Magherabeg Dunes SAC by Lyons (2015). Lyons and Kelly (2016) describe eight plant communities of Irish petrifying springs based on relevé data. Two of the springs in this SAC (PS091a and PS091c) fall into the <i>Eucladium verticillatum-Pellia endiviifolia</i> tufa cascades group and the other (PS091b) into the <i>Schoenus nigricans</i> springs group (Lyons, 2015). Further information on these and all the vegetation communities associated with this habitat is presented in Lyons and Kelly (2016)
Hydrological regime: height of water table; water flow	Metres; metres per second	Maintain appropriate hydrological regimes	Petrifying springs rely on permanent irrigation, usually from upwelling groundwater sources or seepage sources (Lyons and Kelly, 2013). Water flow should not be altered anthropogenically. See Lyons and Kelly (2016) for further details
Water quality - nitrate level	mg/l	No increase from baseline nitrate level and less than 10mg/l	Target based on data from McGarrigle et al. (2010). See Lyons and Kelly (2016) for further details
Water quality - phosphate level	µg/l	No increase from baseline phosphate level and less than 15µg/l	Based on data from Lyons (2015). See Lyons and Kelly (2016) for further details
Vegetation composition: positive indicator species	Number per spring	At least three positive/high quality indicator species as listed in Lyons and Kelly (2016) and no loss from baseline number	Based on Lyons and Kelly (2016), where the lists of positive and high quality indicator species are presented. The positive indicator species <i>Didymodon tophaceus</i> , <i>Eucladium verticillatum</i> and red fescue ( <i>Festuca rubra</i> ) were found at all three sites, black bog-rush ( <i>Schoenus nigricans</i> ) was recorded at PS091b and PS091c, bog pimpernel ( <i>Anagallis tenella</i> ), <i>Campyllum stellatum</i> , <i>Chara vulgaris</i> , <i>Rivularia biasoletiana</i> and brookweed ( <i>Samolus valerandi</i> ) were recorded at PS091b and the moss <i>Palustriella commutata</i> at PS091c (Lyons, 2015)

Vegetation composition: negative indicator species	Cover (DAFOR scale)	Potentially negative indicator species should not be Dominant or Abundant; invasive species should be absent	Based on Lyons and Kelly (2016), where the lists of potentially negative herbaceous, bryophyte (and alga) and woody species are presented. See Lyons and Kelly (2016) also for details on potentially invasive species, including sycamore ( <i>Acer pseudoplatanus</i> ) which is invasive in non-wooded springs and a negative indicator species in wooded springs. If two or more potentially negative bryophyte species are present, and if at least two are Frequent, or at least one is Abundant, then the habitat fails for this attribute. See Lyons and Kelly (2016) for further details. The moss <i>Cratoneuron filicinum</i> was recorded as a potentially negative bryophyte species and common reed ( <i>Phragmites australis</i> ) was recorded as a potentially negative herbaceous species at PS091c, but neither species was Dominant or Abundant (Lyons, 2015)
Vegetation structure: sward height	Centimetres	Field layer height between 10cm and 50cm (except for bryophyte-dominated ground <10cm)	See Lyons and Kelly (2016) for further details
Physical structure: trampling/dung	Cover (DAFOR scale)	Cover should not be Dominant or Abundant	See Lyons and Kelly (2016) for further details



**Legend**

 Magherabeg Dunes SAC 001766



An Roinn Ealaíon, Oidhreachta,  
Gnóthaf Réigiúnacha, Tuaithe agus Gaeltachta  
Department of Arts, Heritage,  
Regional, Rural and Gaeltacht Affairs

**MAP 1:  
MAGHERABEG DUNES SAC  
CONSERVATION OBJECTIVES  
SAC DESIGNATION**

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

**SITE CODE:  
SAC 001766; version 3.  
CO. WICKLOW**

0 0.1 0.2 0.3 0.4 0.5 km

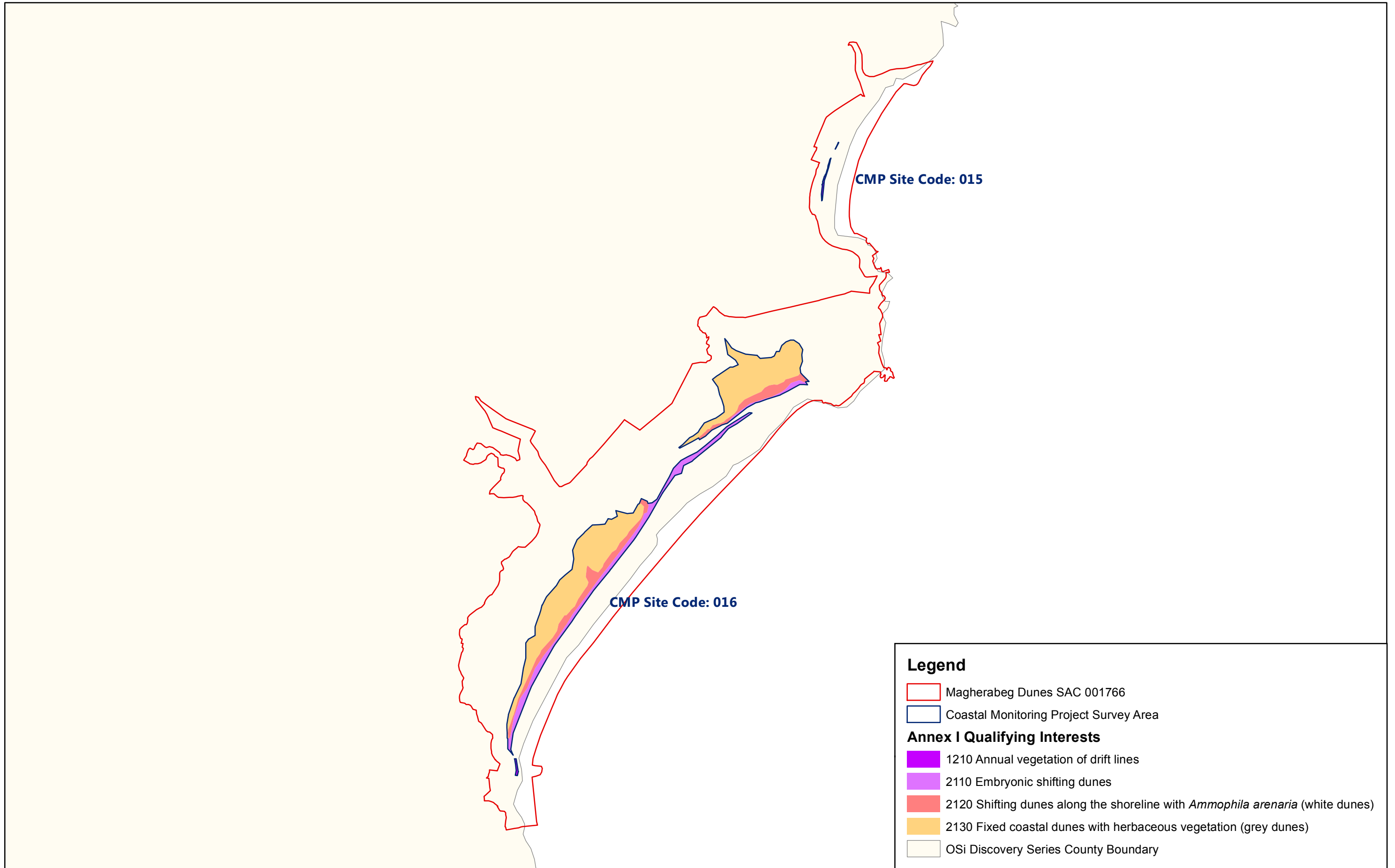
The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.  
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Níl sna teorainneacha ar na léarscáileanna ach nod garshuíomhach ginearálta. Féadfar athbheithníthe a déanamh ar theorainneacha na gceantar comharthaithe. Suirbhéarachta Ordonáis na hÉireann Ceadúnas

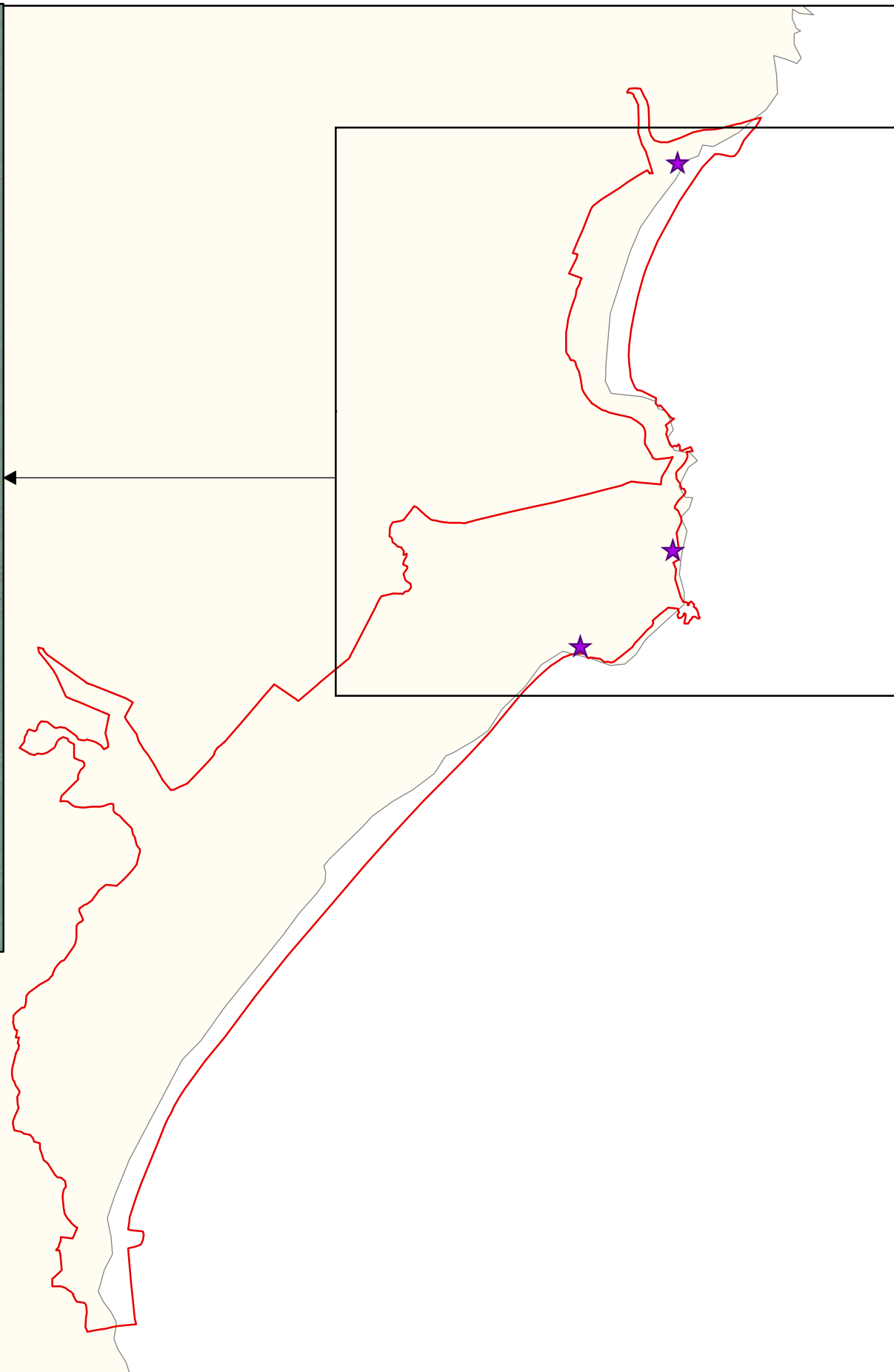
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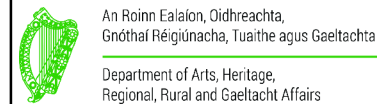






**Legend**

- ★ 7220 Petrifying springs with tufa formation (*Cratoneurion*)
- ▭ Magherabeg Dunes SAC 001766
- ▭ OSi Discovery Series County Boundary

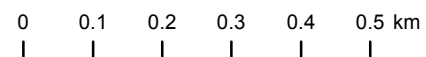


An Roinn Ealaíon, Oidhreacht,  
Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta  
Department of Arts, Heritage,  
Regional, Rural and Gaeltacht Affairs

**MAP 3:  
MAGHERABEG DUNES SAC  
CONSERVATION OBJECTIVES  
PETRIFYING SPRINGS**

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

**SITE CODE:  
SAC 001766; version 3.  
CO. WICKLOW**



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Date: Nov 2016**