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Conservation Objectives Series

Kilkieran Bay and Islands SAC 002111

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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***

002111	Kilkieran Bay and Islands SAC
1140	Mudflats and sandflats not covered by seawater at low tide
1150	Coastal lagoons*
1160	Large shallow inlets and bays
1170	Reefs
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
1355	Otter *Lutra lutra*
1365	Harbour seal *Phoca vitulina*
1410	Mediterranean salt meadows (Juncetalia maritimi)
1833	Slender Naiad *Najas flexilis*
21A0	Machairs (* in Ireland)
6510	Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

Please note that this SAC overlaps with Slyne Head to Ardmore Point Islands SPA (004159) and adjoins Connemara Bog Complex SAC (002034). See map 2. The conservation objectives for this site should be used in conjunction with those for overlapping and adjacent sites as appropriate.

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 :	1989 survey of breeding herds of common seal (*Phoca vitulina*) with reference to previous surveys
Author :	Harrington, R.
Series :	Unpublished report to Wildlife Service
Year :	1996
Title :	Biomar survey of Irish machair sites
Author :	Crawford, I.; Bleasdale, A.; Conaghan, J.
Series :	Irish Wildlife Manual No. 3
Year :	2004
Title :	Harbour seal population assessment in the Republic of Ireland: August 2003
Author :	Cronin, M.; Duck, C.; O Cadhla, O.; Nairn, R.; Strong, D.; O'Keeffe, C.
Series :	Irish Wildlife Manual No. 11
Year :	2004
Title :	Summary of National Parks and Wildlife Service surveys for common (harbour) seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*), 1978 to 2003
Author :	Lyons, D.O.
Series :	Irish Wildlife Manual No. 13
Year :	2005
Title :	Surveys of sensitive subtidal benthic communities
Author :	MERC
Series :	Unpublished Report
Year :	2006
Title :	Otter survey of Ireland 2004/2005
Author :	Bailey, M.; Rochford, J.
Series :	Irish Wildlife Manual No. 23
Year :	2007
Title :	Inventory of Irish Coastal Lagoons v.2
Author :	Oliver, G.
Series :	Unpublished report to NPWS
Year :	2009
Title :	Coastal Monitoring Project 2004-2006
Author :	Ryle, T.; Murray, A.; Connolly, K.; Swann, M.
Series :	Unpublished report to NPWS
Year :	2009
Title :	Saltmarsh monitoring project 2007-2008
Author :	McCorry, M; Ryle, T.
Series :	Unpublished report to NPWS
Year :	2013
Title :	Irish semi-natural grasslands survey 2007-2012
Author :	O'Neill, F.H.; Martin, J.R.; Devaney, F.M.; Perrin, P.M.
Series :	Irish Wildlife Manual No. 78

Year :	2014
Title :	Kilkieran Bay and Islands SAC (site code 2111) Conservation objectives supporting document-coastal habitats V1
Author :	NPWS
Series :	Conservation objectives supporting document
Year :	2014
Title :	Kilkieran Bay and Islands SAC (site code 2111) Conservation objectives supporting document-marine habitats V1
Author :	NPWS
Series :	Conservation objectives supporting document
Year :	2014
Title :	Kilkieran Bay and Islands SAC (site code 2111) Conservation objectives supporting document-lagoons V1
Author :	NPWS
Series :	Conservation objectives supporting document
Year :	2014
Title :	Kilkieran Bay and Islands SAC (site code 2111) Conservation objectives supporting document-*najas flexilis* V1
Author :	NPWS
Series :	Conservation objectives supporting document

Other References

Year :	1980
Title :	An assessment of the status of the common seal (*Phoca vitulina vitulina*) in Ireland
Author :	Summers, C.F.; Warner, P.J.; Nairn, R.G.W.; Curry, M.G.; Flynn, J.
Series :	Biological Conservation 17: 115-123
Year :	1982
Title :	Otter survey of Ireland
Author :	Chapman, P.J.; Chapman, L.L.
Series :	Unpublished Report to Vincent Wildlife Trust
Year :	1983
Title :	An assessment of the breeding populations of common seals (*Phoca vitulina vitulina* L.) in the Republic of Ireland during 1979
Author :	Warner, P.J.
Series :	Irish Naturalists' Journal 21: 24-26
Year :	1991
Title :	The spatial organization of otters (*Lutra lutra*) in Shetland
Author :	Kruuk, H.; Moorhouse, A.
Series :	J. Zool, 224: 41-57
Year :	1997
Title :	The BioMar biotope viewer: a guide to marine habitats, fauna and flora in Britain and Ireland
Author :	Picton, B.E.; Costello, M.J.
Series :	Environmental Science Unit, Trinity College Dublin
Year :	2000
Title :	Aspects of the biology and ecology of adult Ceriantharia (Cnidaria: Anthozoa) with particular emphasis on Irish cerianthidae
Author :	Kelly, E.
Series :	Unpublished PhD thesis, National University of Ireland, Galway

Year :	2002
Title :	Distribution and behaviour of the harbour seal (*Phoca vitulina* L.) in greater Galway Bay
Author :	Doyle, T.
Series :	Unpublished BSc (Hons) thesis, National University of Ireland, Galway
Year :	2003
Title :	Kilkieran Bay seabed mapping project
Author :	Seabed Surveys International
Series :	Unpublished report to NPWS
Year :	2006
Title :	Otters - ecology, behaviour and conservation
Author :	Kruuk, H.
Series :	Oxford University Press
Year :	2006
Title :	The vegetation of Irish machair
Author :	Gaynor, K.
Series :	Biology and Environment: Proceedings of the Royal Irish Academy, vol 106B, No. 3: 311-321
Year :	2008
Title :	The phytosociology and conservation value of Irish sand dunes
Author :	Gaynor, K.
Series :	Unpublished PhD thesis, National University of Ireland, Dublin
Year :	2010
Title :	Otter tracking study of Roaringwater Bay
Author :	De Jongh, A.; O'Neill, L.
Series :	Unpublished draft report to NPWS
Year :	2011
Title :	Intertidal benthic surveys- Valencia Harbour/Portmagee Channel and Kilkieran Bay and Islands
Author :	APEM
Series :	APEM Scientific Report 411251 & 411341
Year :	2011
Title :	Subtidal benthic investigations in Kilkieran Bay and Islands (cSAC site code IE002111) Co. Galway
Author :	Aquafact
Series :	Unpublished report for the Marine Institute and NPWS
Year :	2011
Title :	Reef investigations in Kilkieran Bay and Islands (cSAC site code: IE002111) Co. Galway
Author :	Aquafact
Series :	Unpublished report to the Marine Institute and NPWS
Year :	2012
Title :	The status and management of oyster (*Ostrea edulis*) in Ireland
Author :	Tully, O; Clark, S.
Series :	Irish Fisheries Investigations No. 24
Year :	2013
Title :	Monitoring and assessment of Irish lagoons for the purposes of the EU Water Framework Directive, 2009-2011. Parts 1 and 2
Author :	Roden, C.M; Oliver, G.A.
Series :	Unpublished report to the Environmental Protection Agency

Spatial data sources

Year :	Interpolated 2013
Title :	1997 BioMar Survey; 2002 broadscale mapping survey; 2005 and 2010 subtidal surveys; 2010 intertidal surveys
GIS Operations :	Polygon feature classes from marine community types base data sub-divided based on interpolation of marine survey data. Expert opinion used as necessary to resolve any issues arising
Used For :	1140, 1170, Marine community types (maps 3, 6 and 7)
Year :	Revision 2011
Title :	Inventory of Irish Coastal Lagoons. Version 3
GIS Operations :	Clipped to SAC boundary
Used For :	1150 (map 4)
Year :	2005
Title :	OSi Discovery series vector data
GIS Operations :	High water mark (HWM) polyline feature class converted into polygon feature class; clipped to SAC boundary. EPA WFD transitional waterbody data erased from extent. Expert opinion used as necessary to resolve any issues arising
Used For :	1160 (map 5)
Year :	2005
Title :	OSi Discovery series vector data
GIS Operations :	High water mark (HWM) and low water mark (LWM) polyline feature classes converted into polygon feature classes and combined; EU Annex I Saltmarsh and Coastal data erased out if present
Used For :	Marine community types base data (map 7)
Year :	Revision 2010
Title :	Saltmarsh Monitoring Project 2007-2008. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary; overlapping regions with Coastal CO data investigated and resolved with expert opinion used
Used For :	1330, 1410 (map 8)
Year :	2009
Title :	Coastal Monitoring Project 2004-2006. Version 1
GIS Operations :	QI selected; clipped to SAC boundary; overlapping regions with Saltmarsh CO data investigated and resolved with expert opinion used
Used For :	21A0 (map 9)
Year :	2005
Title :	OSi Discovery series vector data
GIS Operations :	Creation of an 80m buffer on the marine side of the high water mark (HWM); creation of a 10m buffer on the terrestrial side of the HWM; combination of 80m and 10m HWM buffer datasets; creation of a 10m buffer on the terrestrial side of the river banks data; creation of 20m buffer applied to canal centreline data. These datasets are combined with the derived EPA WDF Waterbodies data and Coastal Lagoon data for the 1355 CO. Overlapping regions investigated and resolved; resulting dataset clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising. Creation of 250m buffer on marine side of HWM to highlight potential commuting points
Used For :	1355 (map 10)
Year :	2010
Title :	EPA WFD Waterbodies data
GIS Operations :	Creation of a 20m buffer applied to river and stream centreline data; creation of 80m buffer on the aquatic side of lake data; creation of 10m buffer on the terrestrial side of lake data. These datasets are combined with the derived OSi data and Coastal Lagoon data for the 1355 CO. Overlapping regions investigated and resolved; resulting dataset clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	1355 (map 10)

Year :	Revision 2011
Title :	Inventory of Irish Coastal Lagoons. Version 3
GIS Operations :	Creation of 80m buffer on the aquatic side of lagoon data; creation of 10m buffer on the terrestrial side of lagoon data. These datasets are combined with the derived Osi data and EPA WFD Waterbodies data for the 1355 CO. Overlapping regions are investigated and resolved; resulting dataset clipped to SAC boundaryExpert opinion used as necessary to resolve any issues arising
Used For :	1355 (map 10)
Year :	2013
Title :	NPWS rare and threatened species database
GIS Operations :	Dataset created from spatial references in database records. Expert opinion used as necessary to resolve any issues arising
Used For :	1365 (map 11)
Year :	2005
Title :	OSi Discovery series vector data
GIS Operations :	High Water Mark (HWM) polyline feature class converted into polygon feature class; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	1365 (map 11)
Year :	2013
Title :	NPWS *Najas flexilis* data
GIS Operations :	Lake habitat for species clipped to SAC boundary
Used For :	1833 (map 12)

1140 Mudflats and sandflats not covered by seawater at low tide

To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 3	Habitat area was estimated using OSi data as 180ha
Community distribution	Hectares	Conserve the following community type in a natural condition: Intertidal sand with polychaetes community complex. See map 7	Based on an intertidal survey undertaken in 2010 (APEM, 2011). See marine supporting document for further information

1150 Coastal lagoons

To maintain the favourable conservation condition of Coastal lagoons in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable, subject to natural processes. Favourable reference area-122.8ha. See map 4	Areas calculated from spatial data derived from Oliver, 2007 for 11 sites: codes IL053-IL060; IL064-IL066. NB other, as yet unmapped lagoons may be present in the SAC. See lagoon supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 4 for mapped lagoons	IL053-IL060; IL064-IL066 in Oliver, 2007. NB other, as yet unmapped lagoons may be present in the SAC. See lagoon supporting document for further details
Salinity regime	Practical salinity units (psu)	Median annual salinity and temporal variation within natural ranges	The lagoons in the SAC vary from oligohaline to euhaline. See lagoon supporting document for further details
Hydrological regime	Metres	Annual water level fluctuations and minima within natural ranges	Lagoons listed for this SAC vary in depth. See lagoon supporting document for further details
Barrier: connectivity between lagoon and sea	Permeability	Appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management	The lagoons within this SAC have either rock/peat or saltmarsh barrier types. See lagoon supporting document for further details
Water quality: Chlorophyll *a*	µg/L	Annual median chlorophyll *a* within natural ranges and less than 5µg/L	Target based on Roden and Oliver (2013). See lagoon supporting document for further details
Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Annual median MRP within natural ranges and less than 0.1mg/L	Target based on Roden and Oliver (2013). See lagoon supporting document for further details
Water quality: Dissolved Inorganic Nitrogen (DIN)	mg/L	Annual median DIN within natural ranges and less than 0.15mg/L	Target based on Roden and Oliver (2013). See lagoon supporting document for further details
Depth of macrophyte colonisation	Metres	Macrophyte colonisation to at least 2m depth	For shallow lagoons, it is expected the macrophytes should extend to their deepest points. See lagoon supporting document for further details
Typical plant species	Number and m^2	Maintain number and extent of listed lagoonal specialists, subject to natural variation	Species listed in Oliver, 2007. See lagoon supporting document for further details
Typical animal species	Number	Maintain listed lagoon specialists, subject to natural variation	Species listed in Oliver, 2007. See lagoon supporting document for further details
Negative indicator species	Number and % cover	Negative indicator species absent or under control	Low salinity, shallow water and elevated nutrient levels increase the threat of un-natural encroachment by reedbeds

1160 Large shallow inlets and bays

To maintain the favourable conservation condition of Large shallow inlets and bays in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 5	Habitat area was estimated as 18,760ha using OSi data and the Transitional Water Body area as defined under the Water Framework Directive. See marine supporting document for further details
Community extent	Hectares	Maintain the extent of the *Zostera*- and maërl-dominated community complexes and the *Pachycerianthus multiplicatus*-dominated community, subject to natural processes. See map 7	Based on a 1994 BioMar survey (Picton and Costello, 1997), 2002 acoustic mapping and groundtruthing data (SSI, 2003) and 2005 diver observations (MERC, 2005). See marine supporting document for further details
Community structure: *Zostera* density	Shoots per m²	Conserve the high quality of the *Zostera*-dominated community complex, subject to natural processes	Based on 2005 diver observations (MERC, 2005). See marine supporting document for further details
Community structure	Biological composition	Conserve the high quality of the maërl-dominated community complex, subject to natural processes	Based on 2002 grab sample data (SSI, 2003) and 2005 diver observations (MERC, 2005). See marine supporting document for further details
Community structure	Species abundance	Conserve the high quality of the *Pachycerianthus multiplicatus*-dominated community, subject to natural processes	Based on the 1994 BioMar survey (Picton and Costello, 1997), Kelly (2001) and 2005 diver observations (MERC, 2005). See marine supporting document for further details
Community distribution	Hectares	Conserve the following communities in a natural condition: Intertidal sand with polychaetes community complex; Mixed sediment dominated by polychaetes community complex; Sand with nemerteans and crustaceans community complex; Deep water sand dominated by bivalves and polychaetes community complex; Reef communities (as listed under 1170). See map 7	Based on the 1994 BioMar survey (Picton and Costello, 1997), an acoustic mapping and groundtruthing survey in 2002 (SSI, 2003) and intertidal (APEM, 2011) and subtidal (Aquafact 2011a, b) surveys in 2010. See marine supporting document for further information

1170 Reefs

To maintain the favourable conservation condition of Reefs in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 6	Habitat area estimated as 9,084ha from 2002 acoustic mapping data (SSI, 2003), 2010 subtidal reef survey (Aquafact 2011) and intertidal survey (APEM, 2011)
Distribution	Occurrence	The distribution of reefs remains stable, subject to natural processes. See map 6 for mapped distribution	Based on 2002 acoustic mapping data (SSI, 2003), 2010 subtidal reef survey (Aquafact 2011) and intertidal survey (APEM, 2011)
Community structure	Biological composition	Conserve the following community types in a natural condition: Intertidal reef community complex; Subtidal sponge and ascidian community complex; Exposed to moderately exposed subtidal reef community complex; Deep water faunal crust and sponge community complex; *Laminaria*-dominated community complex. See map 7	Based on 2002 acoustic mapping data (SSI, 2003), 2010 subtidal reef survey (Aquafact 2011) and intertidal survey (APEM, 2011). See marine supporting document for further details

1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in Kilkieran Bay and Islands 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 sub-sites mapped: Lettermullan-West - 0.53ha; Teeranea - 1.59ha; Lettermore South - 3.34ha; Bealadangan - 3.46ha; Kinvarra - 6.34ha; Turloughbeg - 0.43ha. See map 8	Based on data from the Saltmarsh Monitoring Project (SMP) (McCorry and Ryle, 2009). Six sub-sites that supported Atlantic salt meadow were mapped (15.68ha) and additional areas of potential saltmarsh (22.38ha) were identified by an examination of aerial photographs, giving a total estimated area of 38.07ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 8 for known distribution	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). Maintaining the sediment supply is vital for the continued development and natural functioning of a saltmarsh system. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). The efficiency of sediment circulation throughout a saltmarsh depends on the creek pattern. Creeks and pans are well developed at Kinvarra. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). An interesting feature of most of the sub-sites in this SAC is that the saltmarsh habitats occur in mosaic with blanket bog. See coastal habitats supporting document for further details. Some of the coastal lagoons are fringed by saltmarsh (see also the conservation objective for 1150)
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from McCorry and Ryle (2009). Grazing occurs at all of the sub-sites in this SAC and intensity varies from moderate to high. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated	Based on data from McCorry and Ryle (2009). Since all of the sub-sites are grazed and owing to the soft nature of the underlying peat substrate, exposed bare patches are frequent. See 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 SMP (McCorry and Ryle, 2009)	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	There is currently no common cordgrass (*Spartina anglica*) in this SAC. Prevent establishment of cordgrass	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details

1410 Mediterranean salt meadows (Juncetalia maritimi)

To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in Kilkieran Bay and Islands 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 sub-sites mapped: Teeranea - 0.51ha; Lettermullan West - 2.01ha; Lettermore South - 0.46ha; Bealadangan - 0.29ha; Kinvarra - 54.81ha; Turloughbeg - 0.27ha. See map 8	Based on data from the Saltmarsh Monitoring Project (SMP) (McCorry and Ryle, 2009). Six sub-sites that support Mediterranean salt meadows (MSM) were mapped (58.36ha) and additional areas of potential saltmarsh (21.25ha) were identified from an examination of aerial photographs, giving a total estimated area of 79.60ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 8 for known distribution	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). Maintaining the sediment supply is vital for the continued development and natural functioning of a saltmarsh system. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). The efficiency of sediment circulation throughout a saltmarsh depends on the creek pattern. Creeks and pans are well developed at Kinvarra. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Mediterranean salt meadows is found high up in the saltmarsh but requires occasional tidal inundation. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). An interesting feature of most of the sub-sites in this SAC is that the saltmarsh habitats occur in mosaic with blanket bog. See coastal habitats supporting document for further details. Some of the coastal lagoons are fringed by saltmarsh (see also the conservation objective for 1150)
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward	Based on data from McCorry and Ryle (2009). Grazing occurs at all of the sub-sites in this SAC and intensity varies from moderate to high. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Based on data from McCorry and Ryle (2009). Since all of the sub-sites are grazed and owing to the soft nature of the underlying peat substrate, exposed bare patches are frequent. See 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 characteristic species listed in SMP (McCorry and Ryle, 2009)	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	There is currently no common cordgrass (*Spartina anglica*) in this SAC. Prevent establishment of cordgrass	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details

21A0 Machairs (* in Ireland)

To restore the favourable conservation condition of Machairs in Kilkieran Bay and Islands 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 sub-sites mapped: Finish Island - 1.88ha; Mason Island - 4.95ha; Mweenish Island - 19.85ha. See map 9	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009). Three sub-sites were mapped, giving a total estimated area of 26.68ha. NB further unsurveyed areas maybe present within the site, including on Finish Island proper. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 9 for known distribution	The largest area of machair recorded by the CMP is at Mweenish Island. See 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	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
Physical structure: hydrological and flooding regime	Water table levels; groundwater fluctuations (metres)	Maintain natural hydrological regimes	Based on data from Crawford et al. (1996), Gaynor (2006) and Ryle et al. (2009). 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). A range of coastal habitats have been identified at this site, as well as some important transitions to blanket bog and semi-natural grasslands. See coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage	Bare sand should be present but not more than 5% in total, subject to natural processes	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation structure: sward height	Centimeters	Maintain structural variation within sward	Based on data from Gaynor (2006, 2008) and Ryle et al. (2009). See 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 Ryle et al. (2009)	Based on data from Gaynor (2006) and Ryle et al. (2009). Notable species include Autumn lady's tresses (*Spiranthes spiralis*), which was recorded at Mason Island. See coastal habitats supporting document for further details
Vegetation composition: bryophytes	Occurrence	Bryophytes should be at least an occasional component of the vegetation	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) 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 coastal habitats supporting document for further details

6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

To maintain the favourable conservation condition of Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) in Kilkieran Bay and Islands 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	Extent of this habitat in this SAC is currently unknown
Habitat distribution	Occurrence	No decline, subject to natural processes	Distribution of this habitat in this SAC is currently unknown
Vegetation structure: broadleaf herb: grass ratio	Percentage	Broadleaf herb component of vegetation between 40 and 90%	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: sward height	Percentage	At least 50% of sward between 10cm and 50cm tall	Attribute and target based on O'Neill et al. (2013)
Vegetation composition: typical species	Number	At least seven positive indicator species present, including one "high quality" species	List of positive indicator species, including high quality species, identified by O'Neill et al. (2013)
Vegetation composition: negative indicator species	Percentage	Negative indicator species collectively not more than 20% cover, with cover by an individual species less than 10%	List of negative indicator species identified by O'Neill et al. (2013)
Vegetation composition: non-native species	Percentage	Cover of non-native species not more than 1%	Attribute and target based on O'Neill et al. (2013)
Vegetation structure: woody species and bracken	Percentage	Cover of woody species and bracken (*Pteridium aquilinum*) not more than 5%	Attribute and target based on O'Neill et al. (2013)
Physical structure: bare soil	Percentage	Not more than 10% bare soil	Attribute and target based on O'Neill et al. (2013)

1355 Otter *Lutra lutra*

To restore the favourable conservation condition of Otter in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range in west estimated at 70% (Bailey and Rochford, 2006)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 316ha above high water mark (HWM); 14ha along river banks/ around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007).
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 2996ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 4.4km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 24ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006) and wrasse and rockling in coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant increase. For guidance, see map 10	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed

1365 Harbour seal *Phoca vitulina*

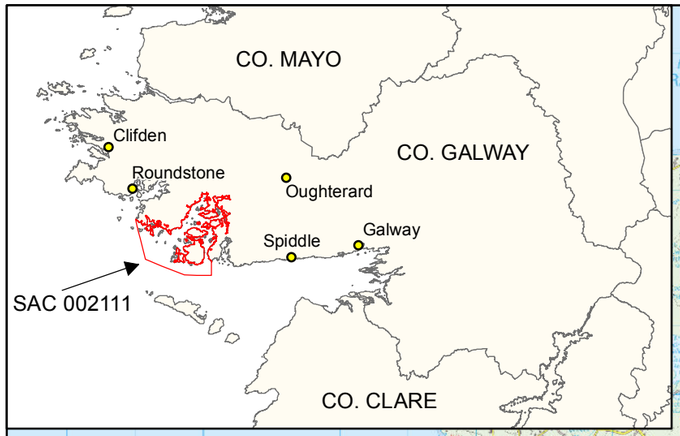
To maintain the favourable conservation condition of Harbour Seal in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use. See map 11	See marine supporting document for further details
Breeding behaviour	Breeding sites	Conserve breeding sites in a natural condition. See map 11	Attribute and target based on background knowledge of Irish breeding populations, review of data summarised by Summers et al. (1980), Warner (1983), Harrington (1990), Doyle (2002), Lyons (2004), and unpublished NPWS records. See marine supporting document for further details
Moulting behaviour	Moult haul-out sites	Conserve moult haul-out sites in a natural condition. See map 11	Attribute and target based on background knowledge of Irish populations, review of data from Doyle (2002), Lyons (2004), Cronin et al. (2004), and unpublished NPWS records. See marine supporting document for further details
Resting behaviour	Resting haul-out sites	Conserve resting haul-out sites in a natural condition. See map 11	Attribute and target based on background knowledge of Irish populations, review of data from Doyle (2002), Lyons (2004) and unpublished NPWS records. See marine supporting document for further details
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	See marine supporting document for further details

1833 Slender Naiad *Najas flexilis*

To maintain the favourable conservation condition of Slender Naiad in Kilkieran Bay and Islands SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population extent	Hectares; distribution	No change to the spatial extent of *Najas flexilis* within each lake, subject to natural processes. See map 12 for known locations	See *Najas flexilis* supporting document for further details
Population depth	Metres	No change to the depth range of *Najas flexilis* within each lake, subject to natural processes	See *Najas flexilis* supporting document for further details
Population viability	Plant traits	No decline in plant fitness, subject to natural processes	See *Najas flexilis* supporting document for further details
Population abundance	Metres square	No change to the cover abundance of *Najas flexilis*, subject to natural processes	See *Najas flexilis* supporting document for further details
Species distribution	Occurrence	No decline, subject to natural processes	See *Najas flexilis* supporting document for further details
Habitat extent	Hectares	No decline, subject to natural processes	See *Najas flexilis* supporting document for further details
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat for the species	See *Najas flexilis* supporting document for further details
Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry	See *Najas flexilis* supporting document for further details
Water quality	Various	Maintain appropriate water quality to support the populations of the species	See *Najas flexilis* supporting document for further details
Acidification status	pH units, mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the populations of *Najas flexilis*, subject to natural processes	See *Najas flexilis* supporting document for further details
Water colour	mg/L PtCo	Maintain appropriate water colour	See *Najas flexilis* supporting document for further details
Associated species	Composition and abundance	Maintain appropriate associated species and vegetation communities	See *Najas flexilis* supporting document for further details



MAP 1:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

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

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

Legend

Kilkieran Bay and Islands SAC 002111

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Department of Arts, Heritage and the Gaeltacht

N

Map Version 1
Date: Jan 2014

SAC 002034

SAC 002034

SAC 002034

SPA 004159

SAC 002111

Legend

- Connemara Bog Complex SAC 002034
- Kilkieran Bay and Islands SAC 002111
- Slyne Head To Ardmore Point Islands SPA 004159
- OSi Discovery Series County Boundaries

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Department of Arts, Heritage and the Gaeltacht

MAP 2:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
ADJOINING / OVERLAPPING DESIGNATIONS
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002034; version 3.01, SAC 002111; version 3.02.
SPA 004159; version 1.01. CO. GALWAY

0 2 4 6 8 10 km

N

Map Version 1
Date: Jan 2014

Legend

- Kilkieran Bay and Islands SAC 002111
- 1140 Mudflats and sandflats not covered by sea water at low tide
- OSi Discovery Series County Boundaries

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MAP 3:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
TIDAL MUDFLATS AND SANDFLATS

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

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014

L. an Mhuilinn (Mill L.) IL064

L. an Chaorain IL066

L. Ateesky IL065

L. an Aibhnin IL058

L. Fhada IL056

Lough Fhada upper pools IL054

L. Tanai IL057

L. an Ghadai IL055

L. Cara na gCaorach IL060

Loch Cara Fionnla IL059

Lettermullen IL053

Legend

- Kilkieran Bay and Islands SAC 002111
- 1150 *Coastal lagoons
- OSi Discovery Series County Boundaries

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MAP 4:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
COASTAL LAGOONS

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

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014

Legend

- Kilkieran Bay and Islands SAC 002111
- 1160 Large shallow inlets and bays
- OSi Discovery Series County Boundaries

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MAP 5:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
LARGE SHALLOW INLETS AND BAYS

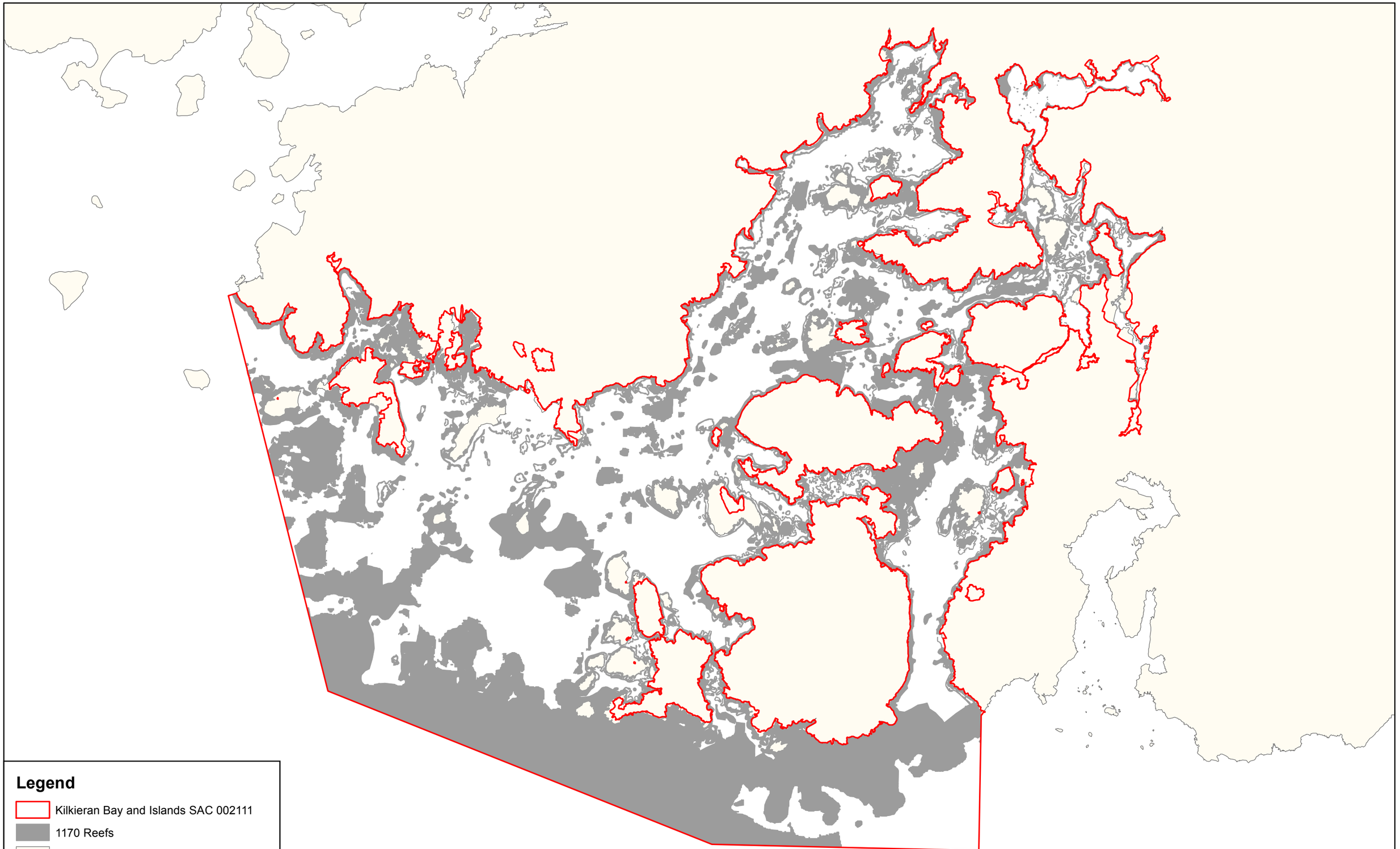
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014



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MAP 6: KILKIERAN BAY AND ISLANDS SAC CONSERVATION OBJECTIVES REEFS

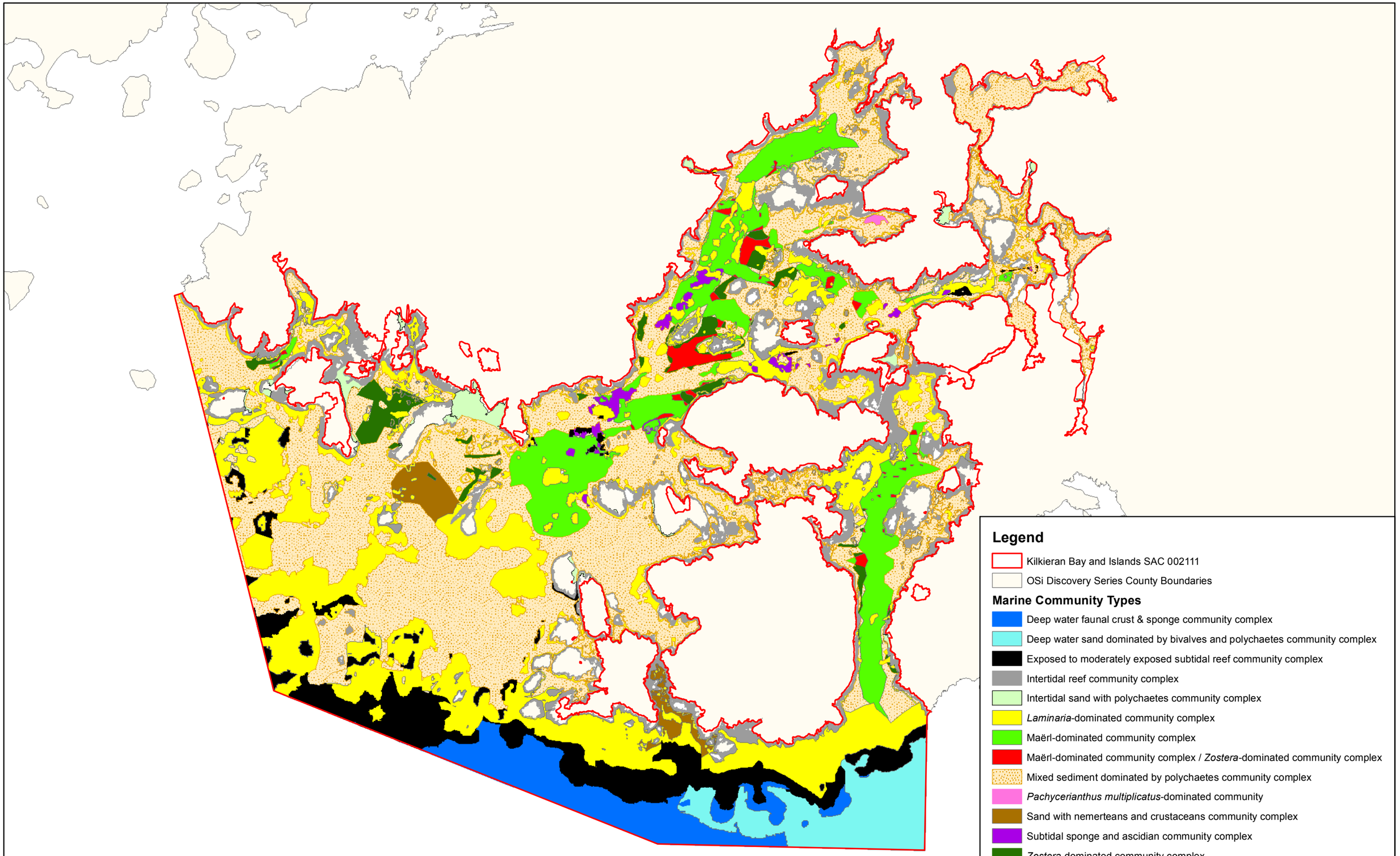
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014



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MAP 7:
KILKIERAN BAY AND ISLANDS SAC CONSERVATION OBJECTIVES MARINE COMMUNITY TYPES

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

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014

Legend

Kilkieran Bay and Islands SAC 002111

OSi Discovery Series County Boundaries

SMP: 0098 Saltmarsh Monitoring Project Site Codes

Saltmarsh Habitats

Qualifying Interests

1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

1330 / 1410 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) / Mediterranean salt meadows (Juncetalia maritimi)

1410 Mediterranean salt meadows (Juncetalia maritimi)

Potential 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

Potential 1330 / 1410 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) / Mediterranean salt meadows (Juncetalia maritimi)

Non Qualifying Interests

1310 *Salicornia* and other annuals colonising mud and sand

SMP: 0103

SMP: 0102

SMP: 0100

SMP: 0101

SMP: 0098

SMP: 0099

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MAP 8:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
SALTMARSH HABITATS

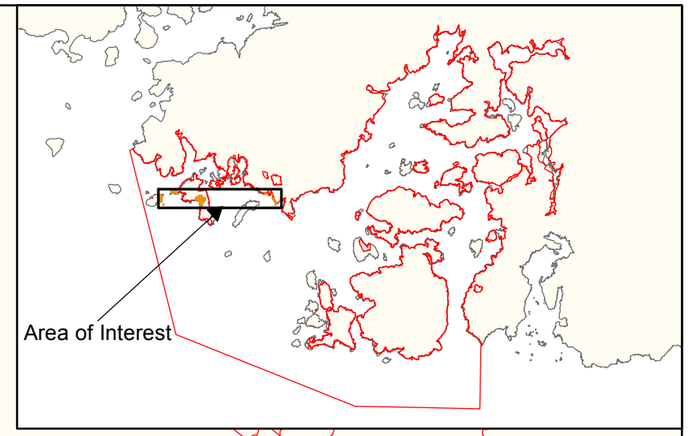
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014



CMP:095

CMP:096

CMP:094

Legend

Kilkieran Bay and Islands SAC 002111

OSi Discovery Series County Boundaries

CMP:094 Coastal Monitoring Project Site Codes

Sand Dune Habitats

Qualifying Interests

21A0 Machairs (*in Ireland)

Non Qualifying Interests

1210 Annual vegetation of drift lines

1220 Perennial vegetation of stony banks

2110 Embryonic shifting dunes

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MAP 9:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
SAND DUNE HABITATS

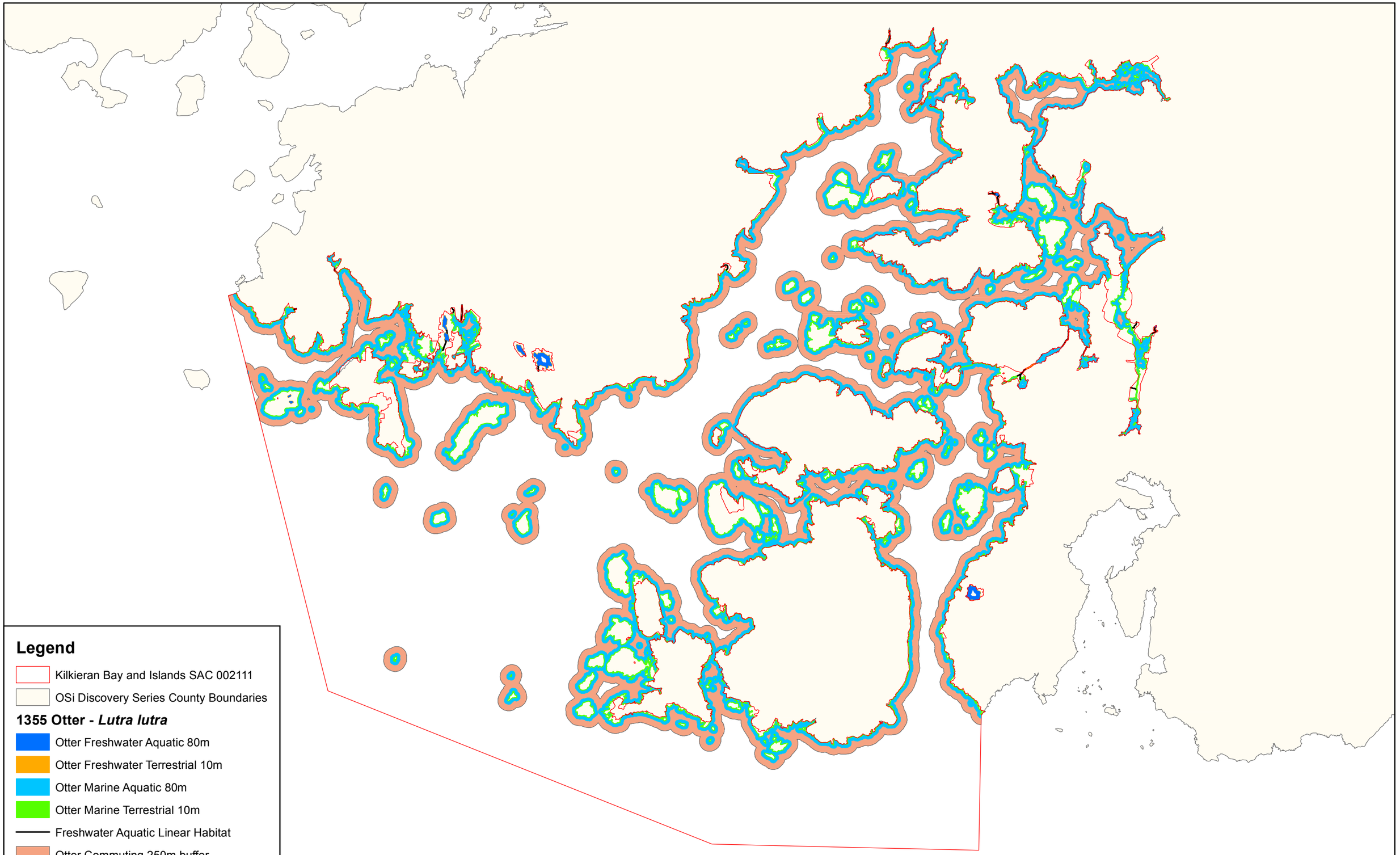
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 0.25 0.5 0.75 1 km

N

Map Version 1
Date: Jan 2014



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MAP 10:
KILKIERAN BAY AND ISLANDS SAC CONSERVATION OBJECTIVES OTTER

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

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014

Legend

- Kilkieran Bay and Islands SAC 002111
- 1365 Harbour Seal - *Phoca vitulina* breeding sites
- 1365 Harbour Seal - *Phoca vitulina* moulting sites
- 1365 Harbour Seal - *Phoca vitulina* resting sites
- 1365 Harbour Seal - *Phoca vitulina* habitat
- OSi Discovery Series County Boundaries

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MAP 11:
KILKIERAN BAY AND ISLANDS SAC CONSERVATION OBJECTIVES HARBOUR SEAL

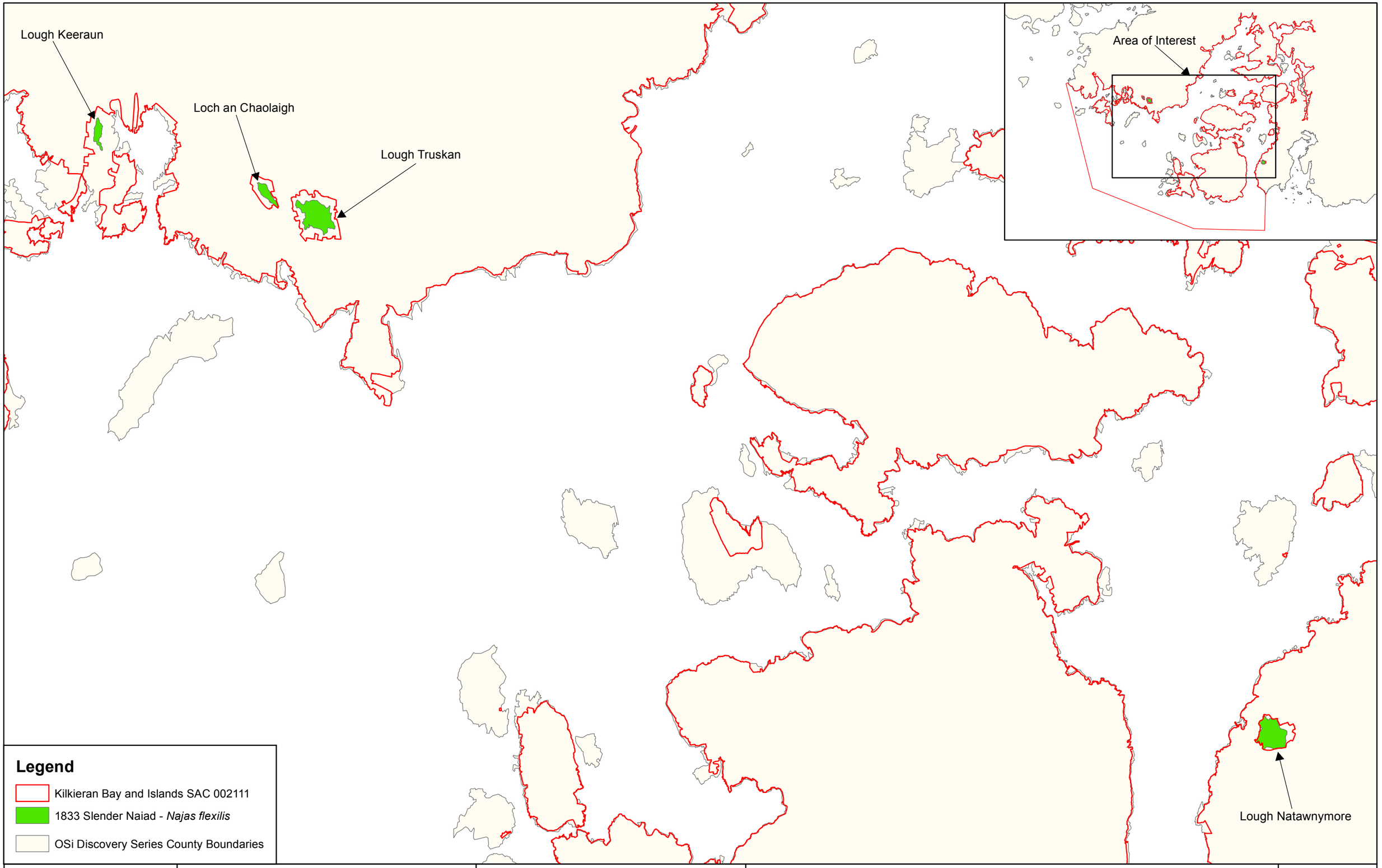
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 1 2 3 4 5 km

N

Map Version 1
Date: Jan 2014



Legend

- Kilkieran Bay and Islands SAC 002111
- 1833 Slender Naiad - *Najas flexilis*
- OSi Discovery Series County Boundaries

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MAP 12:
KILKIERAN BAY AND ISLANDS SAC
CONSERVATION OBJECTIVES
SLENDER NAIAD

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

SITE CODE:
SAC 002111; version 3.02. CO. GALWAY

0 0.5 1 1.5 2 km

N

Map Version 1
Date: Jan 2014