

**Habitats Regulations Assessment (HRA)
Marine Conservation Zone (MCZ) Assessment**



**Strangford Lough Yacht Club (SLYC)
Whiterock Bay, Strangford Lough, Co. Down**

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Contents

1. Introduction	1
Statement of Authority	2
Summary Conclusions	2
Terms of Use	2
Resources & Information	3
Legislation	3
National Site Network (NSN) & Habitats Regulations Assessment (HRA)	4
The Marine Act & MCAA – Marine Conservation Zones & MCZ Assessment, Marine Licensing	5
Areas of Special Scientific Interest (ASSI)	6
2. Habitats Regulations Assessment (HRA)	7
Assessment Methodology	7
Background Information – The Site & Project	8
Site & Surroundings	8
Existing Structures & Current Condition	8
Proposed Repairs	9
Background Information – National Sites Network (NSN)	10
Site Identification, Screening & Rationale	10
NSN Sites – Detailed Information	11
HRA Stage 1 – Screening	13
Conclusions	20
HRA Stage 2 – Appropriate Assessment (AA)	20
Impact Assessment & Mitigation	20
Assessment of Effects	26
Mitigation	29
Conclusions	29
3. Marine Conservation Zone (MCZ) Assessment	30
Assessment Methodology	30
Background Information	30
Site, Surroundings & Proposed Works	30
Strangford Lough MCZ	31
MCZ Assessment	32
Screening	32
Stage 1 Assessment	33
Stage 2 Assessment	33
Summary	34
Annex A: NSN Site Information	35

1. Introduction

- 1.1 The submerged concrete guide piles that support the floating pontoon at Strangford Lough Yacht Club (SLYC) in Whiterock, Co. Down [Figure 1; Plates 1.1 & 1.2],¹ are to be repaired *in-situ*.



Plate 1.1: The Site – the floating pontoon (far end of linkspan), taken from the SLYC on-shore compound at low-water [June 2025]



Plate 1.2: The Site – the floating pontoon & guide piles at low water; SLYC on-shore compound to the rear of frame [June 2025]

- 1.2 This report, provided in support of an application for a Marine Construction License, sets out the (shadow) Habitats Regulations Assessment (HRA) and Marine Conservation Zone (MCZ) Assessment – the Marine Biosecurity Management Plan (MBMP) is provided under separate cover.²

¹ **Cover:** The Site – the floating pontoon at SLYC with guide piles at low-water [June 2025]

² 'Marine Biosecurity Management Plan (MBMP): Strangford Lough Yacht Club (SLYC), Whiterock Bay, Strangford Lough, Co. Down' (GGA-2025-018-2 final v2 June 2025).

Statement of Authority

- 1.3 HRA and MCZ Assessment have been conducted and reported by [REDACTED].
- 1.4 [REDACTED] is the Principal of [REDACTED] an independent environmental and ecological consultancy focused on sustainable development. He holds an Honours degree in Environmental Science (B.Sc. (Hons.), University of Stirling, 2000), a Master of Science in Environmental Change (M.Sc., King's College, London 2001) and a Master of Laws in Environmental Law (L.L.M., Queen's University, Belfast 2014). He has over 21 years of professional experience in the public, private and voluntary sectors, including 5 years with the Northern Ireland Environment Agency (NIEA) and 10 years as a consultant and director at Corvus Consulting. He is a full member of the Chartered Institute of Ecology & Environmental Management (M.C.I.E.E.M.) and the Institution of Environmental Sciences (M.I.Env.Sc.), organisations requiring peer-review for membership and a high standard of professional conduct and is appointed to the panel of Specialist Consultants for *An Bord Pleanála*.
- 1.5 [REDACTED] also compiled and authored the Marine Biosecurity Management Plan (MBMP) and has been involved, as environmental/ecological consultant, with other projects at SLYC in recent years.

Summary Conclusions

- 1.6 HRA has demonstrated following Stage 2 (appropriate assessment), to the required standards of certainty and scientific rigour, that significant adverse impacts on the site integrity of Strangford Lough SAC, Strangford Lough SPA, North Channel SAC are unlikely to occur as a result of the project, individually or in-combination/cumulation with other projects and activities.
- 1.7 MCZ Assessment has demonstrated, to the required standards of certainty and scientific rigour, that no features for which Strangford Lough MCZ is notified will be lost, damaged, degraded or significantly disturbed and that the proposed works present no significant risk of hindering the achievement of conservation objectives.
- 1.8 Provided the detailed working methodology and environmental protection and mitigation measures (appropriate, straightforward, reasonable and of proven efficacy) are fully implemented, it is very unlikely that any wildlife will be disturbed or that the modest and discrete programme of works will have any appreciable influence on ecological, hydrological, and sedimentary conditions within the marine, littoral, or inter-tidal habitats of Whiterock Bay.

Terms of Use

- 1.9 This report is provided to our client, Strangford Lough Yacht Club (SLYC), their retained engineers, Amphora Consulting, and to DAERA, Marine Division (the competent authority), for their exclusive use and reliance. Once marked final, this report can be disseminated and published as necessary, and can be relied upon for consenting, but cannot be relied upon by any party for anything other than the original intended purpose without the agreement and express written confirmation and consent of the author (no reliance can be placed on any report marked as draft).
- 1.10 This report has been prepared, with diligence and care, based upon the author's professional experience and understanding of current and pending legislation, case law and best practice guidance. Neither GGA nor the author can be held responsible for any consequences which may arise from changes to legislation etc. made after this report is marked final which may render its content or conclusions outdated or invalid.

Resources & Information

- 1.11 Information was sourced from drawings³ and reports⁴ prepared by and for Amphora Consulting; site information published by DAERA and JNCC; e-mail correspondence between SLYC/Amphora and DAERA; the completed Marine Construction License application form; spatial data published by LPS & DAERA; and various online resources, standards/specifications, and guidance/reference documents. All sources are referenced within the text as appropriate.

Legislation

- 1.12 Much of the UK's environmental legislation, and various aspects of planning policy, are derived from European Union law. However, all relevant directives and regulations etc. that deal with natural habitats, wildlife and nature conservation were transposed into national legislation before the UK's exit from the EU and, other than some amendments to procedures and terminology to ensure continued effective operation, are essentially unchanged, no substantive amendments are expected in the short-medium term, and existing guidance continues to apply (with updates to correct terminology etc.). The UK courts consider rulings from the CJEU made up to the point of exit.⁵ The following summaries set out our current understanding and, while some uncertainty remains in the long-term, we are not aware of any pending or planned repeals or amendments etc.
- 1.13 The statutory provisions covering habitats and wildlife in NI originate primarily from international conventions. The CMS or Bonn Convention,⁶ a UNEP intergovernmental treaty concerned with the conservation of wildlife and habitats on a global scale, was adopted in 1979 and came into force and was ratified by the UK in 1985. Migratory species threatened with extinction are listed on Appendix I and migratory species that need or would significantly benefit from international co-operation are listed in Appendix II. Several agreements which aim to conserve specific taxa or populations have been concluded. The Berne Convention,⁷ adopted in 1979 and in force since 1982, imposes legal obligations which require the protection of over 500 species of wild plants and over 1000 species of wild animals. The principal aims are to ensure the conservation and protection of species and their natural habitats (Appendices I and II) and to increase co-operation between contracting parties and regulate exploitation, including migratory species (Appendix III).
- 1.14 The OSPAR Convention⁸ entered into force in 1998, replacing the Oslo and Paris Conventions (decisions, recommendations and agreements continue to apply). OSPAR seeks to protect the maritime area against the adverse effects of human activities, to prevent and eliminate pollution, to safeguard human health and to conserve and restore the marine areas and ecosystems of the North-East Atlantic (noting that issues relating to fisheries management and shipping are dealt with by the International Maritime Organisation). Annexes covering the prevention and elimination of pollution, the protection and conservation of marine ecosystems and biodiversity, the assessment of the quality of the marine environment and to extend cooperation over human activities that might adversely affect the marine environment have been adopted.

³ Drawing No. 160-AMP-XX-01-DR-S-01-02 *SLYC Extents of Site Boundary* (Amphora Consulting, February 2025). Drawing No. 160-AMP-XX-02-DR-S-10001-02 *Existing Pontoon and Pile Plan & Sections* (Amphora Consulting, February 2025). Drawing No. 160-AMP-XX-01-DR-S-10002-01 *Existing Pile Details* (Amphora Consulting, February 2025). Drawing No. 160-AMP-XX-01-DR-S-20003-02 *Proposed Pontoon Pile Construction Sequence* (Amphora Consulting, February 2025). Drawing No. 160-AMP-XX-01-DR-S-20005-01 *Proposed Pontoon Pile Plan & Sections* (Amphora Consulting, February 2025).

⁴ 'Method Statement – Strangford Lough Yacht Club' (Amphora Consulting, June 2025). 'Construction Environmental Management Plan (CEMP) – Strangford Lough Yacht Club' (Amphora Consulting, June 2025, rev. 01). 'Strangford Lough Yacht Club Pontoon Piles – Underwater Inspection Report' (Equilibrant Ltd., January 2025).

⁵ www.daera-ni.gov.uk/articles/biodiversity-and-eu-exit and www.daera-ni.gov.uk/brexit-questions-answers (4th January 2021). This guidance also notes that, under the EU Withdrawal Act, a court or tribunal may have regard to anything done by the EU, the CJEU or any other EU entity on or after exit day in so far as it is relevant to any matter before the court or tribunal, and that the EC can continue to bring infraction for 4 years from the end of the transition.

⁶ The Convention on the Conservation of Migratory Species of Wild Animals (Bonn, Germany, 1979)

⁷ The Convention on the Conservation of European Wildlife and Natural Habitats (Bern, Switzerland, 1979)

⁸ The Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris, France, 1992)

- 1.15 The Ramsar Convention,⁹ a UNESCO international treaty, aims to promote the conservation and wise use of all wetlands through local and national actions and international cooperation. The Convention uses a broad definition of wetlands. Under the ‘three pillars’, contracting parties commit to work towards the wise use of all their wetlands, designate suitable wetlands as Ramsar Sites and ensure their effective management, and cooperate on transboundary wetlands and shared wetland systems and species.
- 1.16 The protections required by the CMS and Berne Convention were established in the EU through the adoption, in 1979, of the Wild Birds Directive¹⁰ followed, in 1992, by the Habitats Directive.¹¹ Initial implementation in NI was through the Wildlife Order and the NCALO in 1985¹² and, following implementation throughout the EU, the Habitats Regulations¹³ in 1995. These instruments have variously repealed in part, updated, and revised on several occasions, most notably by comprehensive amendment of the Wildlife Order in 1995, the introduction of the Environment Order¹⁴ in 2002, the WANE Act¹⁵ in 2011, and several amendments to the Habitats Regulations¹⁶ including the 2019 amendment dealing with the UK’s exit from the EU.
- 1.17 The Marine Act¹⁷ implements OSPAR obligations not covered elsewhere and extends/strengthens elements of the Habitats Regulations, providing *inter alia* for marine plans and marine conservation zones. The Marine and Coastal Access Act (MCAA)¹⁸ provides for the sustainable use of marine resources and an integrated planning system for the marine area; it is designed to help achieve clean, healthy, safe, productive and biologically diverse seas.

National Site Network (NSN) & Habitats Regulations Assessment (HRA)

- 1.18 The Habitats Regulations provide for the establishment and protection of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Existing SACs and SPAs, and any new designations made under the Habitats Regulations, form a coherent National Site Network (NSN) covering terrestrial and both inshore and offshore marine areas in the UK. As a matter of policy (SPPS) Habitats Regulations procedures are applied in respect of Ramsar Sites.
- 1.19 Regulation 43 sets out the requirement for prior, precautionary assessment of impacts on the integrity of the NSN or any component European site¹⁹ – a process known as Habitats Regulations Assessment (HRA). Competent authorities can agree to a plan or project only once it has been demonstrated that the integrity of the NSN or any component site will not be compromised.

43.—(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—

(a) is likely to have a significant effect on a European site in Northern Ireland or a European offshore marine site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of the site,

shall make an appropriate assessment of the implications for the site in view of that site’s conservation objectives.

⁹ The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, Iran, 1971).

¹⁰ Council Directive 79/409/EEC on the conservation of wild birds (now codified as 2009/147/EC)

¹¹ Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora

¹² The Wildlife (Northern Ireland) Order 1985; The Nature Conservation and Amenity Lands (Northern Ireland) Order 1985

¹³ The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, were introduced to transpose The Habitats Directive (92/43/EEC) and parts of the Wild Birds Directive (79/409/EEC, now codified as 2009/147/EC).

¹⁴ The Environment (Northern Ireland) Order 2002 (as amended).

¹⁵ The Wildlife and Natural Environment (Northern Ireland) Act 2011.

¹⁶ The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) of 2004, 2007 and 2009; The Conservation (Natural Habitats, etc.) (Amendment) (Northern Ireland) (EU Exit) Regulations 2019. See also ‘Guidance explaining The Conservation (Natural Habitats, etc.) (Amendment) (Northern Ireland) (EU Exit) Regulations 2019’ (DAERA, December 2020).

¹⁷ The Marine Act (Northern Ireland) 2013.

¹⁸ The Marine and Coastal Access Act 2009

¹⁹ ‘NSN’ refers only to SACs and SPAs, which continue to be referred to as European sites, but are no longer part of Natura 2000.

(2) A person applying for such consent, permission or other authorisation shall provide such information as the competent authority may reasonably require—

(a) to enable the competent authority to determine whether an assessment under paragraph (1) is required; or

(b) for the purposes of an assessment under paragraph (1).

[...]

(6) In the light of the conclusions of the assessment, and subject to regulation 44, the authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site in Northern Ireland or the European offshore marine site (as the case may be).

(7) In considering whether a plan or project will adversely affect the integrity of the site concerned, the authority shall have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which it is proposed that the consent, permission or other authorisation should be given.

- 1.20 Regulation 44 then sets out the procedures for consenting plans or projects despite a negative assessment. Initially, an exhaustive examination of alternative options or solutions that achieve the desired objectives and outcomes without adverse impacts. Where adverse impacts cannot be excluded, derogation is only permitted in certain restricted circumstances, when specific conditions are met, and where the plan or project is considered to be of imperative overriding public interest.
- 1.21 The competent national authorities referred to in Regulation 43 (and elsewhere) are identified in Regulation 5 as ‘... government departments, district councils and statutory undertakers, and any trustees, commissioners, board or other persons who, as a public body and not for their own profit, act under any statutory provision for the improvement of any place or the production or supply of any commodity or service.’ Regulation 43(3) requires that the competent authority consult the Department and have regard to any representations made by it.

‘People Over Wind’

- 1.22 In *People Over Wind and Peter Sweetman v Coillte Teoranta (C-323/17)*, the CJEU held (April 2018) that mitigation, interpreted to mean ‘... measures that are intended to avoid or reduce the harmful effects of the envisaged project on the site concerned...’ cannot be taken into account at the screening stage. The CJEU took the view that to do so (i.e. the fact that any mitigation was required) would presuppose ‘... that it is likely that the site is affected significantly and that, consequently, such an assessment should be carried out...’ and that ‘... a full and precise analysis of the measures capable of avoiding or reducing any significant effects ... must be carried out not at the screening stage, but specifically at the stage of appropriate assessment.’ The CJEU noted that a full appropriate assessment would provide significantly more information on the adequacy of the proposed mitigation.

The Marine Act & MCAA – Marine Conservation Zones & MCZ Assessment, Marine Licensing

- 1.23 The Marine Act sets out obligations, ultimately derived from OSPAR, to contribute to an ecologically coherent UK network of Marine Protected Areas (MPA) and to wider biodiversity commitments at European and global level. The Marine Conservation Zone (MCZ), a new type of designation covering sections of the inshore region, safeguards vulnerable or unique marine species and nationally important habitats and geological/geomorphological features. MCZ, along with SAC, SPA, Ramsar and ASSI, form the basis of Northern Ireland’s network of MPAs. Section 23 places duties on public authorities not to authorise acts that may harm the features or conservation of MCZs. Section 33 makes it an offence to deliberately or recklessly damage an MCZ. More generally, marine licensing and enforcement is carried out under Part 4 of the MCAA to established Marine Licensing Operating Principles.²⁰ DAERA is the licensing authority for the Northern Ireland inshore region (MHWST to 12 nautical miles).

²⁰ www.daera-ni.gov.uk/publications/marine-licensing-operating-principles

Areas of Special Scientific Interest (ASSI)

- 1.24 Part IV of the Environment Order deals with the declaration and protection of ASSIs, the principal national designation for sites of nature conservation or earth science interest. ASSIs represent the very best national and regional wildlife and geological sites and are chosen due to habitat, flora, fauna, geological or physiographic features which are of the highest degree of conservation value. ASSI designations usually underpin SAC and SPA designations, but this is not always the case, particularly for marine sites. It is common practice to assess any additional ASSI interest during the HRA process.

2. Habitats Regulations Assessment (HRA)

- 2.1 Originally established by the EU Habitats Directive, and now a requirement of national legislation, HRA must be undertaken for all implicated plans and projects to assess the nature and significance of impacts which may arise on the integrity of the National Site Network (NSN). Consent may only be granted once it has been ascertained that the integrity of the NSN will not be compromised. The proposed repairs to the concrete pontoon piles at SLYC is a project subject to this requirement.
- 2.2 HRA has a narrow focus – it is protection-led and concerned exclusively with the integrity of the NSN. The highest levels of scientific certainty and rigor are required – where any information is missing, or where any scientific uncertainty remains, the precautionary principle requires that the protection of the environment (in this case specifically the NSN) is prioritised.
- 2.3 It is the responsibility of the competent authority to carry out the formal assessment (or ensure that it is carried out). It is the responsibility of the project proponent to collate and provide all the necessary information. This ‘shadow’ assessment has been undertaken on behalf of SLYC and is provided to demonstrate that the proposals are compliant with Habitats Regulations requirements and can be implemented without significant adverse impacts on the integrity of the NSN, and to assist the competent authority with the completion of the formal HRA.

Assessment Methodology

- 2.4 In the absence of specific guidance for Northern Ireland, the primary methodological sources for HRA remain the long-established EC documents:
- *‘Assessment of plans and projects significantly affecting Natura 2000 sites, Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC’* (EC Environment DG, 2002)
 - *‘Managing Natura 2000 Sites, The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC’* (EC Environment DG, 2000)
- 2.5 The broad methodology, consistent with legislation, is well-established. A four-staged approach is adopted, where the results at each stage determine the requirement and scope for the subsequent stage:

Stage 1 – Screening

- Screening addresses the first two tests set out in Regulation 43 – whether a plan or project is directly connected to or necessary for the management of the European site, and whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on the European site. The screening process identifies potentially implicated sites and any impacts that are likely to arise; and determines whether or not these are likely to be significant, given the site’s conservation objectives. Where significant adverse effects are likely, uncertain or unknown, or if the process becomes overly complicated, progression to the second stage is required. Following *People Over Wind*, mitigation cannot be taken into account.

Stage 2 – Appropriate Assessment (AA)

- AA is the detailed, scientific assessment that fulfils the primary test or objective of Regulation 43 – that competent authorities can consent to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site. The likely significant impacts identified in Stage 1 are assessed alone and in combination with other plans or projects with respect to the structure and function of the European sites and published conservation objectives to ensure that site integrity will not be compromised. Where adverse impacts are expected, the measures envisioned to avoid, reduce the significance or otherwise mitigate those impacts are taken into account and assessed.

- 2.6 Throughout the HRA process, significance is assessed against key indicators of site integrity such as habitat loss, degradation/fragmentation, species loss, disturbance, displacement and fragmentation and overall ecological and water quality etc., with respect to the key relationships and processes that define the structure and function of the site and the published conservation objectives. For a positive outcome, the assessment must produce scientific certainty beyond all reasonable doubt – the highest levels of evidence and justification are required, and the precautionary principle must be applied.

- 2.7 Most plans and projects are either consented or abandoned following screening or appropriate assessment. The third and fourth stages are concerned with the further assessment of plans or projects for which significant impacts cannot be excluded (assessment of alternatives) and the design and assessment of compensatory measures for plans or projects which, despite a negative assessment, must progress (imperative reasons of overriding public interest likely do not apply in this case).

Background Information – The Site & Project

Site & Surroundings

- 2.8 Strangford Lough Yacht Club (SLYC) occupies a sizeable, developed site on the shore of Whiterock Bay, within the settlement of Whiterock on the western coast of Strangford Lough in Co. Down. The club facilities include the clubhouse, car parking, a tender park, a dinghy park, a boatyard, slipways and pontoons, cranes and various stores and other onshore facilities. The pontoon is situated in clear open water, below Mean Low Water Springs (MLWS) to the north-east of the on-shore compound and connected to it by an elevated walkway and linkspan bridge; the structure floats in place, held by two concrete guide piles which are secured to the seabed, allowing the pontoon to rise and fall with the tide [Figure 1; Plates 1.1 & 1.2].²¹
- 2.9 Strangford Lough displays a wide variety of marine, intertidal, and coastal habitats. It is Northern Ireland's most important coastal site for wintering waterfowl and an important site for breeding terns. No comparable area supports such a wide range of habitats and species – Strangford Lough is an important ecological reserve in a global context and one of the foremost sites in Europe. Strangford Lough is designated as Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar Site, Area of Special Scientific Interest (ASSI), Marine Conservation Zone (MCZ) and, in part, as a National Nature Reserve (NNR) – the only area within the UK & Ireland to hold all six such or equivalent designations.

Existing Structures & Current Condition

- 2.10 As is set out in the CEMP,²² the two steel-encased concrete guide piles were installed in 1989, around the same time that Strangford Lough Pt. 3 ASSI was declared (also 1989), but several years prior to the designations of Strangford Lough SAC in 1996, and Strangford Lough SPA in 1998. Difficult ground condition during the installation works resulted in significant deviation from the intended alignment – attempts to correct were unsuccessful, leading to the piles being cut horizontally at seabed level and couplers installed to anchor additional pile sections for alignment correction.
- 2.11 The guide piles have remained in continuous use since their installation in 1989. However, in the last several years (since 2019 or so) SLYC members have raised concerns regarding noticeable movement or rotation of the piles, particularly during storms. Following non-intrusive inspections and assessments, the piles were deemed to be fit for purpose with an estimated remaining lifespan of 20-30 years, but the investigations did confirm that misalignment and connection issues, exacerbated by decades of environmental stresses, were the primary factors contributing to instability; wear patterns on the pontoon guides indicate that the piles can lean in all directions. The current condition of the piles, concrete bases, steel collars at seabed is set out in detail in the underwater inspection report²³ and illustrated/summarised on the engineering drawings²⁴ – the concrete forming the slabs at the bases of both piles was observed (January 2025) to be weak, eroded, friable (sections of concrete were easily removed by airlift), and not suitable for remedial work.

²¹ **Cover:** The Site – the floating pontoon at SLYC with guide piles at low-water [June 2025]; other photographs of the site (surface and underwater) are provided in the MBMP and the referenced *Underwater Inspection Report* (Equilibrant Ltd., January 2025).

²² 'Construction Environmental Management Plan (CEMP) – Strangford Lough Yacht Club' (Amphora Consulting, June 2025, rev. 01).

²³ 'Strangford Lough Yacht Club Pontoon Piles – Underwater Inspection Report' (Equilibrant Ltd., January 2025).

²⁴ Drawing No. 160-AMP-XX-02-DR-S-10001-02 *Existing Pontoon and Pile Plan & Sections* (Amphora Consulting, February 2025). Drawing No. 160-AMP-XX-01-DR-S-10002-01 *Existing Pile Details* (Amphora Consulting, February 2025).

Proposed Repairs

- 2.12 It is proposed that the ageing and deteriorating concrete guide piles that support and tether the floating pontoon will be repaired *in-situ* to improve safety and usability. The proposed works focus on restoring the long-term stability and integrity of the pontoon piles. Full details of the repair works are set out in the Method Statement (MS)²⁵ and on the engineering drawings; in outline, the piles are to be exposed, cleaned, and prepared at seabed level before being fitted with new prefabricated steel jackets and grouted in place:
- a twin-hull *MultiCat* barge with and a *Hiab* crane will be mobilised to site and will remain deployed for the duration of the works; diving equipment and other machinery, tools, and equipment required to complete the repair works will be set up on the barge.
 - the barge will create secure platform and, using the crane, strops/chains will be attached to the tops of piles to secure in place before any underwater work commences.
 - before any works take place in the water, a silt curtain will be installed around the working area to ensure that any sediments and other particulates that are disturbed during the works are not spread to the wider environment.
 - divers will then excavate (airlift, pressure washer, hand tools as necessary) the concrete at the base of the piles to a depth of 500mm below current levels, and burn off the legs of the 'L' brackets, leaving the collars in place.
 - divers will then prepare the piles and the concrete fill inside the collars (pressure wash to remove all loose/friable concrete and other material) ready for the new steel jackets and grouting.
 - divers will then perform a clearance dive to remove any larger pieces of waste concrete and other non-natural materials from the seabed within the working area; items will be hand-lifted and bagged underwater and brought to the surface for disposal.
 - personnel working from the barge will then attempt to straighten the piles.
 - the crane will be used to lower the new steel jackets into place; divers will fit the jackets around piles and collars in the excavated areas, placing the bottom of jackets onto the exposed seabed; shims will be placed between the face of shutter and the surrounding concrete as necessary to maintain placement and ensure a 50mm gap all round for grouting.
 - a fully sealed tremie pipe arrangement will be lowered into place from the barge; high-strength flowable marine-grade grout will be mixed and poured from the deck of the construction barge, via the tremie pipe, into the gaps between new steel jackets and the piles; the flowable properties of the grout will allow the internal void in the pile tubes to be filled during the process.
 - divers will weld 2 no. 45kg sacrificial zinc anodes with continuity bars to each pile; similar sacrificial zinc anodes will be welded to the existing steel pile
 - divers will then perform a final clearance dive to remove any excess grout or other larger pieces of waste or non-natural materials from the seabed within the working area as part of the completion and demobilisation process.
- 2.13 A list of equipment and plant is provided in the MS; the following materials will be introduced to the marine environment and left in place when repairs are complete (as noted, all other materials and wastes will be removed from the seabed):
- custom-fabricated steel collars, brackets, bolts, nuts & washers – will be used to reinforce the existing piles.
 - marine-grade, high-strength, flowable cementitious grout – will be used to fill the gaps between the piles and the new steel collars.
 - sacrificial zinc anodes – will be welded to the piles to provide cathodic protection against corrosion and extend lifespan by reducing saltwater-induced deterioration.
- 2.14 The floating pontoon structure is to be replaced – the pontoon will be removed from the water at the start of the repair works and disposed of (in accordance with all relevant regulations and best practice etc.). It would be normal club procedure for the pontoon to be removed from the from water at this time each year for the duration of the off-season in any case; a brand new pontoon will be deployed in line with normal club procedures and practices.

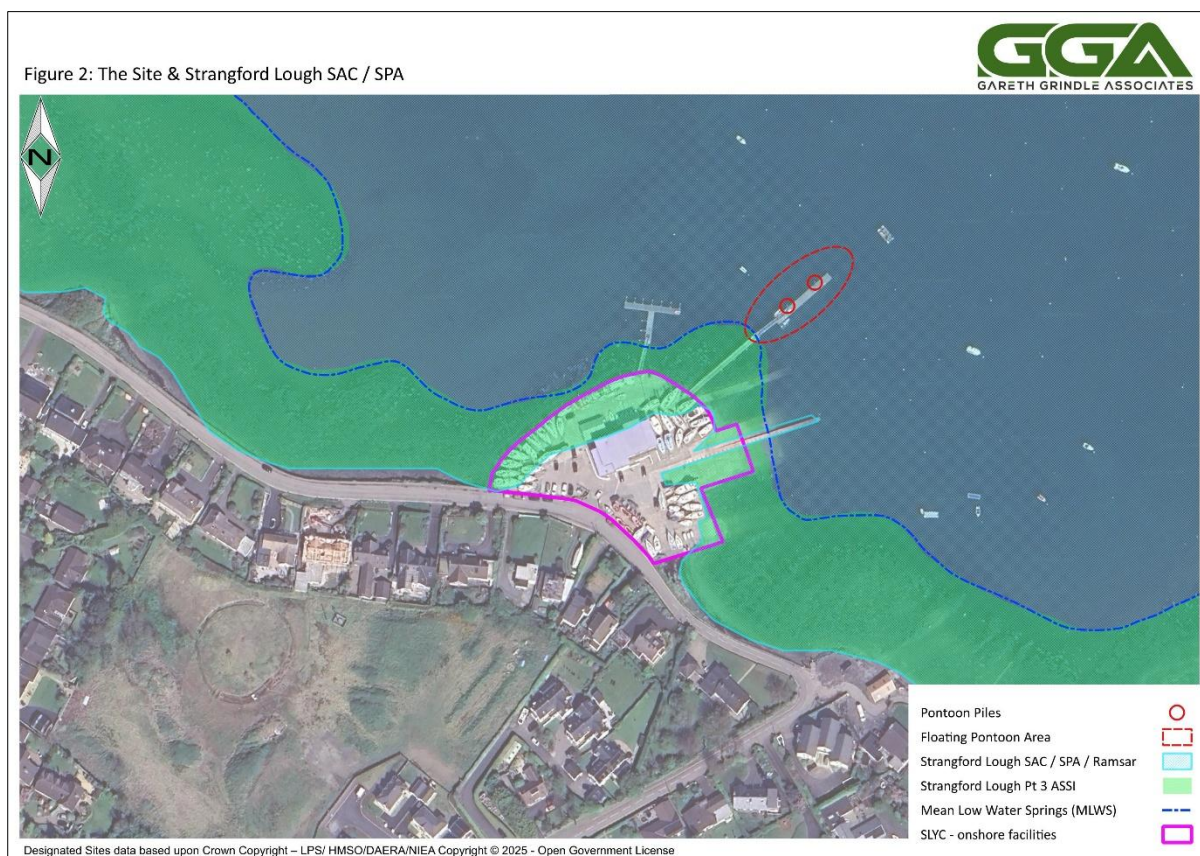
²⁵ *Method Statement – Strangford Lough Yacht Club'* (Amphora Consulting, June 2025).

Background Information – National Sites Network (NSN)

- 2.15 This section provides the background information on the NSN sites that have been identified as requiring assessment, with the underlying reasoning.
- 2.16 The assessment of direct and indirect ecological impacts on European sites is conducted using the standard *source-pathway-receptor* model where, for an impact to occur, all three elements of the mechanism must be present and operational. The absence or removal of a source or the elimination or interruption of a pathway permits a conclusion that an impact mechanism is not operational.

Site Identification, Screening & Rationale

- 2.17 Strangford Lough is internationally designated as a Special Area of Conservation (SAC) and as a Special Protection Area (SPA) and Ramsar site; and under national legislation an Area of Special Scientific Interest (ASSI). The repair works are proposed *in-situ* – the concrete guide piles are set into the littoral zone below MLWS. The site is therefore within Strangford Lough SAC and Strangford Lough SPA/Ramsar, and just outside Strangford Lough Pt. 3 ASSI [Figure 2].



- 2.18 Noise disturbance is widely accepted as one of the main threats to marine mammals²⁶ – marine construction works can generate substantial levels of underwater noise and vibration. Strangford Lough SAC is designated in part for Common seal *Phoca vitulina* (Grey seal *Halichoerus grypus* are also present, as are Harbour porpoise *Phocoena phocoena* from time to time). Given the range that marine mammals can travel, it is also necessary to consider other sites from further afield e.g. North Channel SAC, designated for Harbour porpoise *Phocoena phocoena*, The Maidens SAC, designated in part for

²⁶ 'Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland)' (JNCC, DAERA, Natural England, June 2020). Also, it is the consistent advice of DAERA (various consultation responses issued by Marine & Fisheries Division in recent years) that SACs selected for Grey seal *Halichoerus grypus* within 135km and Harbour seal *Phoca vitulina* within 50km should be considered for screening and assessment in HRA.

Grey seal *Halichoerus grypus*, and Murlough SAC, designated in part for Common seal *Phoca vitulina*. Outer Ards ASSI also supports populations of Grey seal *Halichoerus grypus* and Common seal *Phoca vitulina*, and there are other sites designated for the protection of marine mammals along the western coast of GB and in Irish jurisdiction.

- 2.19 No functional/operational ecological or hydrological connectivity (i.e. no *source-pathway-receptor* mechanism) can be established with any other terrestrial or coastal/marine European or nationally designated sites (Strangford Lough MCZ is assessed in *Section 3: MCZ Assessment*).

NSN Sites – Detailed Information²⁷

- 2.20 Strangford Lough is a large (150km² – 30km long, up to 8km wide) shallow sea lough on the east coast of Co. Down. Approximately one-third of the lough is intertidal, leaving huge expanses of sandflats at the northern end exposed at low tide and covered in shallow water at high tide; approximately 50km² of intertidal habitat lies between HWMMT and LWMMT. The lough is connected to the open sea by the Strangford Narrows, an important feature 8km long, a minimum 0.5km wide with strong currents of up to 8knots. The west shore has numerous islands typical of the flooded drumlin topography.

Strangford Lough SAC

- 2.21 Strangford Lough SAC (UK9020111) was proposed in January 1996, designated in May 2005 and reviewed in December 2015. The designated area covers approximately 15,400ha; the landward boundary is entirely coincident with the landward boundaries of Strangford Lough Part 1, Strangford Lough Part 2, Strangford Lough Part 3, Killard and Ballyquintin Point ASSIs; marine areas below LWMMT are also included.
- 2.22 Strangford Lough SAC is composed of sea inlets (65%), Lagoons (including saltwork basins) (33%), Salt marshes, Salt pastures, Salt steppes (0.5%), Heath, Scrub, Maquis and garrigue, Phygrana (0.5%), Humid grassland and Mesophile grassland (1%). The intertidal mudflats and sandflats in the north of the lough are the largest single continuous area of such habitat in Northern Ireland and also occurs in the south-west reaches. The northern flats support luxuriant beds of the eelgrasses *Zostera noltei* and *Zostera angustifolia*; Common eelgrass *Zostera marina* and Tasselled pondweed *Ruppia maritima* are also present. Such extensive beds are rare in the British Isles.
- 2.23 With a wide range of tidal stream strengths and depths, there is a remarkable marine fauna within Strangford Lough SAC and it is one of the most diverse sea loughs in the UK. The communities present range from the very rich high-energy communities near the mouth, which depend on rapid tidal streams, to communities in extreme shelter where fine muds support burrowing brittlestars, Dublin Bay prawn *Nephrops norvegicus*, and a rich community associated with Horse mussels *Modiolus modiolus*. The Lough supports an impressive range of marine habitats and communities with over 2,000 recorded species. It is important for marine invertebrates, algae and saltmarsh plants, for wintering and breeding wetland birds, and for marine mammals.
- 2.24 Strangford Lough SAC is designated primarily for the Annex I habitats: 1140 Mudflats and sandflats not covered by seawater at low tide; 1150* Coastal lagoons; 1160 Large shallow inlets and bays; 1170 Reefs; and for additional Annex I habitats that are also present as a qualifying feature, but are not a primary reason for site designation: 1210 Annual vegetation of drift lines; 1220 Perennial vegetation of stony banks; 1310 Salicornia and other annuals colonising mud and sand; 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritima*). Other Annex I habitats are also present: 1130 Estuaries; 1320 Spartina swards (*Spartinion maritima*); 2130* Fixed dunes with herbaceous vegetation ('grey dunes'); 1110 Sandbanks which are slightly covered by seawater all the time.

²⁷ The conservation objectives for Strangford Lough SAC, Strangford Lough SPA & North Channel SAC are reproduced at Annex A.

- 2.25 1365 Common seal *Phoca vitulina*, an Annex II species, is present as a qualifying feature but not as a primary reason for site designation. 1355 Otter *Lutra lutra* and 1364 Grey seal *Halichoerus grypus*, also Annex II species, are also present.

Strangford Lough SPA

- 2.26 Strangford Lough SPA (UK0016618) was classified in March 1998 and reviewed in September 2018. The designated area covers approximately 15,580ha. This is Northern Ireland's most important coastal site for wintering waterfowl, and it is important for breeding terns. The landward boundary is entirely coincident with the landward boundaries of Strangford Lough Part 1, Strangford Lough Part 2, Strangford Lough Part 3, Killard and Ballyquintin Point ASSIs; all lands, intertidal and subtidal areas and freshwater habitats are also included.
- 2.27 The diversity of sheltered estuarine habitats means that it is the most important coastal site in Northern Ireland for wintering waterbirds, holding large numbers of geese, ducks and waders. In summer, the lough supports three species of breeding terns. The Lough is especially notable as an autumn arrival site for most of the world population of the Canadian population of Light-bellied Brent Goose *Branta bernicla hrota*; smaller numbers remain to spend the winter after most have dispersed to other sites in Ireland.
- 2.28 Strangford Lough SPA is of importance for nationally and internationally important populations of wintering and breeding waterbirds – breeding populations of A191 Sandwich tern *Sterna sandvicensis*, A193 Common tern *Sterna hirundo*, A194 Arctic tern *Sterna paradisaea*; over-wintering populations of A046b Light-bellied brent goose *Branta bernicla hrota*, A143 Knot *Calidris canuta*, A162 Redshank *Tringa totanus*, A140 Golden Plover *Pluvialis apricaria*, A157 Bar-tailed Godwit *Limosa lapponica*, A048 Shelduck *Tadorna tadorna*; and also by regularly supporting an internationally important assemblage of overwintering birds – the 5-year mean for the Strangford Lough assemblage, calculated for the 2015 review, was over 60,000 individuals comprising the feature species listed above and Great Crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Greylag Goose *Anser anser*, Wigeon *Anas penelope*, Gadwall *Anas strepera*, Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Pintail *Anas acuta*, Shoveler *Anas clypeata*, Goldeneye *Bucephala clangula*, Red-breasted Merganser *Mergus serrator*, Coot *Fulica atra*, Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Dunlin *Calidris alpina*, Curlew *Numenius arquata* & Turnstone *Arenaria interpres*.

Strangford Lough Ramsar Site

- 2.29 Strangford Lough qualifies as a Ramsar Site under Criteria 1, 2a, 3a, 3b and 3c and was designated in 1998. The designated area covers approximately 15,580 ha. The landward boundary is entirely coincident with the underlying ASSI boundaries, and all lands, intertidal and subtidal areas and freshwater habitats are included.

North Channel SAC

- 2.30 North Channel was designated as SAC in February 2019 (site code UK0030399). The designated area covers approximately 160,367ha of open coastal and marine waters which are of importance for 1351 Harbour porpoise *Phocoena phocoena* and considered to be one of the best areas for this species in the UK, particularly during the winter months.
- 2.31 The Maidens SAC, Murlough SAC, Outer Ards ASSI and other sites along the western coast of GB and in Irish jurisdiction are identified for marine mammal interest. However, it is considered that screening/assessment of Strangford Lough SAC for 1365 Common seal *Phoca vitulina* (and 1364 Grey seal *Halichoerus grypus*) and North Channel SAC for 1351 Harbour porpoise *Phocoena phocoena* will cover all other marine mammal sites.

HRA Stage 1 – Screening

2.32 The purpose of designating and managing European sites is to maintain or restore the *favourable conservation status* of the habitats and species for which the sites are notified. The purpose of HRA is to determine whether or not a plan or project will adversely affect site and network integrity.

2.33 The conservation objectives for European sites are sets of targets that must be met to maintain or restore *favourable conservation status* for each qualifying feature and thus preserve the integrity of the site as a whole. A series of component objectives and associated attributes and measures are set out for each site selection feature – these are a set of targets that must be met to maintain or restore *favourable conservation status* and preserve site integrity and, forming the basis for condition assessment, are used to determine whether or not a feature is in *favourable condition*, defined as ‘*the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site.*’²⁸ Achieving *favourable condition* for individual features on individual sites contributes to achieving *favourable conservation status* at national and biogeographic levels and across the NSN.

2.34 The definitions of *favourable conservation status* for habitats and species are set out in the designation documents²⁹ for European sites:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species. The conservation status of a natural habitat will be taken as favourable 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 conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as ‘favourable’ 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.*

2.35 The critical consideration is whether the implications of any activities, considered individually and in combination with other plans or projects, will affect the site’s ability to meet its conservation objectives and maintain or achieve *favourable conservation status*. As such, for the purposes of screening and assessment, a general conservation objective encapsulating an overall aim of maintaining or restoring the *favourable conservation status* of the NSN sites as a whole is applied, in addition to the conservation objectives relating specifically to the formal qualifying interest.

2.36 Although habitats are not site selection features for SPAs, they are essential to the conservation of qualifying species interest and screening/assessment is often more rigorous and straightforward if habitats are treated as if they were. It is assumed therefore that habitats are feature interest of the SPA, that assessment of the European sites encapsulates the additional Ramsar and ASSI interest, and that screening for Strangford Lough SAC and North Channel SAC will cover all marine mammals.

²⁸ ‘Commission Note on Setting Conservation Objectives for Natura 2000 Sites’ (European Commission, Doc. Hab.12-04/06, November 2012)

²⁹ These replicate the definitions established at Article 1 of the Habitats Directive.

Table 2.1: Screening Matrix – Strangford Lough SAC

Brief description of the project or plan:	
<u>Strangford Lough Yacht Club (SLYC)</u>	
It is proposed that the two submerged concrete guide piles will be repaired <i>in-situ</i> . Full details of the proposed works are set out in the MS and CEMP, and the associated engineering drawings, as referenced and summarised above. In outline, the piles are to be exposed, cleaned, and prepared at the seabed level before being fitted with new prefabricated steel jackets which will then be grouted in place and fitted with sacrificial zinc anodes.	
Brief Description of the NSN site:	
<ul style="list-style-type: none"> • Strangford Lough SAC Summary description above; conservation objectives reproduced at Annex A.	
Is the Project or Plan connected with the protection or management of the NSN Site(s)?	No
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the NSN site.	
<p>The repairs will take place <i>in-situ</i> within Strangford Lough SAC. All elements of the construction-phase works present some risk of adverse impact on the SAC, either as a result of pollution/contamination or disturbance to feature species.</p> <p>Once complete, the site will be essentially unchanged with no risk of on-going impact – the project will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.</p>	
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the NSN site by virtue of:	
size and scale:	This is a very small, localised repair project which, although within Strangford Lough SAC, does not attach any potential for significant adverse effects on site integrity as a result of size and scale.
land-take:	The repairs require no additional land-take. The piles were driven into the seabed and secured in place in 1989, several years before Strangford Lough SAC was designated, and are now to be repaired within the existing footprint on the seabed.
distance:	The site is within Strangford Lough SAC and therefore attaches some potential for adverse impacts on feature habitats (pollution/contamination) and species (disturbances) due to proximity.
resources:	No resources are required from within Strangford Lough SAC or areas of supporting habitat.
emissions:	The site is within Strangford Lough SAC, below MLWS and submerged. The proposed repair works will take place underwater. As such, the construction activities (excavation of the base of the piles, pressure washing to remove loose/friable concrete, and grouting) present risks of contamination to the aquatic and sedimentary environments/ecosystems in Whiterock Bay, with some potential for further transfer and wider pollution within Strangford Lough.
excavation:	Two small areas of the seabed within Strangford Lough SAC are to be excavated to expose the bases of the piles prior to the repair works; excavations will be backfilled by natural seabed sediment transport and settlement once the works are complete. The project does not attach any potential for significant adverse effects on Strangford Lough SAC due to excavation <i>per se</i> .
transportation:	A twin hull <i>MultiCat</i> construction barge will be used to move personnel, equipment, and materials to the site and provide access for divers and other operations etc. Otherwise, all transportation and access will be via the existing on-shore facilities at SLYC. The project does not attach any potential for significant adverse effects on Strangford Lough SAC due to transportation.
duration/timing:	<p>The works will be completed quickly (\pm 2 weeks) but may attach heightened risks of disturbances to feature species of Strangford Lough SAC if carried out at an inappropriate time of year.</p> <p>Once repaired, the guide piles will continue to operate indefinitely with no plans for decommissioning. This does not in itself attach any potential for significant adverse effects on Strangford Lough SAC.</p>
other:	The deployment of a construction barge and the use of equipment/machinery, diving gear, and protective equipment/clothing etc. which may have been used on other marine construction projects elsewhere risks introducing marine invasive species into Strangford Lough SAC; preparation of the submerged concrete for repair risks spreading any marine invasives already present at the site.

Describe any likely changes to the site arising as a result of:	
habitat loss/reduction:	The repairs will not result in any habitat loss or reduction. Two small areas of littoral habitat within Strangford Lough SAC will be disturbed temporarily – this is not considered to be significant, in terms of site integrity.
fragmentation:	Contamination or pollution of aquatic and sedimentary habitats, should it occur, may result in habitat fragmentation within Strangford Lough SAC, which is unlikely to be significant, in terms of site integrity, in isolation but may be significant in a cumulative/in-combination context. The introduction or spread of marine invasive species may result in progressive habitat fragmentation, which is likely, in time, to be significant in terms of site integrity.
species loss/reduction:	No feature species of Strangford Lough SAC (or supporting species, for example, prey species) are likely to be lost, or local numbers reduced/displaced, as a result of the proposed works.
species disturbance:	Common seal <i>Phoca vitulina</i> , a qualifying feature interest of Strangford Lough SAC, are well known from Whiterock Bay (regularly/habitually present) and Otter <i>Lutra lutra</i> , also a qualifying feature interest, are known to forage in Whiterock Bay, occasionally leaving predation remains in moored boats or on jetties/pontoons at SLYC. Grey seal <i>Halichoerus grypus</i> are occasionally present. Construction noise on the foreshore or open water, particularly at inappropriate times of the day and/or year, may result in disturbances to SAC feature species. The repairs will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.
Describe any likely impacts on the NSN site as a whole in terms of changes in key indicators of conservation value (water quality etc.) and/or interference with the key relationships that define the structure and function of the site:	
<p>The key indicators of conservation value that are at risk of significant adverse impact are – ecological, water, sedimentary, and habitat quality within the marine and littoral areas close to the site (the base of the pontoon piles on the seabed) within Whiterock Bay; and the local density and patterns of movement/behaviour of feature species.</p> <p>The release of cementitious materials and other pollutants and contaminants, the release and spread of invasive species, disturbances/displacements to feature species, and interruptions to predator/prey relationships and the availability of foraging resources are identified as potentially significant causes of adverse impacts.</p> <p>Pollution may result in habitat degradation and fragmentation which may be significant in terms of overall site integrity. The release of invasive species is likely to be significant in terms of overall site integrity. Disturbances to feature species may result in temporary reductions in species density and displacement/fragmentation to extents that are unlikely to be significant in isolation but may be significant in a cumulative/in-combination context. Similarly, interference with prey/foraging resources are unlikely to be significant in isolation but may be significant in a cumulative/in-combination context.</p>	
Provide indicators of significance as a result of the identification of effects set out above in terms of:	
loss:	n/a – the repair works are very unlikely to result in any loss of any feature or supporting habitats or species of Strangford Lough SAC.
fragmentation:	significant (cumulative/in-combination) – habitat fragmentation within Strangford Lough SAC as a result of the contamination or pollution of marine and littoral habitats, should it occur, is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context. significant – progressive habitat fragmentation within Strangford Lough SAC from the release and/or spread of marine invasive species, should it occur, is likely to be significant in terms of site integrity.
disruption:	significant (cumulative/in-combination) – disruption and/or disturbances to feature species of Strangford Lough SAC as a result of construction noise or activity is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context, particularly at certain times of the day and/or year.
disturbance:	
key elements of the site:	significant – degradation or fragmentation of habitat quality in the marine and littoral areas at the site (feature and/or supporting habitats of Strangford Lough SAC) through the release and/or spread of marine invasive species, is likely to be significant in terms of site integrity. significant (cumulative/in-combination) – degradation or fragmentation of ecological, water, sedimentary, and habitat quality in the marine and littoral areas at the site (feature and/or supporting habitats of Strangford Lough SAC) through pollution/contamination is unlikely to be significant in terms of site integrity in isolation, but may be significant in a cumulative/in-combination context. significant (cumulative/in-combination) – adverse changes in the local density and patterns of movement/behaviour of feature or supporting species is unlikely to be significant in terms of site integrity in isolation, but may be significant in a cumulative/in-combination context.

Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known.

Whiterock Bay qualifies as *1160 Large Shallow Inlets and Bays* and therefore contributes directly to the structure, function and integrity of Strangford Lough SAC. 1365 Common seal *Phoca vitulina*, qualifying feature interest of Strangford Lough SAC, are known to be regularly/habitually present in Whiterock Bay, as are 1355 Otter *Lutra lutra*; 1364 Grey seal *Halichoerus grypus* are also present from time to time.

This is a very small site but it is within Strangford Lough SAC, below MLWS and submerged. The proposed repair works, which are to take place underwater, therefore attach some potential for adverse impacts on feature habitats (pollution/contamination) and species (disturbances) – construction works (excavation of the base of the piles, pressure washing to remove loose/friable concrete, and grouting) present risks of pollution and contamination and construction noise and activity, particularly at inappropriate times of the day and/or year, may result in disturbances to SAC feature species; the deployment of equipment/machinery etc. which may have been used on other marine construction projects presents risks of introducing marine invasive species into Strangford Lough; the works risk spreading any marine invasives that are already present at the site.

The release of cementitious materials and other pollutants/contaminants, the release/spread of invasive species, disturbances to feature species, and any consequent fragmentation of habitats or species, or interruptions to predator/prey relationships and the availability of foraging resources, are therefore identified as potentially significant causes of adverse impacts on the site integrity of Strangford Lough SAC.

Table 2.2: Screening Matrix – Strangford Lough SPA

Brief description of the project or plan:	
<u>Strangford Lough Yacht Club (SLYC)</u>	
It is proposed that the two submerged concrete guide piles will be repaired <i>in-situ</i> . Full details of the proposed works are set out in the MS and CEMP, and the associated engineering drawings, as referenced and summarised above. In outline, the piles are to be exposed, cleaned, and prepared at the seabed level before being fitted with new prefabricated steel jackets which will then be grouted in place and fitted with sacrificial zinc anodes.	
Brief Description of the NSN site:	
<ul style="list-style-type: none"> • Strangford Lough SPA (and Strangford Lough Ramsar Site) Summary descriptions above; SPA conservation objectives reproduced at Annex A.	
Is the Project or Plan connected with the protection or management of the NSN Site(s)?	No
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the NSN site.	
The repairs will take place <i>in-situ</i> within Strangford Lough SPA. All elements of the construction-phase works present some risk of adverse impact on the SAC, either as a result of pollution/contamination or disturbance to feature species. Once complete, the site will be essentially unchanged with no risk of on-going impact – the project will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.	
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the NSN site by virtue of:	
size and scale:	This is a very small, localised repair project which, although within Strangford Lough SPA, does not attach any potential for significant adverse effects on site integrity as a result of size and scale.
land-take:	The repairs require no additional land-take. The piles were driven into the seabed and secured in place in 1989, several years before Strangford Lough SPA was designated, and are now to be repaired within the existing footprint on the seabed.
distance:	The site is within Strangford Lough SPA and therefore attaches some potential for adverse impacts on feature species (disturbances) due to proximity.
resources:	No resources are required from within Strangford Lough SPA or areas of supporting habitat.
emissions:	The site is within Strangford Lough SPA, below MLWS and submerged. The proposed repair works will take place underwater. As such, the construction activities (excavation of the base of the piles, pressure washing to remove loose/friable concrete, and grouting) present risks of contamination to the aquatic and sedimentary environments/ecosystems in Whiterock Bay, with some potential for further transfer and wider pollution within Strangford Lough.

excavation:	Two small areas of the seabed within Strangford Lough SAC are to be excavated to expose the bases of the piles prior to the repair works; excavations will be backfilled by natural seabed sediment transport and settlement once the works are complete. The project does not attach any potential for significant adverse effects on Strangford Lough SPA due to excavation <i>per se</i> .
transportation:	A twin hull <i>MultiCat</i> construction barge will be used to move personnel, equipment, and materials to the site and provide access for divers and other operations etc. Otherwise, all transportation and access will be via the existing on-shore facilities at SLYC. The project does not attach any potential for significant adverse effects on Strangford Lough SPA due to transportation.
duration/timing:	The works will be completed quickly (± 2 weeks) but may attach heightened risks of disturbances to feature species of Strangford Lough SPA if carried out at an inappropriate time of year. Once repaired, the guide piles will continue to operate indefinitely with no plans for decommissioning. This does not in itself attach any potential for significant adverse effects on Strangford Lough SPA.
other:	The deployment of a construction barge and the use of equipment/machinery, diving gear, and protective equipment/clothing etc. which may have been used on other marine construction projects elsewhere risks introducing marine invasive species into Strangford Lough SPA; preparation of the submerged concrete for repair risks spreading any marine invasives already present at the site.

Describe any likely changes to the site arising as a result of:

habitat loss/reduction:	The repairs will not result in any habitat loss or reduction. Two small areas of littoral habitat within Strangford Lough SPA will be disturbed temporarily – this is not considered to be significant, in terms of site integrity.
fragmentation:	Contamination or pollution of aquatic and sedimentary habitats, should it occur, may result in habitat fragmentation within Strangford Lough SPA, which is unlikely to be significant, in terms of site integrity, in isolation but may be significant in a cumulative/in-combination context. The introduction or spread of marine invasive species may result in progressive habitat fragmentation, which is likely, in time, to be significant in terms of site integrity.
species loss/reduction:	No feature species of Strangford Lough SPA (or supporting species, for example, prey species) are likely to be lost, or local numbers reduced/displaced, as a result of the proposed works.
species disturbance:	Significant numbers of wintering and occasionally breeding Strangford Lough SPA/Ramsar feature and assemblage species have been recorded within Whiterock Bay and non-significant numbers have been observed within and around the SLYC on-shore and near-shore facilities. Whiterock Bay is not noted as an important nesting area; shoreline habitats above MHWS and other semi-natural areas in the vicinity of SLYC are not noted as significant high-tide roosts. Construction noise on the foreshore or open water, particularly at inappropriate times of the day and/or year, may result in disturbances to SPA feature species. The repairs will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.

Describe any likely impacts on the NSN site as a whole in terms of changes in key indicators of conservation value (water quality etc.) and/or interference with the key relationships that define the structure and function of the site:

The key indicators of conservation value that are at risk of significant adverse impact are – ecological and water quality generally and the local density, diversity, and patterns of movement/behaviour of feature species.

The release of cementitious materials and other pollutants and contaminants, the release and spread of invasive species, disturbances/displacements to feature species, and interruptions to predator/prey relationships and the availability of foraging resources are identified as potentially significant causes of adverse impacts.

Pollution may result in habitat degradation and fragmentation which may be significant in terms of overall site integrity. The release of invasive species is likely to be significant in terms of overall site integrity. Disturbances to feature species may result in temporary reductions in species density and displacement/fragmentation to extents that are unlikely to be significant in isolation but may be significant in a cumulative/in-combination context. Similarly, interference with prey/foraging resources are unlikely to be significant in isolation but may be significant in a cumulative/in-combination context.

Provide indicators of significance as a result of the identification of effects set out above in terms of:

loss:	n/a – the repair works are very unlikely to result in any loss of any feature or supporting habitats or species of Strangford Lough SPA.
fragmentation:	significant (cumulative/in-combination) – habitat fragmentation within Strangford Lough SPA as a result of the contamination or pollution of marine and littoral habitats, should it occur, is unlikely to

	<p>be significant in isolation, but may be significant in a cumulative/in-combination context.</p> <p>significant – progressive habitat fragmentation within Strangford Lough SPA from the release and/or spread of marine invasive species, should it occur, is likely to be significant in terms of site integrity.</p>
disruption:	<p>significant (cumulative/in-combination) – disruption and/or disturbances to feature species of Strangford Lough SPA as a result of construction noise or activity is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context, particularly at certain times of the day and/or year.</p>
disturbance:	
key elements of the site:	<p>significant – degradation or fragmentation of habitat quality in the marine and littoral areas at the site (supporting habitats of Strangford Lough SPA) through the release and/or spread of marine invasive species, is likely to be significant in terms of site integrity.</p> <p>significant (cumulative/in-combination) – degradation or fragmentation of ecological, water, sedimentary, and habitat quality in the marine and littoral areas at the site (supporting habitats of Strangford Lough SPA) through pollution/contamination is unlikely to be significant in terms of site integrity in isolation, but may be significant in a cumulative/in-combination context.</p> <p>significant (cumulative/in-combination) – adverse changes in the local density and patterns of movement/behaviour of feature or supporting species is unlikely to be significant in terms of site integrity in isolation, but may be significant in a cumulative/in-combination context.</p>

Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known.

Whiterock Bay provides habitat for Strangford Lough SPA/Ramsar feature species and assemblages, and therefore contributes directly to the structure, function and integrity of the SPA & Ramsar. Significant numbers of wintering and occasionally breeding feature and assemblage species have been recorded, and non-significant numbers have been observed within and around the SLYC on-shore and near-shore facilities. Whiterock Bay is not noted as an important nesting area; shoreline habitats above MHWS and other semi-natural areas in the vicinity of SLYC are not noted as significant high-tide roosts.

This is a very small site within Strangford Lough SPA, below MLWS and submerged. The proposed repair works therefore attach some potential for adverse impacts on feature species (disturbances) – construction noise and activity on the foreshore or open water, particularly at inappropriate times of the day and/or year, may result in disturbances to SPA feature species; construction works (excavation of the base of the piles, pressure washing to remove loose/friable concrete, and grouting) also present risks of pollution and contamination and the deployment of equipment/machinery etc. which may have been used on other marine construction projects presents risks of introducing marine invasive species into Strangford Lough; the works risk spreading any marine invasives that are already present at the site.

Disturbances to feature and assemblage species, the release of cementitious materials and other pollutants/contaminants, the release/spread of invasive species, and any consequent fragmentation of habitats or species, or interruptions to predator/prey relationships and the availability of foraging resources, are therefore identified as potentially significant causes of adverse impacts on the site integrity of Strangford Lough SPA.

Table 2.3: Screening Matrix – North Channel SAC

Brief description of the project or plan:	
<u>Strangford Lough Yacht Club (SLYC)</u>	
It is proposed that the two submerged concrete guide piles will be repaired <i>in-situ</i> . Full details of the proposed works are set out in the MS and CEMP, and the associated engineering drawings, as referenced and summarised above. In outline, the piles are to be exposed, cleaned, and prepared at the seabed level before being fitted with new prefabricated steel jackets which will then be grouted in place and fitted with sacrificial zinc anodes.	
Brief Description of the NSN site:	
<ul style="list-style-type: none"> • North Channel SAC Summary descriptions above; SPA conservation objectives reproduced at Annex A.	
Is the Project or Plan connected with the protection or management of the NSN Site(s)?	No
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the NSN site.	
<p>The proposed works will take place in Strangford Lough, c. 30km from North Channel SAC, but potentially within disturbance range of mobile feature Harbour porpoise <i>Phocoena phocoena</i>, which may be present in Strangford Lough from time to time.</p> <p>Once complete, the project will attach no risk of on-going impact – the repairs will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.</p>	

Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the NSN site by virtue of:

size and scale:	This is a very small, localised repair project which is c. 30km from North Channel SAC and does not attach any potential for significant adverse effects on site integrity as a result of size and scale.
land-take:	The proposed repair works require no land-take from within North Channel SAC.
distance:	The site is c. 30km from North Channel SAC but may attach some potential for adverse impacts on feature species (disturbances) due to proximity.
resources:	No resources are required from within North Channel SAC or areas of supporting habitat.
emissions:	The site is within Strangford Lough, c. 30km from North Channel SAC. It is very unlikely that the proposed repair works present risk of contamination of North Channel SAC.
excavation:	Two small areas of the seabed within Strangford Lough are to be excavated, c. 30km from North Channel SAC.
transportation:	twin hull <i>MultiCat</i> construction barge will be used to move personnel, equipment, and materials to the site and provide access for divers and other operations etc. Otherwise, all transportation and access will be via the existing on-shore facilities at SLYC. There are no implications for North Channel SAC.
duration/timing:	The works will be completed quickly (\pm 2 weeks) and the time of year at which the works are carried out is unlikely to have any implications for North Channel SAC. Once repaired, the guide piles will continue to operate indefinitely with no plans for decommissioning. This has no implications for North Channel SAC.
other:	The works attach some risks of releasing and/or spreading marine invasive species within Strangford Lough, but this is unlikely to have any significant implications for North Channel SAC.

Describe any likely changes to the site arising as a result of:

habitat loss/reduction:	The repairs will not result in any habitat loss or reduction from within North Channel SAC or any supporting areas.
fragmentation:	The repairs will not result in any habitat fragmentation within North Channel SAC or any supporting areas.
species loss/reduction:	No feature species of North Channel SAC (or supporting species, for example, prey species) are likely to be lost, or local numbers reduced/displaced, as a result of the proposed works.
species disturbance:	Harbour porpoise <i>Phocoena phocoena</i> , the qualifying feature interest of North Channel SAC, are known to be present in Strangford Lough from time to time. Construction noise on the foreshore or open water, particularly at inappropriate times of the day and/or year, may result in disturbances to SAC feature species. The repairs will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.

Describe any likely impacts on the NSN site as a whole in terms of changes in key indicators of conservation value (water quality etc.) and/or interference with the key relationships that define the structure and function of the site:

The key indicators of conservation value that are at risk of significant adverse impact are – the local density and patterns of movement/behaviour of feature species.

Disturbances to feature species may result in temporary reductions in species density and displacement/fragmentation to extents that are unlikely to be significant in isolation but may be significant in a cumulative/in-combination context.

Provide indicators of significance as a result of the identification of effects set out above in terms of:

loss:	n/a – the repairs will not result in the loss of any feature species of North Channel SAC.
fragmentation:	n/a – the repairs will not result in any habitat or species fragmentation within North Channel SAC or any supporting areas.
disruption:	significant (cumulative/in-combination) – disruption and/or disturbances to feature species of North Channel SAC as a result of construction noise or activity is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context, particularly at certain times of the day and/or year.
disturbance:	

key elements of the site:	n/a – other than some risk of minor and temporary disturbances to mobile feature species, the repairs at SLYC will have no appreciable influence on the key elements of North Channel SAC.
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Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known.

Strangford Lough provides supporting habitat for North Channel SAC. 1351 Harbour porpoise *Phocoena phocoena*, the qualifying feature interest of North Channel SAC, are known to be present in Strangford Lough from time to time.

This is a very small site within Strangford Lough, below MLWS and submerged. The proposed repair works attach some potential for adverse impacts on feature species (disturbances) – construction noise and activity on the foreshore or open water, particularly at inappropriate times of the day and/or year, may result in disturbances to SAC feature species.

Disturbances to feature species is therefore identified as a potentially significant cause of adverse impact on the site integrity of North Channel SAC.

Conclusions

2.37 Under Regulation 43(1) of the Habitats Regulations, and after *People Over Wind*, appropriate assessment is required in all cases where:

- i) *the project is not necessary for the management of the European site; and*
- ii) *the project is likely to have a significant effect on the European site.*

2.38 The project is not necessary for the management of any European site and Stage 1 (screening) has demonstrated that significant adverse impacts on the site integrity of Strangford Lough SAC, Strangford Lough SPA (Ramsar), and North Channel SAC cannot be excluded – Stage 2 (appropriate assessment) is therefore required.

HRA Stage 2 – Appropriate Assessment (AA)

2.39 This section sets out the second stage of the assessment, whereby the overall effect of the project on the integrity of the NSN sites is examined – the identified impact mechanisms are assessed alone and in-combination with other plans or projects with respect to the structure and function of the European sites and their conservation objectives; where significant adverse impacts are indicated, mitigation is identified and assessed.

2.40 A detailed examination of the identified impact mechanisms, including a consideration of cumulative/in-combination effects, is followed by an appropriate assessment report [Table 2.2] and a schedule of mitigation [Table 2.3].

Impact Assessment & Mitigation

2.41 Detailed analysis of the subject site, its nature and location in relation to Strangford Lough SAC, Strangford Lough SPA, North Channel SAC, and the associated feature interest and conservation objectives, establishes the specific feature interest that are likely to be affected by the project, and the specific aspects of the project that are likely to give rise to adverse impacts – assessment is conducted using the standard *source-pathway-receptor* model.

2.42 Whiterock Bay qualifies under *1160 Large Shallow Inlets and Bays*, contributes directly to the structure, function and integrity of the SAC, and provides habitat for both SAC and SPA feature and assemblage species. 1365 Common seal *Phoca vitulina*, a qualifying feature interest of Strangford Lough SAC, and 1355 Otter *Lutra lutra*, are known to be regularly/habitually present in Whiterock Bay; 1364 Grey seal *Halichoerus grypus* are also present from time to time. 1351 Harbour porpoise *Phocoena phocoena*, the qualifying feature interest of North Channel SAC, are present in Strangford Lough from time to time.

2.43 Significant numbers of wintering and occasionally breeding feature and assemblage species of Strangford Lough SPA have been recorded within Whiterock Bay, and non-significant numbers have been observed within and around the SLYC on-shore and near-shore facilities, but Whiterock Bay is

not noted as an important nesting area and shoreline areas above MHWS in the vicinity of SLYC are not noted as significant high-tide roosts.

- 2.44 As per the Stage 1 (screening) assessment, disturbances to feature species, the release of cementitious materials and other pollutants/contaminants, the release/spread of invasive species, and any consequent fragmentation of habitats or species, or interruptions to predator/prey relationships or the availability of foraging resources, have been identified as mechanisms for potentially significant adverse impacts on the site integrity of Strangford Lough SAC and Strangford Lough SPA.
- 2.45 Disturbances to feature species has been identified as a mechanism for potentially significant adverse impact on the site integrity of North Channel SAC.
- 2.46 The SAC/SPA feature interest considered to be at risk are:
- 1160 Large Shallow Inlets & Bays
 - 1365 Common seal *Phoca vitulina* (assessment to include 1364 Grey seal *Halichoerus grypus*)
 - 1351 Harbour porpoise *Phocoena phocoena*
 - 1355 Otter *Lutra lutra*
 - Breeding Bird Assemblage (including feature species – A191 Sandwich tern *Sterna sandvicensis*, A193 Common tern *Sterna hirundo* & A194 Arctic tern *Sterna paradisaea*)
 - Migratory/Wintering Assemblage (including feature species – A046b Light-bellied brent goose *Branta bernicla hrota*, A143 Knot *Calidris canuta*, A162 Redshank *Tringa totanus*, A140 Golden Plover *Pluvialis apricaria*, A157 Bar-tailed Godwit *Limosa lapponica*, A048 Shelduck *Tadorna tadorna*)
- 2.47 The main issues in so far as environmental protection are concerned:
- contamination of the marine and littoral sedimentary environment with cementitious materials during the breaking-out of old concrete and grouting of the new steel jackets.
 - contamination of the marine environment with fuels, oils and other construction materials.
 - disturbances to overwintering or breeding birds through construction works and increased noise and activity at the barge/pontoon.
 - disturbances to marine mammals (porpoise, seals) through construction works and increased noise and activity at the barge/pontoon.
 - the release and/or spread of marine invasive species.
- 2.48 Habitat degradation and progressive fragmentation within Strangford Lough as a result of the release and/or spread of marine invasive species is likely to be significant, in terms of the site integrity of Strangford Lough SAC and Strangford Lough SPA, both in isolation and in a cumulative/in-combination context. Habitat degradation and fragmentation as a result of the contamination or pollution of marine and littoral areas during the repair works is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context.
- 2.49 Disruption and/or disturbance to feature or supporting species of Strangford Lough SAC and Strangford Lough SPA as a result of construction noise or activity, and consequent changes in local densities and patterns of movement/behaviour, is unlikely to be significant, in terms of site integrity, in isolation, but may be significant in a cumulative/in-combination context, particularly if the repair works were to occur at certain times of the day and/or year.
- 2.50 Similarly, disruption and/or disturbance to feature species of North Channel SAC is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context.

Working Methodology & Mitigation

- 2.51 The proposed working methodology is set out in the Method Statement (MS)³⁰ and on the associated

³⁰ *Method Statement – Strangford Lough Yacht Club'* (Amphora Consulting, June 2025).

engineering drawings.³¹ All necessary mitigation is set out in the Construction Environmental Management Plan (CEMP)³² and in the Marine Biosecurity Management Plan (MBMP)³³ – the following sections appraise these mitigation measures but do not introduce any additional measures.

- 2.52 The MS prescriptive and sets out how the repair works are to be implemented, with very little left to the discretion of the main contractor; the CEMP and MBMP, also prescriptive, are designed around the MS for concurrent implementation. The MS (including the CEMP and the MBMP) must be adopted by the main contractor on appointment and finalised *inter-alia* to specify the equipment and materials to be used; attach product-specific data sheets and COSHH risk assessments; and confirm compliance with MBMP pre-deployment inspection and cleaning requirements.

Programme & Timing

- 2.53 The works are scheduled to take place between 20th October and 7th November 2025, with the third week included as a contingency for inclement weather or adverse sea state etc. It is expected that the full programme will be completed within the first two weeks (i.e. by 31st October 2025).
- 2.54 As is set out in the CEMP, site working hours will be 08:30 – 17:30, Monday to Friday, with no early morning or late evening working permitted.

Disturbance & Disruption

- 2.55 Where the works can be properly programmed/timed and controlled, disturbances and disruption to feature SAC and SPA species will be avoided.
- 2.56 Late summer or early autumn is the ideal time to undertake this work as it avoids the pupping season for seals (usually complete in Strangford Lough by the end of August) and both the breeding/nesting and migratory/wintering periods for avifauna. In this case, works are expected to be completed by 31st October 2025 (7th November 2025 at the latest). Otters are known to forage in Whiterock Bay, occasionally leaving predation remains and scat in moored boats or on jetties/pontoons, and are vulnerable to disturbances at all times of the year. However, there are no holts within 50m of the site³⁴ and there are unlikely to be any within or close to this urbanised section of the shore in any case. To avoid undue disturbances to wildlife, daily start and end times have been limited to no earlier than 08:30 and no later than 17:30, scheduling work for the times when this urbanised section of the coast is busy in any case and leaving the early mornings, evenings, and overnights peaceful.
- 2.57 The working methodology been developed to minimise the generation of construction noise and vibration. No underwater piling, drilling, or mechanical breaking-out of concrete etc. is required, and activities that might generate noise or vibration in the marine environment have been kept to a minimum. The base of the piles will be exposed/excavated using an airlifter, pressure washer, and hand tools deployed by divers as necessary, and loose/friable concrete and other material will be removed from the existing concrete structures in a similar manner.
- 2.58 Noise generation on the surface will be limited to the air and power delivery systems for divers and their equipment, and the diesel engines of the construction barge and crane. The 2-3 week working period is scheduled to follow the annual ‘craning-out’ of members’ boats – wholesale craning-in/out takes place at SLYC twice each year and individual boats are craned-in/out on an *ad-hoc* basis as required throughout the year. The onshore crane at SLYC is a *Hiab* crane similar to the crane that

³¹ Drawing No. 160-AMP-XX-01-DR-S-20003-02 *Proposed Pontoon Pile Construction Sequence* (Amphora Consulting, February 2025). Drawing No. 160-AMP-XX-01-DR-S-20005-01 *Proposed Pontoon Pile Plan & Sections* (Amphora Consulting, February 2025).

³² ‘Construction Environmental Management Plan (CEMP) – Strangford Lough Yacht Club’ (Amphora Consulting, June 2025, rev. 01).

³³ ‘Marine Biosecurity Management Plan (MBMP): Strangford Lough Yacht Club (SLYC), Whiterock Bay, Strangford Lough, Co. Down’ (GGA-2025-018-2 final v2 June 2025).

³⁴ The author knows this area well and has checked/surveyed the SLYC facilities and adjoining foreshore for otter holts and activity on several occasions during the last 8-10 years.

will be deployed from the construction barge and generates similar levels of noise when in use; marine diesel engines (and louder outboard engines) generally are common in Whiterock Bay and are part of the daily background soundscape – local wildlife is habituated to noise from cranes and diesel engines, and high levels of activity on and close to the foreshore at SLYC (diminished through the winter).

- 2.59 Once complete, the site will be essentially unchanged with no risk of on-going impact – the repairs will not increase the capacity of the facilities at SLYC and will not result in more on-going activity on the foreshore or increased levels of boating activity in Whiterock Bay.
- 2.60 As the project will not generate any noise and/or vibrations above threshold levels for harm or disturbance to feature avifauna or marine mammals, and as the project is programmed to occur at a time of year when minor disturbances are very unlikely to be significant in any case, it can be concluded that the project will not result in any significant adverse effects on the NSN sites as a result of disturbances or disruptions to feature wildlife.

Pollution & Contamination

- 2.61 Potential sources of water and sediment pollution during the repair works include sediments disturbed from the seabed during the dives, particularly during the use of airlift and pressure washing equipment; degraded/frangible concrete mobilised during the cleaning/preparation works; spillages of grout during application; and accidental spillages or leaks of fuel, oil, or other chemicals from the construction barge and machinery.

Concrete Preparation & Sediment Disturbance

- 2.62 As the repairs will be carried out underwater it is inevitable that some seabed sediments will be disturbed, and cementitious materials (old broken-out concrete) will be mobilised within the marine and littoral environments. Preventing the spread of these materials during the works, and minimising longer-term persistence, are critical – where these pathways can be eliminated significant adverse impacts on the SAC and SPA will not arise.
- 2.63 As is set out in the MS and CEMP, a marine silt curtain, consisting of a floating boom with a weighted and submerged silt curtain suspended beneath, will be deployed around the work area throughout the works. The curtain will contain disturbed sediments, cementitious materials, and other particulates suspended or entrained in the water column, preventing spread and dispersal within the wider marine environment and allowing settlement back to the seabed in the vicinity of the pontoon. Sediment disturbance and transport will be minimised by limiting sediment removal and concrete cleaning/preparation to essential areas and conducting activities during periods of low tidal movement (slack water). Larger pieces of old concrete and other non-natural materials on the seabed at and close to the bases of the piles will be removed by the divers – a cleanup operation will be undertaken after the piles have been exposed and cleaned and again at the end of the repair works; all arisings will be transferred to appropriate waste containers on the construction barge and then removed from site for disposal.

Grouting

- 2.64 The repairs require the underwater deployment of (cementitious) high-strength, flowable, marine-grade, grout.³⁵ Preventing the spread of excess grout beyond the contained target areas is critical – where this pathway can be eliminated significant adverse impacts on the SAC and SPA will not arise.
- 2.65 The *tremie pipe* method will be employed, by personnel working from the construction barge and under supervision of a diver, to deliver the flowable grout (total estimated 200kg) into the gaps between the new steel jackets and the existing concrete piles, and into the internal voids in the pile tubes.

³⁵ Several appropriate and similar products, e.g. *Sika Parex 100 Newtown Grout AW GB* or *Pozament Polymer Modified Grout*, are available – the data sheet for the actual product that will be used will be appended to the CEMP.

- 2.66 The *tremie pipe* is a standard method for the accurate underwater placement of grout whereby a fully sealed, smooth bore, pipe is placed vertically (or nearly vertically) to allow the grout to be delivered to the target area below water level by gravity feed. Using the crane, the *tremie pipe* arrangement will be lowered into place from the construction barge before the grout is poured from the hopper on the deck of the construction barge – the flowable properties of the grout will allow delivery to the target areas underwater before curing/setting. The grout will be managed carefully to prevent spillage – arrangements for storage, mixing, transport, and waste etc. are set out in the CEMP.
- 2.67 In their flowable (i.e. mixed but not cured) state, these products are hydrophobic and are designed to form into clumps rather than dissolve, emulsify, or otherwise disperse if released into water – the clumping properties ensure that any excess or spilled grout does not become suspended in the water column or disperse in the marine environment. Grouting will be undertaken at slack water to ensure that any spillages sink directly to the seabed and remain within the silt curtain boundary for ease of identification and collection for disposal. Pieces of excess grout on the repaired piles or on the seabed will be removed by the divers – a cleanup operation will be undertaken at the end of the repair works; all arisings will be transferred to appropriate waste containers on the construction barge and then removed from site for disposal.

Other Sources of Pollution/Contamination

- 2.68 The prevention of other pollutants and contaminants from entering the marine environment is critical – where this pathway can be eliminated through good working practices, significant adverse impacts on the SAC and SPA will not arise.
- 2.69 The arrangements for safe storage, transfer and use of fuels, oils, and other chemicals necessary for the completion of the repair works, and for the segregation, storage, and recycling/disposal of wastes, are set out in the CEMP. Chemicals will be stored securely in a bunded area well away from the water's edge. Refuelling of equipment will take place onshore with appropriate spill prevention measures in place and equipment will be inspected prior to and during the works to ensure good working order. Spill kits will be easily available on-shore and on the construction barge – to include absorbent materials, oil-absorbent pads, and booms, to manage any accidental spillages promptly and effectively. Containers for segregating and storing waste materials (mostly excess grout and waste concrete collected from the seabed) will be located within the site compound; collection and lifting bags will be used for retrievals from the seabed.

Invasive Species

- 2.70 Preventing the release and/or spread of invasive flora/fauna during the works is critical – where this pathway can be eliminated through good working practices, significant adverse impacts on the SAC and SPA will not arise. The Marine Biosecurity Management Plan (MBMP) is provided under separate cover.³⁶

Cumulative & In-Combination Effects

- 2.71 Cumulative and in-combination effects are interactive effects between aspects of the project, the combination/cumulation of impacts of the project with those arising from other projects which act on the same receptors, or the addition to the existing diffuse background which cannot be attributed to individual sources.

Cumulative & In-Combination Effects – Intra-Project

- 2.72 This is a very small and self-contained project. The various tasks and activities will be undertaken sequentially, with very little potential for aspects to interact in an additive manner which might give

³⁶ 'Marine Biosecurity Management Plan (MBMP): Strangford Lough Yacht Club (SLYC), Whiterock Bay, Strangford Lough, Co. Down' (GGA-2025-018-2 final v2 June 2025).

rise to enhanced risks of adverse effects on site integrity, particularly where environmental mitigation and protection measures have been identified and are integrated into the working methodology.

Cumulative & In-Combination Effects – Inter-Project/Activity

- 2.73 Cumulative effects with other discrete projects are only likely to occur where one or more other active development or similar projects affect the same marine and littoral areas within Whiterock Bay.
- 2.74 From an interrogation of the online planning portal,³⁷ there are no approved and unimplemented development projects, or pending applications, within Whiterock Bay which might be constructed concurrently with the repair works and there are no other known construction/development projects which do not require planning permission. The works have been programmed to avoid clashing with other high-participation events and activities at SLYC (e.g. sailing competitions, craning-out etc.).
- 2.75 This is a spatially and temporally very limited project – other construction/development works or other activities on the water are very unlikely to occur in sufficiently close spatial or temporal proximity as to give rise to significant cumulative impacts which might influence the integrity of the designated sites.

Cumulative & In-Combination Effects – Background

- 2.76 Background or on-going diffuse sources of ecological degradation and disturbance have an influence on conservation and must also be considered cumulatively with the proposed works.
- 2.77 Strangford Lough is a large (150 km²), tidal sea lough with a considerable absorptive and dispersal capacity. However, Whiterock Bay is relatively shallow, has a complex sedimentary regime, and is within a section of the lough with a higher residence time (8-20 days) for water, solubles, and suspended particulates; solids persist indefinitely in sediment and are subject to environmental sequestration/persistence or breakdown rather than translocation and removal from the system. Aquatic and sedimentary habitats within Whiterock Bay are therefore sensitive to additional contaminant loading.
- 2.78 The additive effects of multiple projects and other activities within the catchment which may have an influence on the site integrity of the designated sites associated with Strangford Lough are, for the most part, captured by the NSN and WFD³⁸ condition assessments, which allow quantitative assessment of changes in background levels of ecological and hydrological quality with time.
- 2.79 Whiterock Bay is monitored and reported as part of the Strangford Lough South Coastal Water Body (CWB) in the North-Eastern River Basin District (RBD).³⁹ The CWB was classified with an overall status of 'moderate' in 2015, with targets to retain 'moderate' in 2021 and improve to 'good' by 2027. The key pressures that pose the greatest threat to the water environment and prevent the achievement of 'good' status – diffuse agricultural pollution and point sources from urban wastewater and development – are not relevant to the repair works proposed at SLYC but other pressures – diffuse and point source pollution, the physical condition of the water environment (including changes to the natural habitat of coastal waters), and invasive alien species – are directly relevant.
- 2.80 Strangford Lough SAC condition assessment⁴⁰ confirms that the feature habitat, 1160 Large Shallow Inlets and Bays (and both sub-feature communities, sub-tidal sand and gravel and sub-tidal fine sand

³⁷ www.epicpublic.planningni.gov.uk/publicaccess/ (consulted 10th June 2025)

³⁸ The Water Framework Directive 2000/60/EC (WFD) is an EU directive which commits member states to achieve good qualitative and quantitative status of all water bodies, including marine waters up to one nautical mile from shore, by 2015.

³⁹ 'North Eastern River Basin Management Plan Summary' (NIEA, December 2015); 'River Basin Monitoring Plan, Water Framework Directive 2nd Cycle Classification Summary 2015-2021 Coastal Water Body – Strangford Lough South' (NIEA, May 2015)

⁴⁰ 'Strangford Lough Special Area of Conservation (SAC) Subtidal Condition Assessment 2019' (Alvarez Alonso C. & Foster S., DAERA, 2022). 'Strangford Lough Part 3 Area of Special Scientific Interest (ASSI) and Intertidal Special Area of Conservation (SAC) Condition Assessment 2019' (Alvarez Alonso C & Stewart-Moore S, DAERA, 2022).

and mud) remain in *favourable* condition as of the 2014-2019 monitoring cycle; 1365 Common seal *Phoca vitulina* have dropped to *unfavourable – declining* condition (1355 Otter *Lutra lutra* and 1364 Grey seal *Halichoerus grypus* are not qualifying feature interest and are not subject to condition assessment). On designation in 2019, 1351 Harbour porpoise *Phocoena phocoena* were assessed⁴¹ as being in *favourable* condition within North Channel SAC. Strangford Lough SPA feature and assemblage species were all assessed⁴² as being in *favourable* condition in 2014.

- 2.81 Conservation objectives and management guidance published for NSN sites and underlying ASSIs identify a range of notifiable operations and on-going activities which are considered to be damaging to feature interest or site integrity. Of relevance to the current assessment, operations affecting water quality (including boating facilities and associated activities such as anti-fouling paints, slipway treatments etc.), inter-tidal habitat extent and quality, and marine invasive species are specified among the main threats, pressures and activities with impacts on Strangford Lough SAC and Strangford Lough SPA; boating and sailing generally are considered to be benign, but disturbances to the seabed and shore at moorings, slipways and jetties is noted as being of some concern.

Cumulative & In-Combination Effects – Conclusions

- 2.82 Of the activities and mechanisms that can be linked with significant adverse impacts, set out above, disruption and disturbances to feature species, particularly *P. vitulina* but also *H. grypus*, *P. phocoena* and *L. lutra*, is clearly an in-combination/cumulative issue, as is disturbance to inter-tidal/littoral sediments and habitat degradation/fragmentation as a result of environmental pollution and the release and/or spread of invasive species.
- 2.83 However, this is a small, self-contained, and spatially and temporally limited project which has been planned and timed to minimise impacts and has all environmental mitigation and protection measures integrated into the working methodology. As such, the project is unlikely to give rise to any enhanced risks of significant adverse effects on the site integrity of the NSN sites through cumulation or in-combination action.

Assessment of Effects

Table 2.4: Appropriate Assessment – Strangford Lough SAC & Strangford Lough SPA

Assessment of the Effects of the Project or Plan on the Integrity of Strangford Lough SAC & Strangford Lough SPA			
Elements of the project or plan (alone or in combination) likely to give rise to significant effects on the site (from screening assessment):	Disturbances to feature species, the release of cementitious materials and other pollutants/contaminants, the release/spread of invasive species, and any consequent fragmentation of habitats or species, or interruptions to predator/prey relationships or the availability of foraging resources, have been identified as mechanisms for potentially significant adverse impacts on the site integrity of Strangford Lough SAC and Strangford Lough SPA. Disturbances to feature species has been identified as a mechanism for potentially significant adverse impact on the site integrity of North Channel SAC.		
Conservation Objectives (implicated site features):	1160	Large Shallow Inlets & Bays	Maintain the extent of the large shallow inlet and bay. Allow the natural processes which determine the development, structure, function and extent of the large shallow inlet and bay, to operate appropriately. Maintain and enhance, as appropriate, the species diversity within this habitat.
	1365	Common seal <i>Phoca vitulina</i>	Maintain and enhance, as appropriate, the Harbour (Common) Seal population. Maintain and enhance, as appropriate, physical features used by Harbour (Common) Seals within the site.
	1355	Otter	Maintain and enhance, as appropriate, the Otter population.

⁴¹ JNCC & DAERA – www.jncc.gov.uk/our-work/north-channel-mpa/

⁴² ‘Strangford Lough Special Protection Area (SPA) UK9020111 Conservation Objectives’ (DAERA, 2015).

	<i>Lutra lutra</i>	Maintain and enhance, as appropriate, physical features used by Otters within the site.
1364	Grey seal <i>Halichoerus grypus</i>	Maintain and enhance, as appropriate, the Grey Seal population. Maintain and enhance, as appropriate, physical features used by Grey Seals within the site.
A191	Sandwich tern <i>Sterna sandvicensis</i>	To maintain or enhance the population of the qualifying species. Fledging success sufficient to maintain or enhance population.
A193	Common tern <i>Sterna hirundo</i>	To maintain or enhance the range of habitats utilised by the qualifying species.
A194	Arctic tern <i>Sterna paradisaea</i>	To ensure that the integrity of the site is maintained. To ensure there is no significant disturbance of the species. To ensure that the following are maintained in the long term: <ul style="list-style-type: none"> ▪ Population of the species as a viable component of the site. ▪ Distribution of the species within site. ▪ Distribution and extent of habitats supporting the species. ▪ Structure, function and supporting processes of habitats supporting the species.
A046b	Light-bellied brent goose <i>Branta bernicla hrota</i>	To maintain or enhance the population of the qualifying species.
A143	Knot <i>Calidris canuta</i>	To maintain or enhance the range of habitats utilised by the qualifying species. To ensure that the integrity of the site is maintained.
A162	Redshank <i>Tringa totanus</i>	To ensure there is no significant disturbance of the species. To ensure that the following are maintained in the long term:
A140	Golden Plover <i>Pluvialis apricaria</i>	<ul style="list-style-type: none"> ▪ Population of the species as a viable component of the site. ▪ Distribution of the species within site. ▪ Distribution and extent of habitats supporting the species. ▪ Structure, function and supporting processes of habitats supporting the species.
A157	Bar-tailed Godwit <i>Limosa lapponica</i>	
A048	Shelduck <i>Tadorna tadorna</i>	
Wintering Waterfowl Assemblage		To maintain in favourable condition the nationally and internationally important migratory populations, allowing for natural change.
1351	Harbour porpoise <i>Phocoena phocoena</i>	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that: <ul style="list-style-type: none"> ▪ Harbour porpoise is a viable component of the site. ▪ There is no significant disturbance of the species; and ▪ The condition of supporting habitats and processes, and the availability of prey is maintained.

How the project or plan will affect key species and key habitats: (acknowledge uncertainties and any gaps in information).

Whiterock Bay qualifies under 1160 Large Shallow Inlets and Bays and therefore contributes directly to the structure, function and integrity of the SAC and provides habitat for both SAC and SPA feature and assemblage species. 1365 Common seal *Phoca vitulina*, a qualifying feature interest of Strangford Lough SAC, and 1355 Otter *Lutra lutra*, are known to be regularly/habitually present in Whiterock Bay; 1364 Grey seal *Halichoerus grypus* are also present from time to time. 1351 Harbour porpoise *Phocoena phocoena*, the qualifying feature interest of North Channel SAC, are present in Strangford Lough from time to time. Significant numbers of wintering and occasionally breeding feature and assemblage species of Strangford Lough SPA have been recorded within Whiterock Bay, and non-significant numbers have been observed within and around the SLYC on-shore and near-shore facilities, but Whiterock Bay is not noted as an important nesting area and shoreline areas above MHWs in the

	<p>vicinity of SLYC are not noted as significant high-tide roosts.</p> <p>The SAC/SPA feature interest considered to be at risk are:</p> <ul style="list-style-type: none"> • 1160 Large Shallow Inlets & Bays • 1365 Common seal <i>Phoca vitulina</i> (assessment to include 1364 Grey seal <i>Halichoerus grypus</i>) • 1351 Harbour porpoise <i>Phocoena phocoena</i> • 1355 Otter <i>Lutra lutra</i> • Breeding Bird Assemblage (including feature species – A191 Sandwich tern <i>Sterna sandvicensis</i>, A193 Common tern <i>Sterna hirundo</i> & A194 Arctic tern <i>Sterna paradisaea</i>) • Migratory/Wintering Assemblage (including feature species – A046b Light-bellied brent goose <i>Branta bernicla hrota</i>, A143 Knot <i>Calidris canuta</i>, A162 Redshank <i>Tringa totanus</i>, A140 Golden Plover <i>Pluvialis apricaria</i>, A157 Bar-tailed Godwit <i>Limosa lapponica</i>, A048 Shelduck <i>Tadorna tadorna</i>) <p>The main issues in so far as environmental protection are concerned:</p> <ul style="list-style-type: none"> • contamination of the marine and littoral sedimentary environment with cementitious materials during the breaking-out of old concrete and grouting of the new steel jackets. • contamination of the marine environment with fuels, oils and other construction materials. • disturbances to overwintering or breeding birds through construction works and increased noise and activity at the barge/pontoon. • disturbances to marine mammals (porpoise, seals) through construction works and increased noise and activity at the barge/pontoon. • the release and/or spread of marine invasive species.
<p>How the integrity of the site is likely to be affected by the project or plan: (acknowledge uncertainties and any gaps in information).</p>	<p>The ‘integrity’ of an NSN site refers to the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.</p> <p>Habitat degradation and progressive fragmentation within Strangford Lough as a result of the release and/or spread of marine invasive species is likely to be significant, in terms of the site integrity of Strangford Lough SAC and Strangford Lough SPA, both in isolation and in a cumulative/in-combination context. Habitat degradation and fragmentation as a result of the contamination or pollution of marine and littoral areas during the repair works is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context.</p> <p>Disruption and/or disturbance to feature or supporting species of Strangford Lough SAC and Strangford Lough SPA as a result of construction noise or activity, and consequent changes in local densities and patterns of movement/behaviour, is unlikely to be significant, in terms of site integrity, in isolation, but may be significant in a cumulative/in-combination context, particularly if the repair works were to occur at certain times of the day and/or year. Similarly, disruption and/or disturbance to feature species of North Channel SAC is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context.</p>
<p>Mitigation measures to be introduced to avoid or reduce the adverse effects on the integrity of the site: (acknowledge uncertainties and any gaps in information).</p>	<p><u>Method Statement (MS) & Construction Environmental Management Plan (CEMP)</u></p> <p>The MS sets out the working methodology and the manner in which the repair works are to be implemented, including the programme and daily working hours (to avoid undue disturbances to wildlife). The CEMP (along with the MBMP) sets out all the necessary environmental protection and mitigation measures – as per the appraisal above, these are all reasonable, appropriate, straightforward, and of proven efficacy.</p> <p>The MS prescriptive and leaves little to the discretion of the main contractor. The MS (including the CEMP and the MBMP) must be adopted by the main contractor on appointment and finalised to specify equipment and materials, attach product data sheets and COSHH risk assessments, and confirm compliance with MBMP pre-deployment requirements.</p> <p><u>Marine Biosecurity Management Plan (MBMP)</u></p> <p>The MBMP sets out the necessary measures to manage bio-security and prevent bio-fouling, including measures to be implemented prior to the works (including pre-deployment inspections and cleaning) to prevent the introduction of new marine invasives; and measures to be implemented during the works to minimise the risk of spreading any marine invasives that may already be present in Whiterock Bay.</p>
<p>Results of Consultation</p>	
<p>Agency/Body Consulted:</p>	<p>n/a – this ‘shadow’ HRA is provided for consultation.</p>
<p>Summary of Response:</p>	

Mitigation

Table 2.5: Appropriate Assessment (AA) – Schedule of Mitigation

Mitigation Measure	... will avoid adverse effects on site integrity:	... will reduce adverse effects on site integrity:	... will be implemented (how and by whom):	... will be implemented (timescale):	Confidence of Success	Monitoring & Contingency
MS & CEMP	The MS & CEMP set out the methods, procedures, standards, work practices and management responsibilities required to implement the works and address environmental management and protection requirements.		Available for consultation with DAERA. To be adopted and implemented by main contractor.	Implementation by main contractor prior to and throughout the works.	High	CEMP includes contingency for mitigation failure.
MBMP	The MBMP sets out the necessary measures to manage bio-security and prevent bio-fouling prior to and during the works.		Available for consultation with DAERA. To be adopted and implemented by main contractor.	Implementation by main contractor prior to and throughout the works.	High	n/a

Conclusions

2.84 HRA has demonstrated, to the required standards of certainty and scientific rigour, that significant adverse impacts on the NSN are unlikely to occur as a result of the project, individually or in combination/cumulation with other projects and activities. It is concluded, following Stage 2 (appropriate assessment) that significant adverse impacts on the site integrity of Strangford Lough SAC, Strangford Lough SPA, North Channel SAC are unlikely to occur as a result of the proposed repair works – provided the detailed working methodology and environmental protection and mitigation measures set out in the MS, CEMP and MBMP are fully implemented, it is very unlikely that feature wildlife will be disturbed or that the modest and discrete programme of works will have any appreciable influence on ecological, hydrological, and sedimentary conditions within the feature marine and littoral habitats of Whiterock Bay. The schedule of mitigation, including the CEMP and the MBMP, is appropriate, straightforward, reasonable and of proven efficacy.

3. Marine Conservation Zone (MCZ) Assessment

- 3.1 Section 23 of the Marine Act places a duty on public authorities in that they must not grant authorisation for any act capable of affecting (other than insignificantly) the protected features of an MCZ or any ecological or geomorphological process on which the conservation of protected features of an MCZ is dependent unless the person seeking the authorisation ‘... *satisfies the authority that there is no significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ*’.
- 3.2 The MCZ Assessment assists the public authority in fulfilling this obligation. While it is ultimately the responsibility of the authority to undertake the assessment, it is the responsibility of the proponent to provide all the necessary information. This ‘shadow’ assessment has been compiled on behalf of SLYC and is provided to demonstrate that the proposals are compliant with the requirements of the Marine Act, and can be implemented without compromising the conservation objectives stated for Strangford Lough MCZ, thereby assisting the competent authority with the completion of the formal MCZ Assessment.

Assessment Methodology

- 3.3 The assessment methodology and process is adapted from the template provided by DAERA to enable public authorities to fulfil their duties under Section 23 of the Marine Act:
- ‘*Marine Conservation Zone Assessment Template*’ (DAERA, May 2019)
- 3.4 The following draws heavily on the detailed assessment set out in *Section 2 – Habitats Regulations Assessment (HRA)* however, it is important to note that while Strangford Lough MCZ overlaps Strangford Lough SAC and Strangford Lough SPA, and shares feature interest with common conservation objectives, MCZ Assessment is a distinct process which sits alongside HRA but is not replaced by it.
- 3.5 Unlike HRA, there is no prohibition on considering environmental management and mitigation measures at the screening stage – indeed, the second test in the screening process which asks if there is ‘... *an alternative way of proceeding [...] which would create a substantially lower risk ...*’ presupposes that mitigation will be considered. As such, MCZ Assessment is undertaken for the proposed repair works, as set out in the MS and engineering drawings, and including the specified environmental protection and mitigation measures.
- 3.6 The legislation does not require any explicit consideration of cumulative or in-combination impacts. However, other legislative and policy requirements, and best practice, dictate that the cumulative impacts of any proposal should receive full consideration in the decision-making process.

Background Information

Site, Surroundings & Proposed Works

- 3.7 Details of the site, surroundings, and proposed works are set out in *Section 2 – Habitats Regulations Assessment (HRA)* [at 2.8-2.16] and in the Method Statement (MS);⁴³ environmental protection and mitigation is discussed above [at 2.48-2.67] and set out in detail in the Construction Environmental Management Plan (CEMP)⁴⁴ and the Marine Biosecurity Management Plan (MBMP).⁴⁵

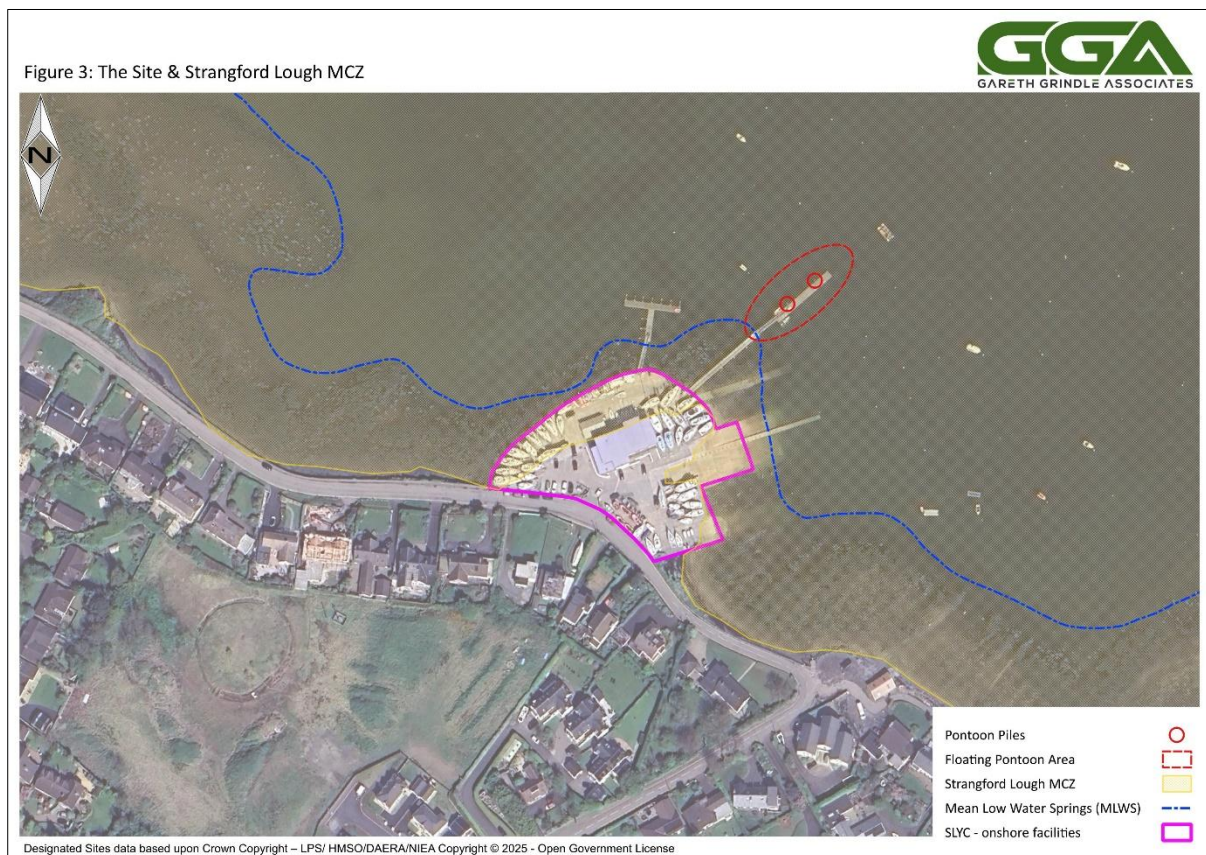
⁴³ ‘*Method Statement – Strangford Lough Yacht Club*’ (Amphora Consulting, June 2025).

⁴⁴ ‘*Construction Environmental Management Plan (CEMP) – Strangford Lough Yacht Club*’ (Amphora Consulting, June 2025, rev. 01).

⁴⁵ ‘*Marine Biosecurity Management Plan (MBMP): Strangford Lough Yacht Club (SLYC), Whiterock Bay, Strangford Lough, Co. Down*’ (GGA-2025-018-2 final v2 June 2025).

Strangford Lough MCZ

- 3.8 Strangford Lough was designated as NI's only Marine Nature Reserve (MNR) in 1995⁴⁶ and automatically became an MCZ in 2013 when the Marine Act came into force and the relevant provisions of the NCALO were repealed. The designated area covers approximately 16,500ha; the landward boundary is the same as the former MNR boundary and is coincident with the landward boundaries of the underlying ASSIs; all marine areas are included.
- 3.9 The floating pontoon at SLYC, and the pontoon guide piles that are to be repaired, are within the area designated as Strangford Lough MCZ [Figure 3]. As is set out in the CEMP, the two steel-encased concrete guide piles were installed in 1989, around the same time that Strangford Lough Pt. 3 ASSI was declared (also 1989), but several years prior to the designation of Strangford Lough MNR (now Strangford Lough MCZ) in 1995.



- 3.10 Despite a thorough search, no published designation or management documents relating specifically to Strangford Lough MCZ could be located online (as is the case for newly proposed MCZs). However, from the dated MNR documentation and various sources⁴⁷ available online, it can be established that Strangford Lough MCZ is designated for habitats such as coastal saltmarsh, intertidal mudflats, saline lagoons and seagrass beds and species/communities including seals, horse mussel beds/reefs, fish, crustaceans, echinoderms, worms, molluscs, sponges, anemones, hydroids, corals, sea squirts, bryozoans and seaweeds/alga, many of which are also features of the SAC or ASSI designations and/or protected/priority habitats/species in their own right. The re-designation as MCZ has little bearing on current management measures.

⁴⁶ The Nature Conservation and Amenities Lands (Northern Ireland) Order 1985 – the NCALO

⁴⁷ Primarily 'Marine Conservation Zones in the Northern Ireland Inshore Region – Justification Report for Selection of Proposed Marine Conservation Zones (pMCZ) Features' (DoENI, September 2014); also Strangford Lough & Lecale Partnership (www.strangfordlough.org/strangford-lough-european-marine-site.html) and Marine Conservation Society (www.mcsuk.org/mpa/show-NI5)

MCZ Assessment

- 3.11 For the purposes of assessment, a general conservation objective encapsulating an overall aim of maintaining favourable conservation status has been applied to the MCZ and the various features of the designation. The proposed repair works are assessed in terms of the effect they may exert on the ability of the MCZ to achieve the conservation objective.

Screening

- 3.12 All applications are screened to determine whether Section 23 of the Marine Act applies [Table 3.1].

Table 3.1: Strangford Lough MCZ Assessment – Screening

(i)	Name of the Plan or Project:
	Strangford Lough Yacht Club (SLYC)
(ii)	Application Number/Reference:
	n/a
(iii)	Brief Description of the Plan or Project:
	It is proposed that the two submerged concrete guide piles will be repaired <i>in-situ</i> . Full details of the proposed works are set out in the MS and CEMP, and the associated engineering drawings, as referenced and summarised above. In outline, the piles are to be exposed, cleaned, and prepared at the seabed level before being fitted with new prefabricated steel jackets which will then be grouted in place and fitted with sacrificial zinc anodes.
(iv)	Name and Location of the MCZ Site(s) Potentially Affected:
	Strangford Lough MCZ
(v)	Description of the MCZ Site(s):
	Strangford Lough was designated as MNR in 1995 and automatically became an MCZ in 2013 when the Marine Act repealed MNR provisions in older legislation. Strangford Lough MCZ is designated for habitats such as coastal saltmarsh, intertidal mudflats, saline lagoons and seagrass beds and species/communities including seals, horse mussel beds/reefs, fish, crustaceans, echinoderms, worms, molluscs, sponges, anemones, hydroids, corals, sea squirts, bryozoans and seaweeds/alga, many of which are also features of the SAC or ASSI designations and/or protected/priority habitats/species in their own right. The boundary for Strangford Lough MCZ is consistent with the former MNR boundary and underlying ASSIs.
(vi)	Summary of Activities from the Plan or Project that may Potentially Affect the MCZ:
	The proposed repair works are to occur underwater and within the MCZ. Adverse impacts may arise as a result of disturbances to feature species, the release of cementitious materials and other pollutants/contaminants, the release/spread of invasive species, and any consequent fragmentation of habitats or species, or interruptions to predator/prey relationships or the availability of foraging resources.
(vii)	Is the Activity Capable of Affecting (other than insignificantly) the Protected Features of the MCZ?
	Yes. Degradation or fragmentation of marine and littoral habitat quality through the release and/or spread of marine invasive species, is likely to be significant. Degradation or fragmentation of ecological, water, sedimentary, and habitat quality in the marine and littoral zones through pollution/contamination is unlikely to be significant in isolation, but may be significant in a cumulative/in-combination context. Adverse changes in the local density and patterns of movement/behaviour marine and coastal wildlife is unlikely to be significant in terms of site integrity in isolation, but may be significant in a cumulative/in-combination context.
(viii)	Is the Activity Capable of Affecting (other than insignificantly) any Ecological or Geomorphological Process on which the Conservation of any Protected Feature of the MCZ is (wholly or in part) Dependent?
	No. This is a spatially and temporally very limited project which may have some limited and localised effects but is unlikely to exert any appreciable influence on the ecological and/or geomorphological processes that operate within the site.

Stage 1 Assessment

- 3.13 As either (vii) or (viii) has been answered 'yes' the process must proceed to a Stage 1 Assessment [Table 3.2], in which the public authority either must be able to satisfy the two tests detailed below, or proceed to a Stage 2 Assessment.

Table 3.2: Strangford Lough MCZ Assessment – Stage 1

Test 1:

Based on the evidence received, is the public authority satisfied that there is no significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZ? And can the public authority exercise its functions to further the conservation objectives of the MCZ site?

Yes.

The public authority can be satisfied that there is no significant risk of the activity hindering the achievement of the conservation objectives for Strangford Lough MCZ and can exercise its functions to further the conservation objectives of the MCZ based on the working methodology set out in the MS and the environmental protection and mitigation measures set out in the CEMP and MBMP.

If the answer is "yes" to this test, a Stage 2 assessment is not required, and the authorisation process may proceed. Provide detail.

If the answer is "no" to this test, provide detail and proceed to Test 2.

Test 2:

Although the person seeking an authorisation is unable to satisfy the public authority that the activity will not hinder the achievement of the conservation objectives stated for the MCZ, is there an alternative way of proceeding with the proposal which would create a substantially lower risk of hindering the achievement of the conservation objectives stated for the MCZ? This would include proceeding with it: in another manner or at another location.

n/a

If the answer is "no" to test 2, a Stage 2 assessment is required.

If the answer is "yes" to test 2, apply the changes and repeat test 1.

If the outcome is "yes" a Stage 2 assessment is not required and the authorisation process may proceed.

If the answer is still "no" a Stage 2 assessment is required.

Please document the steps taken in the stage 1 assessment in chronological order, detailing changes applied if test repeated.

Stage 2 Assessment

- 3.14 As Test 1 has been answered 'yes', a Stage 2 Assessment is not required.

Table 3.3: Strangford Lough MCZ Assessment – Stage 2

Does the benefit to the public of proceeding with the act clearly outweigh the risk of damage to the environment that will be created by proceeding with it?

n/a

If the answer is "no" reject application.

If the answer is "yes" provide information and proceed to the next question.

Can the applicant satisfy the public authority that they will undertake, or make arrangements for the undertaking of, measures of equivalent environmental benefit to the damage which the act will or is likely to have in or on the MCZ?

n/a

If the answer is "yes" continue with the authorisation process. Measures given by the applicant in this section must be conditioned on the authorisation, if issued.

If the answer is "no" reject application.

Annex A: NSN Site Information

Annex A1: Strangford Lough SAC Conservation Objectives (March 2017)

Annex A2: Strangford Lough SPA Conservation Objectives (February 2015)

Annex A3: North Channel SAC Conservation Objectives (March 2019)

STRANGFORD LOUGH SAC
UK0016618

CONSERVATION OBJECTIVES

Document Details

Title	<i>Strangford Lough SAC Conservation Objectives</i>
Prepared By	██████████
Approved By	██████████
Date Effective From	20/03/2017
Version Number	V4
Next Review Date	November 2020
Contact	██████████

Revision History:

Version	Date	Summary of Changes	Initials
V1	June 2013	Internal working document	██
V2	January 2015	Complete review	████
V3	February 2017	Review marine features	██
V4	November 2018	Review seal targets	██

Site relationships

To fully understand the conservation requirements of this site, it is necessary to also refer to the Conservation Objectives for Strangford Lough SPA and the Strangford Lough and Lecale Heritage Management Strategy 2013-2018.

Strangford Lough SAC boundary overlaps with the boundary for Strangford Lough SPA and adjoins Outer Ards SPA. Strangford Lough SAC and SPA also lie within Strangford Lough Marine Conservation Zone (MCZ).

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives¹ to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition
- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.

¹ 92/43/EEC and 2009/147/EC (codified version of Directive 79/409/EEC as amended)

- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas 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 as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as 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 population on a long term basis.

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as **“the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site”**.

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4. SITE INFORMATION

COUNTY: DOWN

GRID REFERENCE: IJ 560579

AREA: 15398.54 ha

5. SUMMARY SITE DESCRIPTION

Strangford Lough is a large (150 km²) marine inlet on the east coast of County Down, of which about 50 km² lies between high water mark mean tide (HWMMT) and low water mark mean tide (LWMMT). Its northern end lies some 15 km east of Central Belfast (6 km from the outskirts). Downpatrick lies 5 km west of the south west corner. Strangford, Killyleagh, Whiterock, Comber, Newtownards, Greyabbey, Kircubbin and Portaferry are situated on the edge of the Lough. About 60,000 people live around its shores and about one million people live within one hour's drive.

Almost land-locked, Strangford Lough is separated from the Irish Sea by the Ards Peninsula to the east and is bounded to the south by the Lecale coast. It is connected to the open sea by the Strangford Narrows, an 8 km long channel with a minimum width of 0.5 km. The Lough is 30 km long from head to mouth and up to 8 km wide.

This sea inlet is made up of a drowned drumlin field (created by inundation of the landscape which emerged from under the melting ice-sheets of the Ice Age) which is for the most part less than 10 m in depth and a deeper Y-shaped channel (possibly an old river-valley or geological fault-line) which is up to 66 m deep. The underlying rock is largely Silurian. The surface of the bed and shore of the Lough ranges from bedrock in areas with strong currents to fine mud in sheltered waters. The narrow entrance channel is an important feature with extremely strong currents of up to 8 knots (4 m/sec).

The tidal flats of Strangford Lough form extensive deposits around its northern limits in a partially eroded drumlin and late-glacial landscape. The sedimentary dynamics of the contemporary tidal flats are controlled by exposure to waves and tidal currents and vary from current- to wave-dominated sandy areas to suspension-dominated muddy areas. At a number of locations indicators of former sea levels are preserved which offer the opportunity to define the evolution of the area.

The triangular area around the Lough mouth is subject to greater wave energy. It has broad, almost level rock platforms, steeply-shelving rocky shores, sandy beaches and a largely sandy sea-bed. The water in the Lough is virtually fully saline except at the mouths of the two moderate-sized rivers and several streams which drain into it from the catchment of about 900 km² where it may be somewhat brackish. The area enjoys an equable climate with low rainfall, infrequent frosts and prevailing west to south west winds.

The Lough supports an impressive range of marine habitats and communities with over 2,000 recorded species. It is important for marine invertebrates, algae and saltmarsh plants, for wintering and breeding wetland birds, and for marine mammals.

Further details of the site are available on the DAERA website (<https://www.daera-ni.gov.uk/publications/reasons-designation-special-area-conservation-strangford-lough>).

5.1 BOUNDARY RATIONALE

The landward boundary of the SAC is entirely coincident with the landward boundary of the following five Areas of Special Scientific Interest: Strangford Lough Part 1, Strangford Lough Part 2, Strangford Lough Part 3, Killard and Ballyquintin Point. Marine areas below mean low water are also included.

6. SAC SELECTION FEATURES

Feature type	Feature	Global Status	Size/ extent/ pop~
Habitat	Large shallow inlet and bay	A	15090.6 ha
Habitat	Coastal lagoons	B	45.0 ha
Habitat	Mudflats and sandflats not covered by sea water at low tide	B	2000.0 ha
Habitat	Reefs	B	1600.0 ha
Habitat	Annual vegetation of drift lines	C	250 km
Habitat	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	C	75.0 ha
Habitat	Perennial vegetation of stony banks	C	30.0 ha
Habitat	<i>Salicornia</i> and other annuals colonising mud and sand	C	
Species	Harbour (Common) Seal <i>Phoca vitulina</i>	C	210

Table 1. List of SAC selection features. Those with global status A-C will be referred to in ANNEX I.

The global status is an expert judgement of the overall value of the site for the conservation of the relevant Annex I habitat. Sites have been graded A, B or C - in the UK these gradings have been interpreted as follows:

A - Sites holding outstanding examples of the habitat in a European context.

B - Sites holding excellent stands of the habitat, significantly above the threshold for SSSI/ASSI notification but of somewhat lower value than grade A sites.

C - Examples of the habitat which are of at least national interest (i.e. usually above the threshold for SSSI/ASSI notification on terrestrial sites) but not significantly above this. These habitats are not the primary reason for SACs being selected.

D - Habitat present but not of sufficient extent or quality to merit listing as SAC feature.

There is therefore a distinction between the principal features for which sites have been selected (those graded A or B) and those which are only of secondary interest (those graded C). This is a useful distinction but it is important to note that all three grades are qualifying SAC interest features.

Click [here](#) to go to the Natura 2000 Standard Data Form for Strangford Lough SAC.

6.1 ASSI SELECTION FEATURES

Strangford Lough ASSI

Feature Type	Feature	Size/ extent/ pop~	Comments
Habitat	Intertidal Rock	1645 ha	
Habitat	Mudflats	2000 ha	
Habitat	Coastal Vegetated Shingle	250km	
Habitat	Coastal Saltmarsh	75 ha	
Habitat	Maritime Cliff & Slope		
Species	Higher Plant Assemblage		
Species	Invertebrate Assemblage		
Species	Waterbird Assemblage		
Species	Harbour (Common) Seal <i>Phoca vitulina</i>		
Earth Science	Contemporary coastal processes – the inter-tidal zone between Greyabbey and Ardmillan Bay		This refers to the entire inter-tidal zone
Earth Science	Holocene sea-level history – buried and semi-buried components within the inter-tidal and adjoining areas		Key localities are at Rough Island, Greyabbey Bay, Ringneill Quay
Earth Science	Pleistocene – Late Glacial Sediments		

Table 2. List of ASSI features

7. CONSERVATION OBJECTIVES

The *Conservation Objective* for this site is:

To maintain (or restore where appropriate) the

- Large shallow inlet and bay
- Coastal lagoons
- Mudflats and sandflats not covered by sea water at low tide
- Reefs
- Annual vegetation of drift lines
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Perennial vegetation of stony banks
- *Salicornia* and other annuals colonising mud and sand
- Harbour (Common) Seal *Phoca vitulina*

to favourable condition.

Maintain implies that the feature is in favourable condition and will, subject to natural change, remain at its condition at designation. Restore implies that the feature is degraded to some degree and that activities will have to be managed to reduce or eliminate negative impact(s). Restoration in the marine environment can refer to natural recovery through the removal of unsustainable physical, chemical and biological pressures, as well as intervention.

For each SAC feature, there are a number of component objectives which are outlined in the table below. These include a series of attributes, measures and targets which form the basis of *Condition Assessment*. The results of this will determine whether the feature is in favourable condition or not. The feature attributes and measures are found in the attached annex.

8. SAC SELECTION FEATURE OBJECTIVE REQUIREMENTS

Feature	Global Status	Component Objective
Large shallow inlet and bay	A	Maintain the extent of the large shallow inlet and bay
		Allow the natural processes which determine the development, structure, function and extent of the large shallow inlet and bay, to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this habitat.

Coastal lagoons	B	Maintain the extent of the coastal lagoons
		Allow the natural processes which determine the development, structure, function and extent of the coastal lagoons, to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this habitat.
Mudflats and sandflats not covered by sea water at low tide	B	Maintain the extent of mudflats and sandflats not covered by sea water at low tide
		Allow the natural processes which determine the development, structure and extent of mudflats and sandflats not covered by sea water at low tide, to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this habitat.
Reefs	B	To restore the reefs and their characteristic species to favourable condition, allowing for natural change.
		Allow the natural processes which determine the development, structure, function and extent of the reefs, to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this habitat.
Annual vegetation of drift lines	C	Maintain and enhance the extent of annual vegetation of drift lines subject to natural processes
		Allow the natural processes which determine the development and extent of annual vegetation of drift lines to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this community including the presence of notable species

Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	C	To restore the Atlantic salt meadows and their characteristic species to favourable condition, allowing for natural change.
		To maintain or enhance, as appropriate, the composition of the saltmarsh communities
		To maintain transitions between saltmarsh communities and to other adjoining habitats
		To permit the continued operation of formative and controlling natural processes acting on the saltmarsh communities
Perennial vegetation of stony banks	C	To restore the perennial vegetation of stony banks and their characteristic species to favourable condition, allowing for natural change.
		Allow the natural processes which determine the development and extent of perennial vegetation of stony banks to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this community including the presence of notable species
<i>Salicornia</i> and other annuals colonising mud and sand	C	To restore the <i>Salicornia</i> and other annuals colonising mud and sand and their characteristic species to favourable condition, allowing for natural change.
		Allow the natural processes which determine the development and extent of <i>Salicornia</i> and other annuals colonising mud and sand, to operate appropriately
		Maintain and enhance, as appropriate, the species diversity within this habitat.
Harbour (Common) Seal <i>Phoca vitulina</i>	C	Maintain and enhance, as appropriate, the Harbour (Common) Seal population

		Maintain and enhance, as appropriate, physical features used by Harbour (Common) Seals within the site
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9. ASSI FEATURE OBJECTIVE REQUIREMENTS

Feature	Component Objective
Intertidal Rock	See SAC Selection Feature Objective Requirements table.
Mudflats	See SAC Selection Feature Objective Requirements table.
Coastal Vegetated Shingle	See SAC Selection Feature Objective Requirements table.
Coastal Saltmarsh	See SAC Selection Feature Objective Requirements table.
Maritime Cliff & Slope	To be finalised
Higher Plant Assemblage	To be finalised
Invertebrate Assemblage	To be finalised
Waterbird Assemblage	See SPA Conservation Objectives.
Harbour (Common) Seal <i>Phoca vitulina</i>	See SAC Selection Feature Objective Requirements table.
Contemporary coastal processes – the inter-tidal zone between Greyabbey and Ardmillan Bay	Permit the continued operation of formative and controlling natural processes acting on the inter-tidal system. Maintain natural site morphology subject to natural processes.
Holocene sea-level history – buried and semi-buried components within the inter-tidal and adjoining areas	Maintain the potential for access to buried and semi-buried components necessary for the demonstration of sea-level history as related to this site.
Pleistocene - Late Glacial Sediments	Maintain extent and quality of exposure, together with access to the features subject to natural processes.

10. MAIN THREATS, PRESSURES AND ACTIVITIES WITH IMPACTS ON THE SITE

Both on-site and off-site activities can potentially affect SAC/ASSI features. The list below is not exhaustive, but deals with the most likely factors that are either affecting Strangford Lough SAC, or could affect it in the future.

Although Reefs, Large shallow inlet and bay, Coastal lagoons, Mudflats and sandflats not covered by sea water at low tide, Atlantic salt meadows, Perennial vegetation of stony banks, Annual vegetation of drift lines, *Salicornia* and other annuals colonising mud and sand and Common Seal *Phoca vitulina* are the qualifying SAC features, factors affecting ASSI features are also considered.

NOTE - Carrying out any of the Notifiable Operations listed in the ASSI schedule could affect the site.

Changes in Surrounding Land Use Impacts

Activities occurring outside the site (e.g. land surrounding Strangford Lough such as agricultural intensification, coastal engineering, and development) may be detrimental to the site through remote affects – some of these outside impacts are considered, as follows:

Housing and Industrial Development

Pressure for development around the Lough is evident from the number of planning applications submitted in recent years. Substantial housing developments have proceeded at Portaferry, Greyabbey, Kircubbin and Killyleagh and others are under consideration. The area also attracts applications for individual houses in rural locations which may be effect wildlife or landscape.

Development close to the shore may have adverse effects on areas of saltmarsh and other habitats or lead to disturbance of feeding and nesting birds. The cumulative effect of such development is difficult to assess accurately but is unlikely to be insignificant. There are also indirect impacts associated with development, for example the increased load on sewage treatment plants or additional septic tanks and the effects of storm water drainage.

Shoreline housing may also create demand for further sea defences, causeways and boat slips.

Coastal Engineering

Much of the larger scale sea defences are located in the northern end of the Lough. The sea defences at Newtownards have recently been repaired and improved. A monitoring programme has been set up by the Rivers Agency to assess the effects of these major repair works on the ecology of the Lough.

In recent years rock armouring has been a favoured strategy for road protection against erosion. Unlike the traditional sea walls, armouring helps to dissipate wave energy with less drawdown of sediment. However, it is rarely aesthetically pleasing and tends to encroach onto the shore. There have also been attempts by some landowners to prevent erosion by using rocks and boulders from the intertidal area.

Coastal engineering works have affected a number of shallow bays, saltmarshes and areas of tidal flat around the Lough. Causeways, boat slips and other restrictions have modified current and tidal flow patterns and, in turn, affected sediment transport patterns. In some cases this has resulted in the incidental creation of new habitat including saltmarsh, brackish ponds and wetlands.

The effect of rising sea levels and changing weather patterns in the long-term may create a desire for new or additional flood defences at existing settlements.

Sand and Gravel Extraction

Traditional rights to remove sand, gravel and shingle from the shores are attached to the folios of some land-holdings in the area. These materials were formerly extracted by shovel and horse-drawn cart for use on the land. Nowadays tractors, trailers and earth-moving machinery are more likely to be used. The removal of intertidal sediments increases the risk of erosion by removing some of the wave-absorbing materials and altering the beach profile. The exercise of extraction rights is not, however, currently a major issue within the SAC/SPA.

Farming

Farmers and landowners have helped to shape the Strangford Lough landscape and its habitats and contributed to the conservation interests around the Lough. For example, many of the islands which are important for wildfowl or nesting terns are grazed by sheep or cattle. By and large farmers have tolerated the habit of Brent Geese to graze agricultural land when eelgrass is in short supply. Some farming practices, however, can cause localised damage.

Livestock which are free to wander onto the shore may result in damage to strandline vegetation and saltmarsh. Their trampling can seriously poach the ground and exacerbate erosion. The practice of sand-ploughing on the shore to clean the plough can have damaging effects both on eel-grass beds and on invertebrates in the sand. Recovery from this seemingly harmless activity can take years in some situations.

ACTION: Reduce the risk of surrounding agricultural intensification by encouraging owner/occupiers to enter into agri-environment schemes. Use appropriate assessments, through the planning process, to minimise any development risks adjacent to the SAC.

Recreational & Educational Impacts

Tourism

Areas of high scenic and amenity value such as Strangford Lough are an important part of Northern Ireland's tourism product. Investment in tourism capital projects and support systems such as environmental and heritage visitor centres has helped bring employment and new prosperity to rural towns and presents diverse business opportunities for local communities. As the trend towards activity and special interest holidays increases, Strangford Lough's environmental designations may provide additional impetus to the promotion of the marine life as a tourist attraction.

Increasing pressure from the public for access to the water and the surrounding countryside for recreation and enjoyment has to be balanced with the need to sustain the environment and the fabric of local communities.

Informal Recreation

Strangford Lough is an attractive and popular venue for a variety of informal recreational pursuits, such as walking (often with dogs), bathing and wildlife watching.

Individuals or small groups of walkers rarely cause any problems for conservation. Walkers can, however, cause considerable disturbance to bird-life in certain sensitive locations. Localised problems have been experienced with dogs disturbing birds, particularly on the upper shore at low tides and at nesting islands. The problem is particularly acute with loose dogs and at certain periods of the year critical to the bird's feeding cycles.

Efforts to keep beaches suitable for recreation often include the removal of drift seaweed along with litter. Seaweed is an important component of the marine ecosystem and in most instances is better left in place unless there are compelling reasons for its removal. There have been proposals to create or extend sandy beaches for bathing. In addition to loss of natural foreshore, such efforts can be counterproductive if they fail to take account of the local sediment regime. There may also be a desire to provide amenities such as promenades and car parking areas. These are likely to increase the numbers of people using the area with the consequent risk of increased disturbance.

The Lough's international reputation for waterfowl is underlined by the number of bird-watchers who are attracted to the area, many from Britain or overseas. The National Trust and the Wildfowl and Wetlands Trust have provided hides from which the birds may be observed by the public. Seal watching from the car park at Cloghy Rocks is also popular.

The observation of wildlife for enjoyment is a popular activity. However some enthusiasts fail to consider either owners' property rights or the welfare of the wildlife. Disturbance can prevent wildlife feeding and can cause desertion of nests with eggs or young birds. Litter and discarded angling materials are unsightly and may cause injury to wildlife. There has been an increase in charter boats specialising in wildlife watching trips, which without appropriate training may cause disturbance to protected species.

Boating and Sailing

About 2000 yachts are located around the Lough and there are approximately 5000 active boaters. Most yachting is organised through the eleven clubs around the Lough. Club races and regattas take place throughout the summer with frequent all-Ireland and international events for particular classes. Yachting instruction takes place at several centres and clubs have their own cadet classes.

Most cruisers are moored on permanent swing moorings close to club premises. There are also a few public moorings and scattered private moorings elsewhere. Some craft are mud-berthed and a few are berthed at marina type jetties. Some areas, particularly Whiterock, are popular for water-skiing. There is limited public access to the shore for boats. Cook Street Pier owned by Ards Borough Council and the pontoons at Portaferry are the two main areas.

Windsurfing (sailboarding) has become increasingly popular over recent years, particularly at Cunningburn, Kircubbin and Whiterock. Little depth of water is required and insulating suits enable enthusiasts to sail throughout the year when weather permits. Jet skiing has developed on a small scale on the Lough notably at Whiterock.

Although generally a benign activity, boating may result in a number of potentially harmful impacts on the Lough and its wildlife. It may cause physical disturbance to the seabed and shore, particularly at moorings and where slipways and jetties are built. It is often difficult to maintain water quality at anchorage's and harbours. Boating may also cause noise and general disturbance to wildlife, particularly to breeding or over-wintering birds. Fast powered craft including jet-skis tend to be the worst in this regard. Windsurfing during the winter could potentially conflict with wildlife in refuges.

Diving

Strangford Lough is one of the principal areas in Northern Ireland used by recreational divers for training, exploring wrecks and observing marine life. The Lough's sheltered waters are ideal as training areas for novice divers, while also affording some of the most challenging dives to be found in Northern Ireland for the more experienced.

The study of the seabed by divers is in harmony with conservation interests provided no damage is done. Over-collection of marine life could, however, prove damaging to the populations of certain species. The Strangford Lough Regulation of anchoring, mooring and diving byelaws 2012 () prohibit anchoring, mooring or diving within a restricted zone at any time. This byelaw applies to all waters deeper than 10m below chart datum in the restricted zone which is bounded by a Northern Limit and a Southern Limit. Diving for the purposes of monitoring condition and recovery of the designated features within the zone may be permitted by the Department following an assessment of the proposed methodology and qualifications of the Dive Team. Any such Permit will be time bounded and require the production of a detailed survey report.

Horse Riding

Newtownards, Mount Stewart and Ballyhornan are the most popular areas for horse riding on the foreshore. Firm beaches provide uninterrupted gallops for exercising horses.

The areas most sensitive to horse riding are wildlife refuges over the winter months and areas supporting Eelgrass. Birds may not be unduly disturbed by riders hacking across the shore, but are more likely to move where several horses are using the same stretch of shore as a gallop. There is some conflict with displacement of wildfowl from the shore at Castle Espie where there is a bird watching hide. Otherwise there are few significant problems at present.

Wildfowling

There is a very long tradition of wildfowling on Strangford Lough. The five wildfowling clubs around the Lough, (all affiliated to the British Association for Shooting and Conservation), co-ordinate their activities through the Joint Council of Strangford Lough Wildfowling Associations. Wildfowling on the foreshore and on adjacent lands owned or controlled by the National Trust is subject to controls under the Wildlife Scheme. A system of refuges has been established where wildfowling is either banned or restricted to certain times of year and where efforts are being made to minimise all forms of disturbance. Bag returns provide information on the

composition of birds shot and their location. Mallard is the main quarry species, followed by teal.

Wildfowling inevitably causes some disturbance to the birds though this is minimised by the wildfowlers. Participants try to reach their positions unseen, and shoot birds on a flightline, rather than on the feeding grounds. Dogs retrieving birds may cause some disturbance to feeding birds, but with well-trained animals this is minimal.

The revised system of refuges, including time-share zones and shooting regulated zones, has been designed to increase the birds' opportunity to feed and roost undisturbed, so maintaining the Lough's attraction for them. Work to determine the effectiveness and sustainability of the current refuge system is on-going.

Aircraft

Newtownards Airfield lies adjacent to the SAC/SPA. Light aircraft, gliders and small helicopters use the airfield, mostly for recreation. An annual fund-raising air-show attracts large crowds.

The evidence to date suggests that birds generally become accustomed to the movements of light aircraft. Microlites and helicopters cause greater disturbance.

Education and Research

The Lough provides a natural laboratory for carrying out marine biological and oceanographic research and this is evident from the number and diversity of research projects that it supports. Strangford Lough is much used for field studies at all levels of education, with many school groups visiting the interpretative centres which have been established around the Lough. In addition, residential centres bring Primary and Secondary school parties to the Lough for study and training.

Generally speaking these activities have little lasting impact on the Lough's ecology. There is, however, a risk of disturbance from large parties repeatedly using sensitive areas. Repeated collecting at favoured sites may also lead to local depletion of species in that area.

ACTION: The increasing recreational pressure needs to be continuously monitored and assessed for any possible adverse impacts on the loughs SAC/ASSI habitats and associated species. Recreational pressure also needs to be considered in appropriate assessments when assessing the possible adverse impacts of proposed recreational developments, on or around the lough.

Operations Affecting Water Quality

Anthropogenic inputs entering Strangford Lough include those from sewage outfalls, watercourses, recreational and commercial craft and associated facilities, and the open sea. They include nutrients from effluent discharges, organic wastes and fertiliser run-off; some particulate material including bacteria; small amounts of petroleum and oils; some metal ions and other more complex chemicals derived from industrial processes; fuel additives, pesticides, anti-fouling paints, slip-way treatments etc.; and plastic and other floating waste. Some fly-tipping of refuse

onto the shore also takes place, which may result in chemicals leaching into the Lough.

Sewage effluent is discharged directly into Strangford Lough from eight main outfalls. In addition, treated sewage effluent from a number of neighbouring settlements is discharged into the Quoile system. Slurry, silage effluent, effluent from septic tanks and leachate from landfill sites may enter the rivers and some of the smaller streams, particularly the Quoile. A certain amount of agricultural run-off enters the Lough directly from adjacent fields, or indirectly via watercourses.

Effluent discharged from in-board toilets on boats may cause localised pollution.

Water quality in the Lough is generally good, although there be locally significant effects from discharges of storm water and sewage from peripheral housing areas. High nutrient levels from sewage outfalls can adversely modify the local biota though such inputs may increase productivity and carrying capacity. Some forms of wildlife thrive in nutrient enriched areas but nutrient overload can also lead to some species having a blanketing effect on the habitat. Enrichment tends to result in an increase in the abundance of a few tolerant species such as ragworms and in the growth of green algae.

Nutrication may be having a detrimental effect particularly at the northern end of the Lough. Increases in the suspension of organic or inorganic material in the water column increases turbidity and reduces light levels, which along with changes in sedimentation may be affecting the growth of eelgrass.

The potential exists for any spillage from shipping in the Irish Sea to enter the Lough system. The scale of impact would depend on the amount of spill, its location and type of oil etc.

ACTION: The ongoing water quality monitoring of the lough should identify any potential water quality problems. In the case of accidental oil spills from shipping in the Irish Sea, there needs to be an up to date Oil Spill Contingency Plan, in place, to deal with such an eventuality.

Commercial Fisheries Impacts

Commercial Fishing

Fishing on a commercial scale can affect the seabed in a variety of ways. Several studies of the impact of fishing operations on the seabed were undertaken during the 1990s. These studies concluded that only those areas where fishing boats could not easily gain access remained unmodified. Following concerns about a serious decline in the biogenic reef (*Modiolus modiolus*) in Strangford Lough, Queen's University Belfast were commissioned by EHS to undertake a wide ranging investigation into the probable causes of this decline. The final report (Strangford Lough Ecological Change Investigation) identified trawling and dredging for scallop species as the main cause for the demise of the *Modiolus* biogenic reef structure. Subsequently, DARD Fisheries Division introduced the Strangford Lough

(Prohibition of Fishing for Shellfish) Regulations (Northern Ireland) 2001 which prohibits the use of mobile fishing gear within the Lough.

In 2008, DOE and DARD developed a comprehensive restoration plan for the *Modiolus* biogenic reef, which was submitted to and accepted by the European Commission. This included surveying the extent and condition of the remaining biogenic reef, identification of sites in good condition, investigation of practical methodologies and introducing total protection measures where required. The Restoration plan was modified and resubmitted to the European Commission in October 2012. As part of the restoration plan DARD brought forward proposals to prohibit, through regulations, fishing in two areas of Strangford Lough, known to contain *Modiolus* biogenic reef. These regulations (The Strangford Lough (Sea Fishing Exclusion Zones) Regulations (Northern Ireland) 2012) came into operation in January 2013 and prohibit all fishing within two zones at a depth of 10m or more below chart datum.

Potting takes place mainly in the Narrows and the periphery of the Lough. There is pot fishing of Dublin Bay Prawns and more recently of Shore Crabs, Velvet Swimming Crabs, Common Whelks and Lobsters are also taken. Fishing effort can disturb sediment and over-fishing of some species might affect the conservation interests.

Harvesting of Wild Shellfish

Though economically viable beds of the Native Oyster were worked out in the 19th century, other shellfish are still gathered. Cockles are gathered by hand raking the sediment. While the collection of Common Mussels and Winkles for personal use is unlikely to have a significant impact on the designated features of the Lough, there has been an increase in unregulated shellfish harvesting by large groups or 'gangs'. Some commercial harvesting may be sustainable but large-scale harvesting may be detrimental. Mechanical harvesting of cockles for example would be very likely to severely damage other fauna and flora that live in the mudflats. Eelgrass may be physically damaged and harvesting may interfere with birdlife such as oystercatchers, for which cockles are a major food source.

People on the shore engaged in such activities may reduce bird feeding times and increase their energy requirements as they fly to other areas. Common and Grey seals hauled out onto rocks within the intertidal area may also be disturbed by people harvesting wild shellfish.

Seaweed Harvesting

Historically in Strangford Lough seaweeds have been both harvested and cultured. Drift wrack and kelp (brown seaweeds) were used on the land as fertiliser. Up to the Second World War seaweed - in particular the Knotted Wrack - was extensively cut for fertiliser and for burning to produce a powder used in glass-making. At certain sites, for example around Greyabbey, large boulders were placed on sandy areas of shore for seaweeds to attach and create a crop of material.

The red algae known as Dulse is also a traditional crop, being cut from the stipes of kelp, on which it grows particularly in the Narrows, then dried for human consumption.

Were extensive commercial exploitation of seaweed to take place in Strangford Lough the loss in ecological terms would be likely to be on a significant scale. Research has indicated that large scale commercial harvesting would probably alter populations over a wider area with consequent decline in larval supply, increase in sediment mobility and loss of organic material from the inshore system.

There is interest in the cultivation of seaweed in Strangford Lough which may have implications for the features.

Bait Digging

Bait digging has traditionally taken place on a small scale in many places around the Lough and today digging for Lugworm and Ragworm is commonplace at Island Hill. Small-scale bait digging by anglers for individual use may be insignificant in its effect in many situations but if undertaken in sensitive habitats, at certain times of the year or on a commercial scale, it may be incompatible with the aims of nature conservation. It may damage eelgrass beds and large numbers of bait diggers are likely to cause disturbance to waterfowl. Raking or digging for burrowing invertebrates buries oxygen-rich surface sediments often killing the animals they contain.

Aquaculture

There has been a steady growth in interest in shellfish cultivation in Strangford Lough in recent years. Some 350 hectares of seabed and intertidal area within the Lough are now subject to shellfish culture licences. A number of different techniques are used for growing oysters, mussels, clams and scallops. Oyster farming is the most economically important fishery in the Lough with an annual turnover in excess of that from commercial fishing. Both Native Oyster and Pacific Oyster are cultivated in the Lough; these are grown in mesh sacks on trestles at low water and finished on ground mats.

Shellfish culture is generally regarded as an activity that has relatively low negative impact on the environment. A high standard of water quality is required and no chemicals or antibiotics are used in shellfish production. It can, however, cause loss or modification of habitat, disruption of sediment movement, and disturbance to wildlife. Care has to be taken to avoid the accidental introductions of other species with commercial shellfish. Imports of juvenile shellfish for cultivation are therefore routinely inspected by the Department.

The impact of areas set aside for the shellfish cultivation on bird feeding is generally limited. Sown areas cover only a small proportion of the foreshore and are usually well spaced. Harvesting and net cleaning occurs only during periods of spring tides. However, harvesting does occur during the winter months when bird feeding may be at its most intense. The cumulative impacts of shellfish cultivation on all designated features should be considered, in particular with each new application.

Caged fin-fish farming is presently considered to be an inappropriate practice in Strangford Lough for various environmental reasons including risks to native

marine life from waste products and parasite treatments, incompatibility with predator species and its impact on maintaining visual amenity.

ACTION: Commercial fisheries operations need to be constantly monitored and reviewed to assess the sustainability of the operations to prevent any adverse impacts on the loughs water-quality and foodchain ecology.

Wildlife watching trips

Wildlife watching trips (boat and land based) have the potential to cause disturbance to species if operators are not appropriately trained in how to approach species while minimising potential disturbance. In addition, damage to sensitive habitats may occur through lack of knowledge of their location. Various wildlife training courses are available which teach best practice when dealing with wildlife.

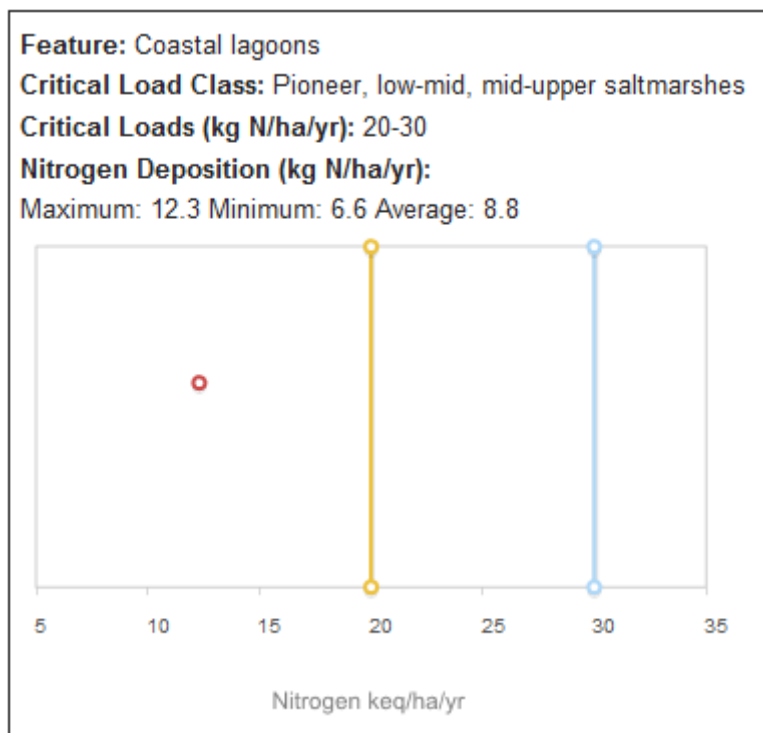
Nitrogen Deposition

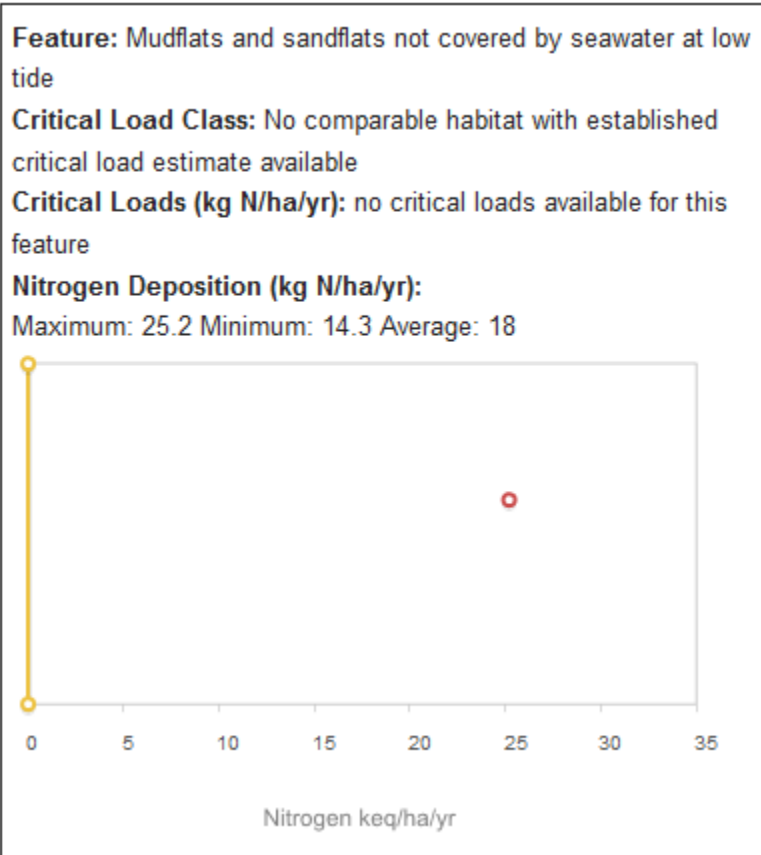
Excess nitrogen deposition can favour the growth of competitive plants and lead to changes in ecosystem structure or function and to a reduction in biodiversity. National scale studies show the potential adverse effects of excess nitrogen on natural and semi-natural habitats to be widespread across the UK. Lower and upper critical loads have been calculated for Strangford Lough SAC.

Large Shallow Inlets and Bays - Designated feature/feature habitat not sensitive to eutrophication.

Reefs - Designated feature/feature habitat not sensitive to eutrophication.

Annual Vegetation of Drift Lines - Designated feature/feature habitat not sensitive to eutrophication.





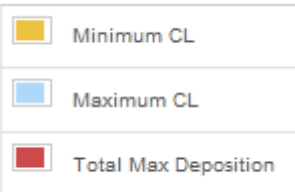
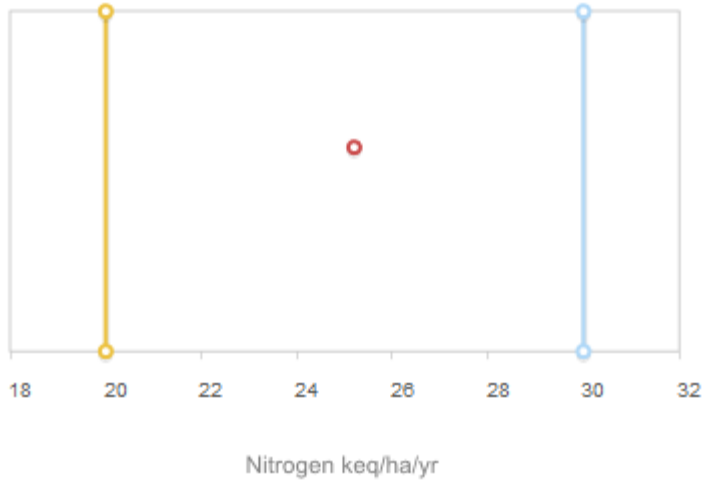
Feature: Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Critical Load Class: Pioneer, low-mid, mid-upper saltmarshes

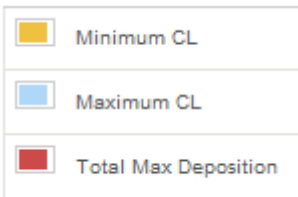
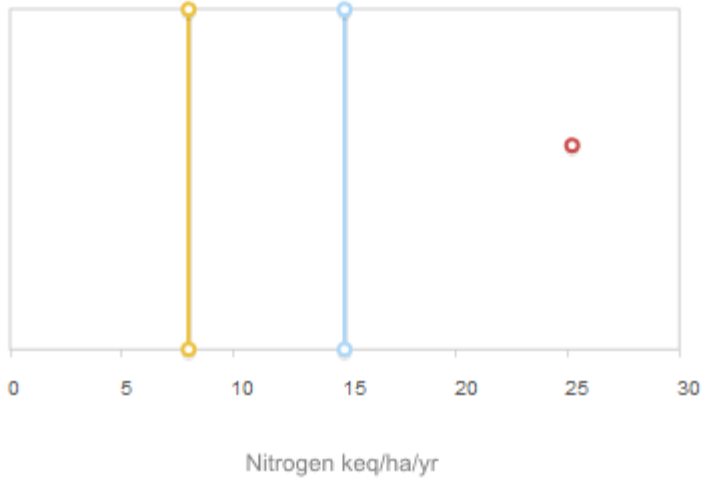
Critical Loads (kg N/ha/yr): 20-30

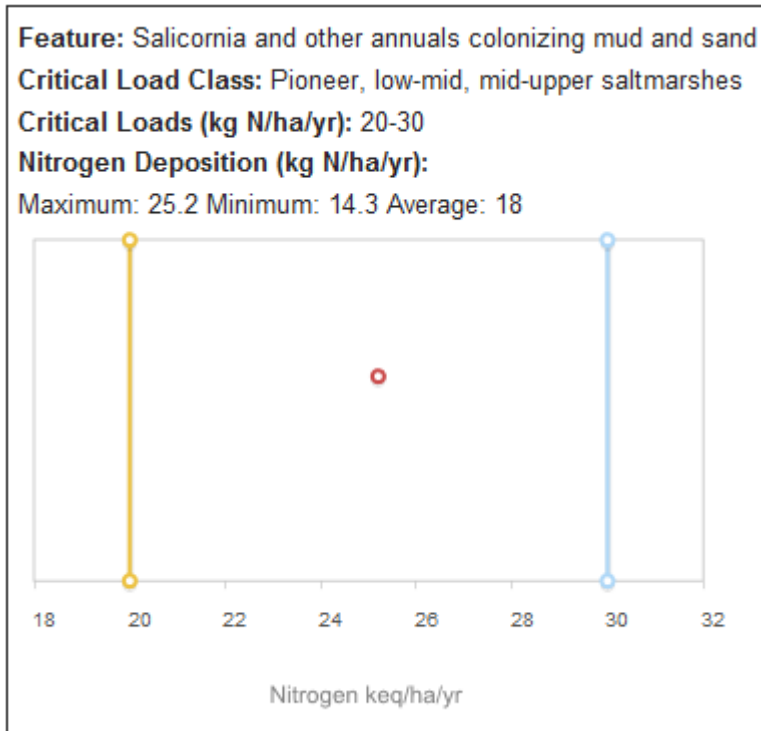
Nitrogen Deposition (kg N/ha/yr):

Maximum: 25.2 Minimum: 14.3 Average: 18



Feature: Perennial vegetation of stony banks
Critical Load Class: Coastal stable dune grasslands
Critical Loads (kg N/ha/yr): 8-15
Nitrogen Deposition (kg N/ha/yr):
Maximum: 25.2 Minimum: 14.3 Average: 18





(Source: Air Pollution Information System (APIS) website- www.apis.ac.uk)

ACTION: Seek to maintain or where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant critical load.

Changes to surrounding land use

Any changes in local land-use e.g. agricultural intensification, drainage works and development) may be detrimental to the SAC.

ACTION: Reduce the risk of surrounding agricultural intensification by encouraging the adjacent owner/occupiers to enter into agri-environment schemes. Use Habitats Regulations Assessments (HRAs), through the planning process, to minimise any development risks adjacent to the SAC.

Climate Change

Northern Ireland faces changes to its climate over the next century. Indications are that we will face hotter, drier summers, warmer winters and more frequent extreme weather events. The Northern Ireland Climate Change Adaptation Programme was published in January 2014. This contains the Northern Ireland Executive's response to the risks and opportunities identified in the Climate Change Risk Assessment for Northern Ireland (published January 2012) as part of the overall UK Climate Change Risk Assessment. The Adaptation Programme provides the strategic objectives in relation to adaptation to climate change, the

proposals and policies by which each department will meet these objectives and the timescales associated with the proposals and policies identified in the period up to 2019.

ACTION: When developing SAC management plans, the likely future impacts of climate change should be considered.

11. MONITORING

The SACs are surveyed using two forms of monitoring:

Site Integrity Monitoring (SIM) is carried out to ensure compliance with the ASSI/ SAC conservation objectives. The most likely processes of change will either be picked up by SIM (e.g. dumping, burning, turf cutting, grazing etc.) or will be comparatively slow (e.g. gradual degradation of the habitat). In addition, potentially damaging activities may be picked up through the active marine ranger programme or by members of the public raising concerns with the Department. These reports are followed up through consultation with the relevant competent authorities.

Site Condition Assessment of the designated features is carried out on a rolling 6 year basis to pick up subtle changes in the condition of the feature and to ensure that the conservation objectives are being met.

The method for Site Condition Assessment was agreed by the relevant JNCC-led Lead Co-ordination Network although the methodology has been modified to reflect individual site attributes in Northern Ireland. For marine features, condition assessments include a variety of techniques such as diving, remote cameras, sediment sampling and acoustic seabed mapping. Marine mammal monitoring programmes also contribute.

11.1 MONITORING SUMMARY

1. Monitor the integrity of the site (SIM or Compliance Monitoring)

This SIM should be carried out at least once every year.

2. Monitor the condition of the site (Condition Assessment)

Monitor the key attributes for each of the SAC selection features. This will detect if the features are in favourable condition or not. See Annex I.

The favourable condition table provided in Annex I is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any Habitats Regulations Assessment (HRA) that may be needed. It should be noted that completion of a HRA is a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

12. REFERENCES

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ANNEX I

The marine Annex I habitats are very broadly defined habitats that are often represented by large and complex sites. To effectively describe, monitor and manage such complex features, it has been necessary to divide some of them into smaller units called *sub-features*. Sub-features are distinctive biological communities (e.g. eelgrass beds, maerl beds, horse-mussel reefs), or particular structural or geographical elements of the feature. Due to the broad nature of marine Annex I features, it has often proved helpful, both in the development of conservation objectives, and of monitoring programs, to separate the feature into a number of constituent sub-features, and then to identify attributes and targets for the sub-features. The use of sub-features has been found to be particularly helpful for those marine Annex I features that represent whole physiographic units, and permits a level of flexibility in the application of the UK's Common Standards Monitoring which has been found necessary when applying the standards at the site level.

Feature 1 (SAC) - Large shallow inlet and bay (Status A)

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
	Extent	Area (ha) of the large shallow inlet and bay, measured once per reporting cycle.	No decrease in extent from an established baseline, subject to natural change.	
	Water clarity	Light attenuation measured on a monthly basis from March to September.	Seasonal light attenuation should not deviate from the baseline, subject to natural change.	The extent and diversity of plant and algal communities is affected by water clarity. Clarity is reduced through increases in the suspension of organic or inorganic material in the water column.

	Water salinity & temperature	Salinity and water temperature measured on a monthly basis.	Temperature & salinity should not deviate significantly from the long-term trends, subject to natural change.	Temperature and salinity are characteristics of the overall hydrography of the area, thus the overall functioning of the Lough.
	Nutrient status	Phytoplankton concentration in summer measured annually.	No significant increase in phytoplankton concentration from the established baseline, subject to natural change.	Nutrient enrichment stimulating excessive growth of phytoplankton is a common factor contributing to a reduction in water clarity. Single species-dominated phytoplankton blooms can also be harmful.

Feature 1 (SAC) - Large shallow inlet and bay (Status A) – continued.

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
Subtidal Sand and Gravel Communities	Characteristic biotopes at sites chosen so as to provide some indication of the distribution and extent of the Sub-Feature.	Presence of selected biotopes at selected sites measured once during the reporting cycle	Results should not deviate significantly from the established baseline, subject to natural change.	Changes in extent and distribution may indicate long term changes in the physical conditions at the site. Previously, AFBI was involved in a range of mapping exercises (ROXANN) to produce habitat maps, however, the complex heterogeneity of Strangford Lough seabed has rendered this maps of limited use. In 2015 AFBI produced a comprehensive bathymetric and habitat map (https://www.afbini.gov.uk/sites/afbini.gov.uk/files/publications/strangford_lough.pdf) and the Department is engaged in follow-up monitoring in ground truthing to further refine the precision of this map.
Subtidal Fine Sand and Mud Communities				

NOTE: As they are all part of the single system, the condition of other features which occur within a large shallow inlet and bay will also contribute to the overall assessment of the large shallow inlet and bay

Feature 2 (SAC) – Coastal Lagoons (Status B)

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
Tide-swept communities (The Dorn Sill)	Characteristic biotopes at sites chosen so as to provide some indication of the distribution and extent of the Sub-Feature.	Presence of selected biotopes at selected sites measured once during the reporting cycle	Results should not deviate significantly from the established baseline, subject to natural change.	Baseline survey was carried out as part of the Northern Ireland Littoral Survey between 1984 and 1987 by Heriot-Watt University. Changes in extent and distribution may indicate long term changes in the physical conditions at the site
	Species composition of selected biotopes at monitoring sites.	Presence and abundance of composite species, measured during summer, once per reporting cycle.	Presence and abundance of composite species should not deviate significantly from an established baseline, subject to natural change.	Tide-swept communities are characteristic of inlet lagoons and are therefore integral to the structure and function of such lagoons. A list of selected indicator species identified by field surveys will be utilised to determine the achievement of the conservation objectives through presence/absence at monitoring sites.
	Extent	Area (ha) measured once per reporting cycle.	No decrease in extent from an established baseline, subject to natural change.	Use of aerial photographs and subsequent ground truthing to determine this.

Feature 3 (SAC) - Mudflats and sandflats not covered by sea water at low tide (Status B)

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
	Morphological naturalness (extent, mobility and substrate)	Ensure that any loss in extent and change in system dynamics is only due to natural processes	No human induced developments impacting on the natural system.	This habitat occupies a naturally dynamic position in coastal systems. Provided that no human developments result in direct loss of habitat, or change the site dynamics, then the attribute should be deemed to be in favourable condition. Substrate supply and distribution should be regulated by natural coastal processes. Aerial photos can be used to monitor natural movement of channels and any encroachment from unregulated planning.
Intertidal Sand and Gravel Communities Intertidal Fine Sand and Mud Communities	Characteristic biotopes at sites chosen so as to provide some indication of the distribution and extent of the Sub-Feature.	Presence of selected biotopes at selected sites measured once during the reporting cycle	Results should not deviate significantly from the established baseline, subject to natural change.	Baseline survey was carried out as part of the Northern Ireland Littoral Survey between 1984 and 1987 by Heriot-Watt University. Changes in extent and distribution may indicate long term changes in the physical conditions at the site
	Species composition of selected biotopes at monitoring sites.	Species composition of selected biotopes measured once during the reporting cycle.	Composite species of selected biotopes should not deviate significantly from the established baseline, subject to natural change.	Species composition will be used to determine the biotope classification. The species composition of some biotopes may provide further information on changes/trends in these communities. A list of selected indicator species identified by field surveys will be utilised to determine the achievement of the conservation objectives through presence/absence at monitoring sites.

<p><i>Zostera</i> Spp Beds</p> <p>(<i>Z noltii</i>, <i>Z. angustifolia</i> <i>Z. marina</i>)</p>	Distribution of <i>Zostera</i> beds.	Distribution of <i>Zostera</i> beds, measured during autumn once during the reporting cycle.	Distribution should not deviate significantly from the established baseline, subject to natural change.	<p>The distribution of the beds is of key importance to their conservation condition.</p> <p>It is important that any consideration of <i>Zostera</i> within the context of these conservation objectives fits with the UK Biodiversity Action Plan for Seagrass Beds.</p> <p>A considerable amount of data has recently been collated regarding this attribute. A target value and consequently limits, will be derived from this data.</p> <p>The Department is currently gathering data on the distribution, extent and quality of subtidal <i>Zostera marina</i> beds (at present these are located at Ballyhenry and Strangford Harbour, but others may be found through subtidal survey).</p>
	Extent.	Area (ha) of <i>Zostera</i> spp. Beds	Extent should not deviate significantly from the established baseline, subject to natural change.	A considerable amount of data has recently been collated regarding this attribute. A target value and consequently limits, will be derived from this data.

Feature 3 (SAC) - Mudflats and sandflats not covered by sea water at low tide (Status B) – continued.

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
Zostera Spp Beds (<i>Z noltii</i> , <i>Z. angustifolia</i> <i>Z. marina</i>)	Taxonomic composition	Presence of selected taxa	Taxonomic species should not deviate significantly from the established baseline, subject to natural change.	A considerable amount of data has recently been collated regarding this attribute. A target value and consequently limits, will be derived from this data.
	Density	Measuring <i>Zostera</i> shoot density	Target: Average shoot density should not deviate significantly from the long term average.	An early indicator of seagrass under stress is a reduction in the number of plants and loss of plants on the lower shore. This will probably concentrate only on <i>Z. angustifolia</i> which, being a larger plant, is found at lower densities than <i>Z. noltii</i> .

Feature 4 (SAC) - Reefs (Status B)

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
Subtidal Rock and Boulder Communities Subtidal Rocky Reef Communities Intertidal Rock and Boulder Communities	Characteristic biotopes at sites chosen so as to provide some indication of the distribution and extent of the Sub-Feature.	Presence of the selected biotopes at selected sites measured once during the reporting cycle.	Results should not deviate significantly from the established baseline, subject to natural change	<p>AFBI was involved in a range of mapping exercises (ROXANN) to produce habitat maps, however, the complex heterogeneity of Strangford Lough seabed has rendered these maps of limited use. In 2015 AFBI produced a comprehensive bathymetric and habitat map (https://www.afbini.gov.uk/sites/afbini.gov.uk/files/publications/strangford_lough.pdf) and the Department is engaged in follow-up monitoring in ground truthing to further refine the precision of this map.</p> <p>For intertidal rock and boulder communities, baseline surveys were carried out as part of the Northern Ireland Littoral Survey between 1984 and 1987 by Heriot-Watt University. Changes in extent and distribution may indicate long term changes in the physical conditions at the site.</p>
	Species composition of selected biotopes at monitoring sites	Species composition of the selected biotopes measured once during the reporting cycle.	Composite species of selected biotopes should not deviate significantly from the established baseline, subject to natural change.	Species composition will be used to determine the biotope classification. The species composition of some biotopes may provide further information on changes/trends in these communities. A list of selected indicator species identified by field surveys will be utilised to determine the achievement of the conservation objectives through presence/absence at monitoring sites.

Feature 4 (SAC) - Reefs (Status B) - continued

SUB-FEATURE	ATTRIBUTE	MEASURE	TARGETS	COMMENTS
<p><i>Modiolus modiolus</i> Beds</p>	<p>Distribution of <i>Modiolus</i> beds.</p>	<p>Distribution of <i>Modiolus modiolus</i> biotope SCR.ModCVar and biotopes with <i>Modiolus /Ophiothrix</i> measured once during the reporting cycle.</p>	<p><i>Modiolus</i> beds (SCR.ModCVar) and other biotopes should be present in those areas of the Lough where they historically occurred.</p>	<p>The <i>Modiolus beds</i> are currently in unfavourable condition and are subject to a restoration plan which has been agreed with the EU Commission and all relevant stakeholders. It has been agreed that no direct intervention (by way of transplants etc.) will be conducted, instead favouring a natural resettlement of the feature, facilitated by enhanced fishery management plans. Periodic monitoring for indicators of natural restoration will be conducted by the Department and others but natural restoration is likely to take decades.</p>
	<p>Extent and percentage cover of <i>Modiolus</i> beds.</p>	<p>Extent and percentage cover occupied by <i>Modiolus</i> beds i.e biotope SCR.Mod.Cvar and biotopes with <i>Modiolus/Ophiothrix</i> measured once during the reporting cycle.</p>	<p>This target will reflect the potential for natural recovery of <i>Modiolus modiolus</i> beds in areas where it has been impacted.</p> <p>Lower limit: No decrease in extent or percentage cover from established baseline, subject to natural change.</p>	<p>It will be important to ensure that the beds do not become further reduced or fragmented even if the distribution does not change significantly.</p> <p>A considerable amount of data has recently been collated and is being updated regarding this attribute. Periodic monitoring for indicators of natural restoration will be conducted by the Department and others but natural restoration is likely to take decades.</p>

	Species index of <i>Modiolus</i> beds.	The diversity (number of species and their abundance) of the mussel beds is a key measure of its health.	Species index of the <i>Modiolus modiolus</i> beds should not deviate from the established baseline, subject to natural change.	<i>Modiolus</i> beds are a habitat for many other species. A list of selected indicator species identified by field surveys will be utilised to determine the achievement of the conservation objectives through presence/absence at monitoring sites.
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Feature 5 (SAC) - Annual vegetation of drift lines (Status C)

* = primary attribute. One failure among primary attribute = unfavourable condition

Attribute	Targets	Method of Assessment	Comments
* Morphological naturalness (extent, mobility and substrate)	No human induced developments impacting on the natural system.		This community occupies a naturally dynamic position in coastal systems. Provided that no human developments result in direct loss of habitat or of areas with the potential to develop this habitat, or change the site dynamics, then the attribute should be deemed to be in favourable condition. Both inorganic and organic substrates are important precursors to development of annual vegetation of drift lines. Substrate supply should be regulated by natural coastal processes.
* Characteristic species	Maintain the presence and broad distribution of stands of <i>Honckenya peploides</i> – <i>Cakile maritima</i> SD2 community and the SD3 <i>Matricaria maritima</i> - <i>Galium aparine</i> community together with other local variants across the feature. Assessments will need to be made during late summer(July/August)		These communities are found in a narrow strip at the extreme high water mark. Changes in the frequency and abundance of these species should be expected to occur seasonally as a result of storm events, but the communities are also sensitive to disturbance by human activities. Some communities on coarse substrates do not match well with SD 2 but are important as regional variants. Such communities are dominated by <i>Beta</i> and <i>Atriplex</i> spp. and show affinities to MC 6 <i>Atriplex hastata</i> - <i>Beta vulgaris</i> ssp <i>maritima</i> Sea-bird cliff community.
Disturbance	No increase in area where vegetation colonisation/recolonisation is prevented by human activity		To be assessed once per reporting cycle in late summer (July/August)
Rare and notable species	To maintain the presence of notable species at localities with historical records.		Check historical records to determine applicability

Feature 6 (SAC) - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (Status C)

* = primary attribute. One failure among primary attribute = unfavourable condition

Attribute	Target	Method of assessment	Comments
* Area of saltmarsh	Subject to natural processes, maintain the overall extent of saltmarsh vegetation.	Visual estimate in 2 x 2 m plots and across the extent of the saltmarsh using a combination of aerial photographs and SIM. The area should be measured once per reporting cycle (6 years) during the summer months of June, July, August or early September.	Judgements in changes to extent/area will have to take particular care to distinguish changes as a result of natural erosion vs. anthropogenic actions.
* Mobility	No increase in either the linear extent or the area constrained by introduced structures or landforms.	Visual inspection of aerial photographs, SIM and Condition assessment structured walk. Check for any new physical structures that may impact on this community.	Introduction of physical constraints would reduce the extent of this community and affect its structure.
Physical structure: creeks and pans	Realignment of creeks absent or rare. No further anthropogenic alteration of creek patterns or loss of pans compared to an established baseline.	Visual inspection of aerial photographs, SIM and Condition assessment structured walk. Check for man-made influences on creeks and pans.	Creeks and pans vary in size and density. Creeks absorb tidal energy and assist with the delivery of sediment into saltmarshes. Major erosion of saltmarsh is indicated by internal dissection and enlargement of the drainage network.

* Saltmarsh community diversity	Maintain presence of saltmarsh communities SM10, SM13, SM16, SM18, SM19, SM20 and SM28 as established at baseline survey.	Visual estimate in 2x2m plots.	
* Presence of associated semi-natural habitats	Maintain other saltmarsh communities and transitions to freshwater/flush and grassland - e.g. some of the samples to contain open SM8 communities with <i>Salicornia</i> ; S21 communities with <i>Scirpus maritimus</i> ; and S4d communities with <i>Phragmites</i>	Visual estimate in 2x2 m plots	<i>Zostera</i> and <i>Ruppia</i> beds (SM1 and SM2) and stands of <i>Salicornia</i> and <i>Suaeda</i> (SM8 and SM9) are included within other Annex 1 habitat types. Where they occur with saltmarsh communities, their presence should be recorded.
* Maintain frequency of positive indicators for low-level marsh (SM10)	At least 5 of the indicator species listed below at least occasional, of which 3 are at least frequent throughout the sward: <i>Suaeda maritima</i> , <i>Salicornia</i> agg., <i>Puccinellia maritima</i> , <i>Aster tripolium</i> , <i>Limonium humile</i> , <i>Glaux maritima</i> , <i>Cochlearia officinalis</i> , <i>Plantago maritima</i> , <i>Triglochin maritima</i> <i>Armeria maritima</i> . At least occasional is equivalent to greater than	Visual estimate in 2x2 m plots	Ensure species-poor/rank communities/sub-communities do not increase at the expense of other sub-communities. Note: <i>Zostera</i> and <i>Ruppia</i> beds (SM1 and SM2) and stands of <i>Salicornia</i> and <i>Suaeda</i> (SM8 and SM9) are included within other Annex 1 habitat types/ ASSI selection features.

	<p>21% occurrence in recorded plots.</p> <p>At least frequent is equivalent to greater than 41% occurrence in recorded plot.</p>		
* Sward Height (SM10)	<p>Maintain short sward in areas of species-rich vegetation.</p> <p>Maintain mean sward height at less than 12 cm.</p>	Visual estimate in 2 x 2 m plots	Measure during summer (July/August/early September)
* Maintain frequency of positive indicators for low-level marsh (SM13a, b, c and d)	<p>At least 5 of the indicator species listed below at least occasional, of which 3 are at least frequent throughout the sward: <i>Suaeda maritima</i>, <i>Salicornia</i> agg., <i>Puccinellia maritima</i>, <i>Aster tripolium</i>, <i>Limonium humile</i>, <i>Glaux maritima</i>, <i>Cochlearia officinalis</i>, <i>Plantago maritima</i>, <i>Triglochin maritima</i>, <i>Armeria maritima</i>.</p> <p>At least occasional is equivalent to greater than 21% occurrence in recorded plots.</p> <p>At least frequent is equivalent to greater than</p>	Visual estimate in 2 x 2 m plots	<p>Ensure species-poor/rank communities/sub-communities do not increase at the expense of other sub-communities.</p> <p>Note: <i>Zostera</i> and <i>Ruppia</i> beds (SM1 and SM2) and stands of <i>Salicornia</i> and <i>Suaeda</i> (SM8 and SM9) are included within other Annex 1 habitat types/ ASSI selection features..</p>

	41% occurrence in recorded plot.		
* Sward Height (SM13a, b, c and d)	Maintain short sward in areas of species-rich vegetation. Maintain mean sward height at less than 15 cm.	Visual estimate in 2 x 2 m plots	Measure during summer (July/August/early September)
* Maintain frequency of positive indicators for middle marsh communities (SM16b, c, d and e)	At least 6 of the indicator species listed below at least occasional, of which 4 are at least frequent throughout the sward: <i>Puccinellia maritima</i> , <i>Aster tripolium</i> , <i>Limonium humile</i> , <i>Glaux maritima</i> , <i>Cochlearia officinalis</i> , <i>Plantago maritima</i> , <i>Triglochin maritima</i> , <i>Armeria maritima</i> , <i>Festuca rubra</i> , <i>Juncus gerardii</i> , <i>Agrostis stolonifera</i> , <i>Trifolium repens</i> , <i>Leontodon autumnalis</i> , <i>Carex flacca</i> At least occasional is equivalent to greater than 21% occurrence in recorded plots. At least frequent is equivalent to greater than 41% occurrence in recorded plot.	Visual estimate in 2 x 2 m plots	Ensure species-poor/rank communities/sub-communities do not increase at the expense of other sub-communities. Note: <i>Zostera</i> and <i>Ruppia</i> beds (SM1 and SM2) and stands of <i>Salicornia</i> and <i>Suaeda</i> (SM8 and SM9) are included within other Annex 1 habitat types/ ASSI selection features.

* Sward Height (SM16b, c, d and e)	Maintain short sward in areas of species-rich vegetation. Maintain mean sward height at less than 20 cm.	Visual estimate in 2 x 2 m plots	Measure during summer (July/August/early September)
* Maintain frequency of positive indicators for upper marsh communities (e.g.SM18a, SM19 and SM20 and SM28)	At least 6 of the indicator species listed below at least occasional, of which 4 are at least frequent throughout the sward: <i>Juncus maritimus</i> , <i>Agrostis stolonifera</i> , <i>Festuca rubra</i> , <i>Glaux maritima</i> , <i>Juncus gerardii</i> , <i>Triglochin maritima</i> , <i>Plantago maritima</i> , <i>Armeria maritima</i> , <i>Aster tripolium</i> , <i>Elymus repens</i> , <i>Atriplex prostrata</i> , <i>Potentilla anserina</i> , <i>Phragmites australis</i> , <i>Blysmus rufus</i> , <i>Eleocharis uniglumis</i> At least occasional is equivalent to greater than 21% occurrence in recorded plots. At least frequent is equivalent to greater than 41% occurrence in recorded plot.	Visual estimate in 2 x 2 m plots	Ensure species-poor/rank communities/sub-communities do not increase at the expense of other sub-communities.
Sward Height (Upper marsh communities)	Maintain mean sward height less than 1m.	Visual estimate in 2x2 m plots	Measure during summer (July/August/early September)

			As upper saltmarsh communities are tall, often mono-dominant stands of vegetation, the height of the vegetation is not critical.
* Frequency and/or % cover of <i>Spartina</i> encroachment into the saltmarsh communities (% Cover)	<p><i>Spartina</i> be should be recorded as absent or rare across the saltmarsh communities.</p> <p>Mean cover should be less than 2 %.</p> <p>No more than rare is equivalent to less than 20% occurrence in recorded plots</p>	Visual estimate within a 10x10 m radius of monitoring plots <u>and</u> across the feature using a combination of aerial photographs and Condition Assessment structured walk.	<i>Spartina</i> is extremely invasive across all saltmarsh communities and its occurrence should be carefully recoded to ensure that it does not pose a threat to these valuable communities.
* Frequency and % cover of negative indicators excluding <i>Spartina</i> (DAFOR and % cover)	<p>Negative indicators no more than occasional across the saltmarsh communities</p> <p>Mean cover should be less than 2 %.</p> <p>No more than occasional is equivalent to less than 40% occurrence in recoded 2x2m plots.</p>	Visual estimate in 2x2 m plots	
* Frequency and % cover of scrub/tree encroachment into transitional communities (DAFOR and % cover)	<p>Scrub encroachment no more than occasional in transitional communities.</p> <p>Mean cover should be less than 5 %.</p>	Visual estimate within a 10x10 m radius of monitoring plots <u>and</u> across the feature using a combination of aerial photographs and	

	No more than occasional is equivalent to less than 40% occurrence in recoded 10x10m plots.	Condition Assessment structured walk.	
* Cover of litter/thatch accumulation (% cover)	Less than 25% mean cover. Lower thresholds may be appropriate for short SM 10 communities.	Visual estimate in 2x2m plots.	More than 25% litter cover indicates insufficient removal of biomass by grazing, particularly in middle and upper saltmarsh communities such as SM13 and SM16. A lower threshold for thatch should be set - perhaps 10% For SM10 communities (to be determined).
* % cover of bare ground	Bare areas resulting from trampling by stock or human activity (vehicle use, etc.) should account for less than 10 % of the extent of all communities with the exception of SM 10.	Visual estimate in 2x2m plots <u>and</u> across the extent of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Saltmarsh can be severely affected by persistent heavy trampling Note: UK CSM suggests 25% upper limit for poaching – a lower limit is recommended for SM13 and SM16 at most saltmarsh areas in N. Ireland.
Lack of disturbance	There should be no management activities leading to erosion.	Visual estimate in 2x2m plots <u>and</u> across the extent of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Saltmarsh can be severely affected by persistent heavy trampling Lower marsh communities naturally have higher cover of bare ground than middle and upper marsh communities.
Lack of pollution	No evidence of oil or other forms of pollution	Visual estimate in 2x2m plots <u>and</u> across the extent of the saltmarsh using a combination of aerial photographs, SIM and	

		Condition Assessment structured walk.	
Saltmarsh hydrology	Artificial drainage channels adversely affecting hydrology are absent or rare,	Visual estimate across the extent of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk.	
* Maintain distinctive elements at current extent/levels and/or in current locations	Maintain distinctive elements at current extent/levels and/or in current locations (e.g. maintain existing populations of notable species, important structural attributes or notable transitions between habitats)	Visual estimate in 2x2 m plots <u>and</u> across the extent of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk. Check for presence of species/structural attributes, and/or transitions.	This attribute is intended to cover any site-specific aspects of this habitat feature which are not adequately covered by the previous attributes.

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

Feature 7 (SAC) - Perennial vegetation of stony banks (Status C)

* = primary attribute. One failure among primary attribute = unfavourable condition

Attribute	Target	Method of assessment	Comments
* Extent	<p>Subject to natural processes, maintain the overall extent of the vegetation at 1.92 ha.</p> <p>Gransha Point - 1.02 ha Mid Island (at least partially on shingle) – 0.9 ha</p>	<p>Visual estimate in 2 x 2m plots and across the extent of the community using SIM and aerial photos.</p> <p>Measured once per reporting cycle.</p>	<p>Although the habitat on Strangford Lough (and at Ballyquintin Point in particular) is comparatively stable, there may be some natural variation as a result of dynamic coastal processes at Gransha Point, which appears to be active in places.</p>
* Physical structure: functionality and sediment supply	<p>No increase in either the linear extent or the area constrained by introduced structures or landforms.</p>	<p>Visual inspection of aerial photographs, SIM and Condition Assessment structured walk.</p>	<p>Potentially relevant to Gransha Point.</p>
Sward Height	<p>Sward height should be between 5-15 cm over at least 75% of the sample plots within grassland habitats</p>	<p>Visual estimate in 2x2m plots.</p>	<p>Grassland makes up the bulk of the community at Gransha Point; requires sufficient (but not excessive) grazing to maintain it.</p>
Litter	<p>Average litter cover (i.e. dense thatch-like material in a more or less continuous layer) should be less than 10 %.</p> <p>May be distributed either in patches or in one larger</p>	<p>Visual estimate in 2x2m plots.</p>	<p>Excessive build-up of litter indicates inadequate grazing levels.</p>

	area within grassland areas.		
Bare ground	Bare areas resulting from disturbance should account for less than 10 % of the extent of any of the habitat No management activities leading to erosion.	Visual estimate in 2x2m plots.	Note that some parts of the site are naturally bare, with only a rudimentary cover of lichens over the stable cobbles.
* Zonation of vegetation	The current range of NVC communities and their approximate distribution should be maintained – i.e. shingle banks (SD2, SD3), saltmarsh (SM9, SM10, SM13, SM14, SM16 and SM28), grasslands (SD8, MC8, MC9, MG1, MG11 and MG12) and scrub (W23,W24). In particular, there should be no loss in extent of the more species-rich communities.	Visual estimate in 2x2m plots.	Ballyquintin Point has a mosaic of different habitats and vegetation types. Gransha Point is much more limited in communities present on shingle – essentially saltmarsh, strandline and grassland. Note: 1. Gransha Point was mapped as SD8 (NI Coastal Survey), but perhaps should more accurately be described as MC8/9 2. only a limited range of these communities are actually perennial vegetation on shingle
* Presence of positive indicator species in the dry grassland plots	Frequency of community character species. At least four of the following at least frequent and four at least occasional throughout the sward:	Visual estimate in 2x2m plots.	

	<p><i>Agrostis spp.</i>, <i>Aira spp.</i>, <i>Armeria maritima</i>, <i>Carex panicea</i>, <i>Centaurea nigra</i>, <i>Cladonia spp.</i>, <i>Danthonia decumbens</i>, <i>Festuca rubra</i>, <i>Galium saxatile</i>, <i>Galium verum</i>, <i>Hypochaeris radicata</i>, <i>Jasione montana</i>, <i>Koeleria macrantha</i>, <i>Lotus corniculatus</i>, <i>Molinia caerulea</i>, <i>Plantago lanceolata</i>, <i>Polypodium agg.</i>, <i>Potentilla erecta</i>, <i>Rumex acetosella</i>, <i>Scilla verna</i>, <i>Sedum spp.</i>, <i>Succisa pratensis</i>, <i>Thymus praecox</i></p>		
Agricultural weed species :	<p>No more than one negative species should more than frequent; or singly or together contribute more than 5% cover: - <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>, <i>Senecio jacobaea</i>, <i>Urtica dioica</i>, <i>Arrhenatherum elatius</i></p>	Visual estimate in 2x2m plots.	
Bracken	<p>Less than 5% <i>Pteridium aquilinum</i> over the area as whole</p>	Visual estimate in 2x2m plots <u>and</u> across the extent of the feature using Condition Assessment structured walk.	
Indicators of Improvement	<p>Mean cover values from the sample plots for eutrophic broad-leaved grasses (i.e.</p>	Visual estimate in 2x2m plots.	

	<i>Lolium perenne</i> , <i>Holcus lanatus</i> , <i>Dactylis glomerata</i> .) should be less than 10% cover		
Trees/shrubs	Trees and/or shrubs no more than occasional on W-Walk, with seedlings rare or absent Less than 10 % tree or shrub cover (over the area as a whole)	Visual estimate in 2x2m plots <u>and</u> across the extent of the feature using Condition Assessment structured walk.	
Presence of Dung	Dung no more than occasional (as recorded in monitoring plots)	Visual estimate in 2x2m plots.	
Presence of Tracks	Tracks no more than occasional (over the total area)	Visual estimate across the extent of the feature using Condition Assessment structured walk.	
Stock Feeding	No evidence of stock feeding (over the total area)	Visual estimate across the extent of the feature using Condition Assessment structured walk.	
Stone Removal	No evidence of stone removal (over the total area)	Visual estimate across the extent of the feature using Condition Assessment structured walk.	

Frequency -

1-20% = Rare

21-40% = Occasional

41- 60% = Frequent

> 60% = Constant

NOTE: “Perennial vegetation of stony banks” occurs on Strangford Lough at two discrete and rather different locations. Gransha Point is still an active shingle bank, and the importance of ensuring that active processes are maintained is one of the fundamental aims here. In contrast, Ballyquintin Point is no longer an active system, so coastal processes are not particularly relevant, except for occasional storm events which may cause some erosion.

The “habitat” at both sites is actually a complex of many different habitats, and the main aim is to maintain the full range of communities represented at both sites. Particular issues of note are grazing levels (leading to scrub encroachment over more valuable grassland communities) and enrichment.

Feature 8 (SAC) - *Salicornia* and other annuals colonising mud and sand (Status C)

* = primary attribute. One failure among primary attribute = unfavourable condition

Attribute	Target	Method of assessment	Comments
* Extent	Subject to natural processes, maintain the overall extent of the vegetation.	<p>Visual estimate in 2 x 2 m plots and across the extent of the community using SIM.</p> <p>Aerial photographs can be useful if taken at the appropriate scale and time of year.</p> <p>Measured once per reporting cycle, preferably during the summer months of July or August</p>	<p>These communities are important precursors to more stable vegetation of low to mid marsh. Communities may be dynamic in their distribution and are linked with the physical processes operating on the site - e.g., topography, creek patterns, sea-level rise etc.</p>
* Mobility/Coastal Processes	No increase in either the linear extent or the area constrained by introduced structures or landforms.	<p>Visual inspection of aerial photographs, SIM and Condition assessment structured walk. Check for any new physical structures that</p>	<p>Colonisation of mud and sand by saltmarsh plants will only occur if adequate sediment is accreting - this is influenced by extent of fronting mudflat which can dissipate wave energy and affect availability of suspended sediment. Introduced structures could interfere with these processes.</p>

		<p>may impact on this community.</p> <p>Aerial photographs are particularly valuable for this, if available.</p>	
* Vegetation composition	<p>Maintain extent and species composition of low-level marsh communities <i>Salicornia</i> and <i>Suaeda</i> (SM8 and SM9) –</p> <p>At least 1 of the species below recorded as frequent and at least a further 2 as occasional or rare:</p> <p><i>Salicornia</i> agg., <i>Suaeda maritima</i>, <i>Zostera</i> spp., <i>Ruppia</i> spp., <i>Puccinellia maritima</i>, <i>Aster tripolium</i>, <i>Spergularia media</i>, <i>Limonium humile</i>, <i>Cochlearia officinalis</i></p> <p>At least occasional is equivalent to greater than 21% occurrence in recorded plots.</p> <p>At least frequent is equivalent to greater than 41% occurrence in recorded plot.</p>	Visual estimate in 2x2m plots.	

<p>* Frequency and/or % cover of <i>Spartina</i> encroachment into the <i>Salicornia</i> communities</p>	<p><i>Spartina</i> be should be recorded as absent or rare in <i>Salicornia</i> communities.</p> <p>Mean cover should be less than 2 %.</p> <p>No more than rare is equivalent to less than 20% occurrence in recoded plots</p>	<p>Visual estimate within a 10x10 m radius of monitoring plots <u>and</u> across the feature using a combination of aerial photographs and Condition Assessment structured walk.</p>	<p><i>Spartina</i> often invades these lower marsh communities and its spread needs to be controlled.</p>
<p>* Vegetation Structure</p>	<p>Area and thickness of algal mats should not deviate significantly from an established baseline, subject to natural change</p>	<p>Area and thickness of algal mat, measured during summer periodically (frequency to be determined).</p>	<p>Algal mats are often associated with the pioneer saltmarsh communities, and are important primary producers. However, they can be affected by changes to water quality – nutrient enrichment/eutrophication may lead to expansion and smothering of vegetation. On the other hand, pollution can cause a decline, leading to destabilisation of sediment surfaces and initiate erosion. An increase in algal cover can also indicate a decline in grazing invertebrates.</p>
<p>* % cover of bare ground</p>	<p>Bare areas resulting from trampling by stock or human activity (vehicle use, etc.) should account for less than 10 % of the extent of the habitat</p>	<p>Visual estimate in 2x2m plots and across the extent of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk.</p>	<p>Lower marsh communities naturally have higher cover of bare ground than middle and upper marsh communities.</p> <p><i>Salicornia</i> communities on mud and sand can be severely affected by persistent heavy trampling</p>
<p>Lack of disturbance</p>	<p>There should be no management activities leading to erosion.</p>	<p>Visual estimate in 2x2m plots <u>and</u> across the extent</p>	

		of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk.	
Lack of pollution	No evidence of oil or other forms of pollution	Visual estimate in 2x2m plots <u>and</u> across the extent of the saltmarsh using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Check for direct and indirect evidence of pollution.

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

Feature 9 (SAC) - *Phoca vitulina* Harbour (Common) Seal (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

ATTRIBUTE	MEASURE	TARGETS	COMMENTS
*Population	Number of Harbour Seals counted during the autumn moult period.	Maintain a population of at least 210 Harbour Seals.	<p>The minimum population declared at the time of designation was 210. The target should be calculated as a mean maximum count over the 6 year rolling cycle. When monitoring Harbour Seal numbers, ideally 2 counts would be performed during the moult season and 2 counts would be performed during the pupping season each year to give a reasonable estimate of the population.</p> <p>The population within this area could be influenced by factors including population trends within the wider Irish Sea, food availability and disturbance.</p> <p>Strangford Lough data to be considered in the context of both long-term trends and existing seal numbers in Co. Down, all Ireland, UK and North East Atlantic.</p>
Number of Pups	Percentage of pups in relation to number of seals counted in the moult period.	Maintain a pup percentage of at least 25%.	
*Haul-outs	Integrity of haul-outs.	Maintain integrity of traditional haul-outs.	Changes to traditional haul-outs should only be through natural processes e.g. coastal erosion/deposition.
Disturbance	Disturbance events	Contain disturbance events to a level which do not significantly impact the population.	<p>Disturbance can result in injury to pups, separation of pups from their mothers and reduced opportunities to feed and rest. Disturbance events reported previously within this SAC include recreational activities on the shore and on water. Deliberate disturbance by boating activities has also been reported. Incidents reported to DAERA should be logged and investigated where practicable.</p>

STRANGFORD LOUGH - SPECIAL PROTECTION AREA (SPA)

UK9020111

CONSERVATION OBJECTIVES

Document Details

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Version	Date	Summary of Changes	Initials	Changes Marked
V1	09/03/1998	Internal working document	■	
V1.1	August 2013	Review	■	
V2.0	February 2015	Draft	■	Complete review

Site relationship

To fully understand the site conservation requirements for this site it may be necessary to also refer to other site Conservation Objectives

This SPA overlaps with Strangford Lough SAC and adjoins Outer Ards SPA and the proposed East Coast Marine SPA.

The SPA also includes the Strangford Lough Ramsar site.

See also Boundary Rationale

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives¹ to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, terrestrial/inter-tidal Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition
- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.
- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

¹ 92/43/EEC and 2009/147/EC (codified version of Directive 79/409/EEC as amended)

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas 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 as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as 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 population on a long term basis.

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as “**the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site**”.

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4 GENERAL INFORMATION

COUNTY: Down

G.R. J560 579

AREA: 15580 ha.

REVIEW OF ANY ADJOINING OR REMOTE MARINE AREAS WILL BE INFORMED BY JNCC REPORT ON MARINE USAGE BY TERN SPECIES FROM EXISTING SPA'S DESIGNATED FOR BREEDING TERNS.

CONSERVATION OBJECTIVES WILL BE REVISED AS THESE ISSUE PROGRESS

5 SUMMARY SITE DESCRIPTION

Strangford Lough is a large (150 km²) marine inlet on the east coast of County Down, of which about 50 km² lies between high water mark mean tide (HWMMT) and low water

mark mean tide (LWMMT). It is connected to the open sea by the Strangford Narrows, an 8 km long channel with a minimum width of 0.5 km. The Lough is 30 km long from head to mouth and up to 8 km wide. The tidal flats of Strangford Lough form extensive areas around the northern and north-eastern shorelines. The Lough supports an impressive range of marine habitats and communities with over 2,000 recorded species. It is important for marine invertebrates, algae and saltmarsh plants, for a range of wintering and breeding waterbirds, and for marine mammals.

5.1 BOUNDARY RATIONALE

The landward boundary of the SPA is entirely coincident with the landward boundary of the following five Areas of Special Scientific Interest: Strangford Lough Part 1, Strangford Lough Part 2, Strangford Lough Part 3, Killard and Ballyquintin Point. Roost sites occurring outside the extent of natural or semi-natural habitat, together with those agriculturally improved areas utilised by swans and geese, have not been included but their importance must not be underestimated.

6 SPA SELECTION FEATURES

Feature Type	Feature	Population (5 year average 1995-2000) except where stated	Population at time of designation (ASSI)	Population at time of designation (SPA)	SPA Review population	Common Standards Monitoring baseline (min. peak 1991/92-1997/98)
Species	Sandwich Tern ^a	1405 (current population 2003)		593	593	346
Species	Common Tern ^a	894 (current population 2003)		603	603	560
Species	Arctic Tern ^a	272 (current population 2003)		210	210	47
Species	Golden Plover ^b	8401	7570	8277	6526	3123
Species	Bar-tailed Godwit ^b	1452	1587	1058	882	291
Species	Light-bellied Brent Goose ^a	12141	14400	10527	10527	8367
Species	Shelduck ^b	3081	1271	2358	3871	1755
Species	Knot ^a	9191	12294	8723	8723	4200
Species	Redshank ^a	3748	2591	3176	3176	2336
Assemblage species	Great Crested Grebe	102	35	94	90	40
Assemblage species	Cormorant	219		Not listed	183	123
Assemblage species	Greylag Goose	352	265	420	419	173
Assemblage species	Wigeon	2183	6655	1975	1921	1630
Assemblage species	Gadwall	82	107	110	108	63
Assemblage species	Teal	2021	905	1662	1435	1133
Assemblage species	Mallard	1441	188	1562	1633	1238

Assemblage species	Pintail	264	196	214	209	159
Assemblage species	Shoveler	143	135	140	147	101
Assemblage species	Goldeneye	249	479	298	335	157
Assemblage species	Red-breasted Merganser	290	274	338	328	191
Assemblage species	Coot	414	898	510	392	222
Assemblage species	Oystercatcher	6621	3542	8248	5243	4125
Assemblage species	Ringed Plover	244	197	305	291	134
Assemblage species	Grey Plover	282	114	284	194	48
Assemblage species	Lapwing	9971	12644	9108	8359	3779
Assemblage species	Dunlin	7885	6220	6900	5317	2403
Assemblage species	Curlew	1761	1838	1980	1911	1344
Assemblage species	Turnstone	261	446	350	401	207
Waterfowl Assemblage	Waterfowl Assemblage wintering population ^a (Component species: Golden Plover, Bar-tailed Godwit, Light-bellied Brent Goose, Shelduck, Knot, Redshank, Great Crested Grebe, Cormorant, Greylag Goose, Wigeon, Gadwall, Teal, Mallard, Pintail, Shoveler, Goldeneye, Red-breasted Merganser, Coot, Oystercatcher, Ringed Plover, Grey Plover, Lapwing, Dunlin, Curlew, Turnstone)	55097	72880	70200	60220	35667
Habitat ¹	Habitat extent					
Habitat ¹	Roost site locations					

Table 1. List of SPA selection features.

¹ Habitat is not a selection feature but is a factor and is more easily treated as if it were a feature. Habitat extent is also used for breeding birds reported as an area.

Notes on SPA features – may not be applicable to all SPAs

The above table lists all relevant qualifying species for this site. As the identification of SPA features has and continues to evolve, species may have different status but all should be considered in the context of any HRA process. Ultimately all SPAs will be renotified to formalise species features.

^a – species cited in current SPA citation and listed on current N2K dataform

^b – species selected post SPA designation through UK SPA Review 2001

^c – species highlighted as additional qualifying features through the UK SPA Review 2015 or the UK marine SPA programmes.

6.1 ADDITIONAL ASSI SELECTION FEATURES SEE STRANGFORD LOUGH SAC CONSERVATION OBJECTIVES

	Feature Type (i.e. habitat, species or earth science)	Feature	Size/ extent/ pop'
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Table 2. List of ASSI features, additional to those that form all or part of SPA selection features. These will be referred to in ANNEX II.

7 FEATURE OBJECTIVES

The Conservation Objectives for this site are:

To maintain each feature in favourable condition.

For each feature there are a number of component objectives which are outlined in the tables below. Component objectives for Additional ASSI Selection Features are not yet complete. For each feature there are a series of attributes and measures which form the basis of *Condition Assessment*. The results of this will determine whether a feature is in favourable condition, or not. The feature attributes and measures are found in the attached annexes.

8 STRANGFORD LOUGH SPA CONDITION ASSESSMENT 2014

Species	2005/06	2006/07	2007/08	2008/09	2009/10	CSM	5 yr mean	% CSM	Status
Sandwich Tern (B)	1092	1137	1528	1398	1994	346	1429.8	413.24	Favourable
Common Tern (B)	1104	962	832	650	1174	560	944.4	168.64	Favourable
Arctic Tern (B)	582	663	628	316	645	47	566.8	1205.96	Favourable
Light-bellied Brent Goose	21885	24658	30487	25605	26041	8367	25735.2	307.58	Favourable
Bar-tailed Godwit	1378	529	1305	969	1158	291	1067.8	366.94	Favourable
Redshank	4099	3632	4029	4969	4488	2336	4243.4	181.65	Favourable
Shelduck	4201	3346	6084	5583	2825	1755	4407.8	251.16	Favourable
Knot	6220	5193	7360	6376	7452	4200	6520.2	155.24	Favourable
Waterbird assemblage	77553	66955	87771	86292	79823	54080	79678.8	147.34	Favourable

9 SPA SELECTION FEATURE OBJECTIVES

- To maintain or enhance the population of the qualifying species
- Fledging success sufficient to maintain or enhance population
- To maintain or enhance the range of habitats utilised by the qualifying species
- To ensure that the integrity of the site is maintained;
- To ensure there is no significant disturbance of the species and
- To ensure that the following are maintained in the long term:
- Population of the species as a viable component of the site
 - Distribution of the species within site
 - Distribution and extent of habitats supporting the species
 - Structure, function and supporting processes of habitats supporting the species

Feature	Component Objective
Sandwich Tern breeding population	As above
Sandwich Tern breeding population	Fledging success sufficient to maintain or enhance population
Common Tern breeding population	As above
Common Tern breeding population	Fledging success sufficient to maintain or enhance population
Arctic Tern breeding population	As above
Arctic Tern breeding population	Fledging success sufficient to maintain or enhance population
Golden Plover wintering population	As above
Bar-tailed Godwit wintering population	As above
Light-bellied Brent Goose wintering population	As above
Shelduck wintering population	As above
Knot wintering population	As above
Redshank wintering population	As above
Great Crested Grebe wintering population	As above
Cormorant wintering population	As above
Greylag Goose wintering population	As above
Wigeon wintering population	As above
Gadwall wintering population	As above
Teal wintering population	As above
Mallard wintering population	As above
Pintail wintering population	As above
Shoveler wintering population	As above
Goldeneye wintering population	As above
Red-breasted Merganser wintering population	As above
Coot wintering population	As above
Oystercatcher wintering population	As above
Ringed Plover wintering population	As above
Grey Plover wintering population	As above
Lapwing wintering population	As above
Dunlin wintering population	As above
Curlew wintering population	As above
Turnstone wintering population	As above
Waterfowl Assemblage	No significant decrease in population against national trends
Waterfowl Assemblage wintering population	Maintain species diversity contributing to the Waterfowl Assemblage
Habitat Extent	To maintain or enhance the area of natural and semi-natural habitats used or potentially usable by Feature bird species (3781 ha intertidal area), (breeding areas X ha) subject to natural processes

Habitat Extent	Maintain the extent of main habitat components subject to natural processes
Roost sites	Maintain or enhance sites utilised as roosts

Table 3. SPA Component objectives

Tern nesting localities current and historical (TO BE FINALISED)

Table 5. Tern nesting locations within the SPA

9.1 ADDITIONAL ASSI SELECTION FEATURE OBJECTIVES SEE ALSO STRANGFORD LOUGH SAC CONSERVATION OBJECTIVES

	Feature	Component Objective
Strangford Lough Part 1 (North)	Coastal saltmarsh	
Strangford Lough Part 1 (North)	Sealevel history	
Strangford Lough Part 1 (North)	Coastal processes	
Strangford Lough Part 1 (North)	Common Seal	
Strangford Lough Part 1 (North)	Intertidal mud/sand	
Strangford Lough Part 1 (North)	Intertidal rock	
Strangford Lough Part 1 (North)	Large shallow inlets and bays	
Strangford Lough Part 1 (North)	Higher Plant Assemblage	
Strangford Lough Part 2	Coastal saltmarsh	
Strangford Lough Part 2	Common Seal	
Strangford Lough Part 2	Inter-tidal rock	
Strangford Lough Part 2	Coastal vegetated shingle	
Strangford Lough Part 2	Intertidal mud/sand	
Strangford Lough Part 2	Coastal mosaic	
Strangford Lough Part 3	Coastal vegetated shingle	
Strangford Lough Part 3	Higher Plant Assemblage	
Strangford Lough Part 3	Sealevel history	
Strangford Lough Part 3	Coastal processes	
Strangford Lough Part 3	Coastal mosaic	
Strangford Lough Part 3	Intertidal mud/sand	
Strangford Lough Part 3	Intertidal rock	
Strangford Lough Part 3	Common Seal	

Table 4. ASSI Component objectives

10. MANAGEMENT CONSIDERATIONS

See also Views About Management for relevant ASSIs

Owner/Occupier's – (to be used to identify any key management considerations arising from ownership e.g. owners/organisations having an obvious bearing on conservation matters or from management agreements).

The ownership details for Strangford Lough were not complete at time of designation. However, based on available information there are approximately 260 individuals/organisations who own lands within the SPA. Major landowners and leasees within the SPA, relevant to the site management, include The National Trust, Crown Estate Commissioners, RSPB, NIEA, DARD and Private Individuals. There may be conflicts of

interest between the requirements of individual/organisations, both within and adjacent to the SPA, and the site management needs.

Recreational activities can cause disturbance throughout the year, particularly to feeding wintering wildfowl and breeding seabirds. The sewage treatment works at Ballyrickard, Portaferry and Killyleagh may impact upon the SPA. Development pressures are significant along the entire SPA. Other threats include coastal protection works particularly in southern region of the site.

There are a number of management agreements within the SPA.

11 MAIN THREATS, PRESSURES, ACTIVITIES WITH IMPACTS ON THE SITE OR SITE FEATURES

Notifiable Operations - Carrying out any of the Notifiable Operations listed in the schedule could affect the site. The list below is not exhaustive, but deals with the most likely factors that are either affecting Carlingford Lough SPA, or could affect it in the future. Although, features 1, 2, 3, 4 etc, are the qualifying SPA features, factors affecting ASSI features are also considered.

Generic site/feature issues

No	Issue	Threat/comments	Local considerations	Action
1	Adjoining habitat	Particularly important for swans and geese as well as providing high tide roost locations. Significant changes in land management and disturbance are key considerations. Such areas lie without the site making effective management of developments other than those for which planning permission is required, difficult.	Not utilised by feature species but management can have a bearing on transitional habitat.	Assess planning applications. Identify key areas and promote site management schemes. Review use of Wildfowl Refuges. Consider the collective impact.
2	Aquaculture	Disturbance is a minor consideration unless carried out deliberately to minimise losses to shell-feeding waterfowl. Alteration of natural littoral and sub-littoral communities through seeding, tray/trestle cultivation, dredging/control of pest species. Naturalisation of introduced species – both the shellfish themselves and associated species e.g. algae and disease vectors.	Widespread especially in the Ardmillan area. Represents a change of substrate in areas important for wintering wildfowl. Spread of Sargassum is assumed to be associated with introduced shellfish stock.	Liaise with DARD Fisheries Division. Assess all license applications individually. Consider the collective impact.
3	Bait digging – commercial or ‘recreational’	Disturbance and impact on sediment and invertebrate fauna – may be positive	Commercial cockle harvesting at the north end of the lough could	Monitor scale of activity. Consider the collective impact.

	and shellfish gathering.	through making deeper prey items available on surface. Shellfish gathering represents a net loss to the system in terms of biomass. Generally unregulated.	potentially be a serious impact through direct disturbance of bird and sediment mobility. Scale of other activities unknown.	
5	Beach sand and gravel extraction.	Disturbance issue together with loss of biologically active upper sediments. Most beach systems are sedimentologically closed thus material removed may not be renewed making the activity unsustainable. May lead to changed sediment character of beach ultimately impacting on birds.	Ongoing at Killard through exercising permitted rights. Position elsewhere is unclear.	‘Permitted’ extraction of beach sand and gravel should be halted through management agreements. Ad hoc removal should be addressed in conjunction with local authorities.
7	Boating activity – recreational	Disturbance and potential for impact especially from jet skis. Generally relevant to particularly sensitive areas within site.	Recreational boating is an important activity on the lough. Main consideration would be impacts on nesting tern colonies. Winter disturbance probably limited.	Liaise with appropriate authority with codes of good practice, zoning and use of by-laws as necessary. Consider the collective impact.
8	Coastal protection schemes	Where there is no history of this, it impacts on natural beach systems with loss of habitat.	Widespread especially along the north and east shores. Ongoing monitoring of impacts of the Newtownards seawall construction.	Liaise with Planning Service and other parties with an involvement in coastal management.
9	Cull of fledglings/ young	Licensed selective culling of species impacting on ‘more desirable’ species. Licensed by NIEA.	Control of large gull nests may have been undertaken at the tern colonies. To be continued as necessary.	NIEA to review all licenses. Consider the collective impact.
14	Fishing – commercial or recreational	Minimal disturbance consideration but may represent ‘competition’ for piscivorous birds. Represents a net loss to the system in terms of biomass.	Commercial trawling is undertaken but unlikely to impact on inter-tidal areas.	Liaise with DARD and fishing authority as required. Liaise with angling clubs as required.
15	Habitat extent – inter-tidal	Loss of habitats through development, changes in coastal processes. Loss of inter-tidal habitat is a critical issue as this is the feeding zone for the majority (numbers and species) of birds.	Unlikely to be an ongoing issue. There has been encroachment onto the inter-tidal zone from coastal defence and housing developments. Future issues probably related to marina developments. Aquaculture cultivation is also a	Assess planning applications. Monitor using aerial photography.

			consideration.	
16	Habitat extent – open water	Loss likely to be limited but expansion of commercial port facilities can impact on key localities.	Minimal concern.	Assess planning applications. Consider the collective impact.
17	Habitat quality – inter-tidal	Alteration of habitat quality through diminution of water quality, invasive species or changes in coastal processes.	Principle issue is from alien species – especially Spartina and Sargassum. Progressive loss of inter-tidal mudflats and impact on saltmarsh habitat.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection as required with regard to water quality issues and pollution incidents. Consider the collective impact.
18	Habitat quality – open water	Alteration of habitat quality through diminution of water quality or invasive species.	Other than sewage discharges causing localised problems, not a major issue. Upgrading of STW is ongoing.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection as required with regard to water quality issues and pollution incidents. Consider the collective impact.
19	Habitat extent and quality-breeding	Alteration of habitat area or quality through inappropriate use or absence of site management.	Ongoing management of the islands hosting tern colonies will be required with regard to vegetation succession.	Assess needs of breeding species. Liaise with owner or appropriate authority to adjust or introduce site management.
20	High tide roosts	An essential component of sites hosting waders. Development of adjoining ground or actual traditional roost localities may adversely impact on the sites carrying capacity. Many such sites lie without the site making effective management of developments, other than those for which planning permission is required, difficult.	Localities should be mapped.	Assess planning applications. Identify key areas and promote site management schemes. Review use of Wildfowl Refuges. Consider the collective impact.
21	Introduced species	Range of threats from loss of habitat, feeding competition, disease, hosting species presenting a threat outside of the site.	Issue of Spartina and Sargassum. See 17.	Liaise with appropriate authority. Consider feasibility of elimination. Participate in national/international initiatives.
23	Predation.	Mainly of concern on bird breeding sites.	Need to assess large gull impact on tern colony. See culling issue above.	Must be dealt with as part of wider countryside management considerations. Carry out appropriate site management.
24	Recreational activities.	Disturbance is the main consideration although vehicle access may also lead to beach compaction and impacts on beachhead habitats. Breeding birds,	Areas of the lough are heavily used by walkers and dogs, horse riders, boats, windsurfers, kite surfers etc.	Liaise with local authorities and other managing parties.

		especially seabirds, are vulnerable to disturbance as absence of adults can often result in predation or chilling of young with a reduction/loss in fledging success.	Cumulative disturbance impacts (e.g. boating, wildfowling, walkers, dogs etc) may be a significant factor for wintering bird populations impacting on both feeding (inter-tidal) and roosting birds	
25	Research activities.	Census and ringing activities especially have the potential to impact on bird populations, particularly at breeding sites.	Routine WEBS counts (high and low tide) and nesting tern surveys. A wide range of ongoing research is undertaken on Strangford, generally unrelated to birds.	Census and ringing activities to be undertaken by competent individuals, appropriately trained. In case of ringers, appropriate license must be held.
27	Seaweed harvesting	Either cutting living weed or gathering storm debris. The former, depending on scale and frequency, may fundamentally impact on shore communities and their ability to support waterfowl. The latter, represents a net loss to the system in terms of habitat and biomass.	Some permitted rights are exercised. Position overall is unclear.	
28	System dynamics	Cuts across many other issues. Dynamic systems, especially coastal, can be affected by many factors especially engineered structures and significant changes in dominant wind direction or storm frequency. Many systems may indeed still be undergoing responses to historical developments e.g. partial reclamation, seawall construction. Changes may include alteration in sediment grade, shifts in patterns of erosion and deposition etc. Consequences for habitat and species utilisation of the site can be profound.	Historical reclamation at the north end of the lough especially. Locally extensive aquaculture represents an alteration to substrate. New sea defences in the Newtownards area could influence mudflat behaviour. The eastern shoreline especially is heavily engineered. Mechanised cockle harvesting could also affect sediment mobility.	Human induced change should be minimised. Assess planning applications and liaise with other relevant authorities. Ad hoc dumping and removal of natural materials should be managed. Major natural shifts in system behaviour may be identified through analysis of aerial photographs and site monitoring. Major and consistent changes to patterns of habitat distribution and bird utilisation of the site should be noted.
31	Wildfowling	Has direct effect through bag sizes/bag species and wider disturbance issue. Issue of regulated (through recognised shooting clubs) and ad hoc shooters. Lead shot on grazing lands.	Managed under the Strangford Wildlife Scheme through National Trust.	Liaise with relevant shooting bodies (BASC especially) to define areas for wildfowling, the development of Wildfowling Codes of Good Practice and encourage bag returns. Support pressure to stop use of lead shot. Review use of Wildfowl Refuges. Consider the

				collective impact.
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Table 3. List of site/feature management issues

12 MONITORING

Monitoring of our Special Protection Areas takes place at a number of levels, using a variety of methods. Methods for both Site Integrity Monitoring and Condition Assessment can be found in the Monitoring Handbook (To be written).

Maintain the integrity of the site. Undertake Site Integrity Monitoring (SIM) at least annually to ensure compliance with the SPA/ASSI schedule. The most likely processes of change (e.g. dumping, infilling, gross pollution) will either be picked up by Site Integrity Monitoring, or will be comparatively slow (e.g. change in habitat such as growth of mussel beds). More detailed monitoring of site features should therefore be carried out by Site Condition Assessment on a less frequent basis (every 6 years initially to pick up long-term or more subtle changes). A baseline survey will be necessary to establish the full extent of the communities present together with the current condition of the features, against which all further condition assessments will be compared.

In addition, detailed quality monitoring or verification monitoring may be carried out from time to time to check whether condition assessment is adequate to detect long-term changes that could affect the site. This type of quality monitoring may involve assessment of aerial photographs to determine site morphological changes. Methodology for this is being developed.

12.1 MONITORING SUMMARY

1. Monitor the integrity of the site (Site Integrity Monitoring or SIM) – Complete boundary survey to ensure integrity of site and that any fencing is still intact. Ensure that no sand extraction or dumping has been carried out within the SAC boundary. This SIM should be carried out once a year.
2. Monitor the condition of the site (Condition Assessment) - Monitor the key attributes for each selection feature (dune, saltmarsh, species). This will detect if the features are in favourable condition or not. See Annexes I and II for SAC and Additional ASSI Features respectively.

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any appropriate assessment that may be needed. It should be noted that appropriate assessments are a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

12.2 ADDITIONAL MONITORING ACTIONS UNDERTAKEN FOR SITES IN UNFAVOURABLE CONDITION

Monitoring actions set out in section 6 and Annex 1 will use, amongst other attributes, bird population data to determine site condition. In the event of a significant population decline being detected, a series of subsequent actions will be initiated. The following list is not exhaustive, actions will be site dependant, but the order of these points IS hierarchical i.e. consider point 1, then 2, etc.

1. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, world. Refer to BTO ALERT limits etc. Liaise with other competent bodies to meaningfully assess wider pattern. No site action if site decline mirrors regional pattern the cause of which is not related to the site. Action may be required at regional or larger scale. If the cause of the regional population decline (e.g. eutrophication) is found at the site then action may be necessary, but this may need to form part of a network of strategic species action. Further research may be required.
2. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, Europe, world. Determine if site losses are balanced by gains elsewhere e.g. breeding terns. Review site condition to determine if losses are due to site deterioration. Determine if possible whether population has relocated within SPA series (national, biogeographical, European). Note that the reasons for such locational changes may not be readily identifiable. Further research may be required.
3. For passage/wintering species assess breeding information. No site action if site decline is due to breeding ground failure, unless breeding ground failure is related to poor adult condition resulting from factors affecting wintering / passage birds.
4. Determine whether a major incident has affected the site e.g. toxic impact on prey items, predation event or geographical shift in available prey. Ability to respond to impacts may be limited.
5. Assess condition of principal site habitats e.g. vegetational composition and structure, change in habitat balance e.g. mudflats reduced by encroaching mussel beds.
6. Assess prey availability. Issues to consider are both within site e.g. water quality, broad site management, and without site e.g. climatically driven factors.
7. Assess whether there have been any changes in any other site features or management practices (see Table 3) that may have affected populations of site selection features.
8. Long-term site value must be considered even when it is found to be in unfavourable condition for a number of reporting cycles. This is particularly important for breeding seabird and wader sites where ongoing appropriate management may ultimately encourage re-establishment of a favourable population.

13 SELECTION FEATURE POPULATION TRENDS

Site trends are reported using running 5 year means of annual maximum count (WeBS data). Long term trends in index values have been used to assess changes in overall wintering

populations for Northern Ireland and UK (WeBS data). Caution is always necessary in the interpretation and application of waterbird counts given the limitations of these data. The reduced number of both sites and birds in Northern Ireland, result in a greater degree of fluctuation. Trends for Ireland are based on five years of data 1994-1999 (I-WeBS data). Consequently short-term fluctuations apparent in the data series may reflect changes in between year productivity, or other short term phenomena, rather than being indicative of a real change in a population.

SPECIES	SITE TREND	NI TREND	ROI TREND	UK TREND	COMMENTS
Golden Plover	Stable	-	Slight Fluctuation	-	Golden Plover is not included in the indexing processes
Bar-tailed Godwit	Increasing	Declining	Large Fluctuation	Stable/Declining	High Alert for NI
Sandwich Tern	-	-	-	-	Not known, to be compiled.
Common Tern	-	-	-	-	Not known, to be compiled.
Artic Tern	-	-	-	-	Not known, to be compiled.
Light-bellied Brent Goose	Stable	Fluctuating	Slight Fluctuation	-	
Shelduck	Increasing	Fluctuating/Increasing	Slight Fluctuation	Stable	
Knot	Fluctuating	Fluctuating	Large Fluctuation	Stable	High Alert for NI. Medium Alert for UK.
Redshank	Increasing	Fluctuating/Increasing	Stable	Stable/Fluctuating	
Great Crested Grebe	Stable	Increasing	Moderate Fluctuation	Increasing/Stable	
Cormorant	Stable	Increasing	Stable	Increasing/Stable	
Greylag Goose	Declining	-	Moderate Fluctuation	Increasing/Stable	
Wigeon		Fluctuating	Stable	Stable	
Gadwall	Declining	Fluctuating	Increasing	Increasing	Medium Alert for NI.
Teal	Increasing	Fluctuating	Increasing	Increasing	
Mallard	Fluctuating	Stable	Stable	Stable	Declining since 1990 in UK. Medium Alert for UK.
Pintail	Fluctuating	Fluctuating	Stable	Stable	
Shoveler	Stable	Stable	Stable	Stable	
Goldeneye	Declining	Declining	Moderate Fluctuation	Fluctuating	
Red-breasted Merganser	Fluctuating	Stable	Stable	Fluctuating/Increasing	
Coot	Fluctuating	Fluctuating	Moderate Fluctuation	Stable	
Oystercatcher	Increasing	Increasing	Stable	Stable	
Ringed Plover	Declining	Fluctuating	Stable	Fluctuating	Medium Alert for UK and NI.
Grey Plover	Fluctuating	Stable	Moderate Fluctuation	Increasing	
Lapwing	Stable	-	Slight Fluctuation	-	Lapwing is not included in the indexing processes.
Dunlin	Fluctuating	Stable	Slight Fluctuation	Fluctuating	Medium Alert for UK.
Curlew	Stable	Stable	Slight Fluctuation	Stable	
Turnstone	Declining	Fluctuating	Increasing	Fluctuating	Medium Alert for UK and NI.

ANNEX I

Feature (SPA) – Breeding Seabirds

* = primary attribute. One failure among primary attribute = unfavourable condition

= optional factors. These can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
* Sandwich Tern breeding population	Apparently occupied nests	No significant decrease in Sandwich Tern breeding population against national trends	Requirement that annual data is collected, then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Sandwich Tern fledging success	Annual survey (as per Gilbert <i>et al.</i> 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined
* Common Tern breeding population	Apparently occupied nests	No significant decrease in Common Tern breeding population against national trends	Requirement that annual data is collected, then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Common Tern fledging success	Annual survey (as per Gilbert <i>et al.</i> 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined

* Arctic Tern breeding population	Apparently occupied nests	No significant decrease in Arctic Tern breeding population against national trends	Requirement that annual data is collected, then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Arctic Tern fledging success	Annual survey (as per Gilbert <i>et al.</i> 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined

Non-Avian Factors – habitat

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	No significant decrease in bird populations against national trends, caused by on-site factors.	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures or breeding sites, where this would lead to different usage by notified species.

Feature (SPA) – Wintering Waterfowl

* = primary attribute. One failure among primary attribute = unfavourable condition

= optional factors. These can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
* Golden Plover wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Bar-tailed Godwit wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Light-bellied Brent Goose wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site
* Shelduck wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site
* Knot wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Redshank wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

# Great Crested Grebe wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Cormorant wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Greylag Goose wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Wigeon wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Gadwall wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Teal wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Mallard wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Pintail wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

# Shoveler wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Goldeneye wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Red-breasted Merganser wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Coot wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Oystercatcher wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Ringed Plover wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Grey Plover wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Lapwing wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Dunlin wintering	Bird numbers	No significant decrease in population against	Five year running averages will be used to monitor population trends

population		national trends	through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Curlew wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Turnstone wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
*Waterfowl assemblage wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
Waterfowl assemblage wintering population	Species diversity	Maintain species diversity contributing to the Waterfowl Assemblage	

Non-Avian Factors – habitat

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used or potentially usable by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	Maintain the extent of main habitat components subject to natural processes	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures where this would lead to different usage by notified species.
# Roost sites	Location of roost	Maintain all locations of roost sites.	Map roost site locations. Visit once every reporting cycle to ensure sites

	sites		are available.
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ANNEX II

Feature (ASSI) –

= primary attribute. One failure among primary attribute = unfavourable condition

= optional factors. These can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments



**Harbour Porpoise (*Phocoena phocoena*)
Special Area of Conservation:
North Channel**

Conservation Objectives and Advice on Operations

March 2019

Advice under Regulation 21 of The Conservation of Offshore Marine Habitats and Species Regulation 2017 and Regulation 28(2) of The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)

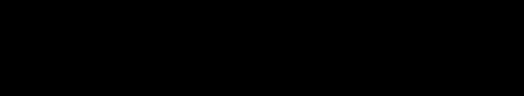
Further information

This document is available as a pdf file on the JNCC website for download if required (www.jncc.defra.gov.uk).

Contact details:

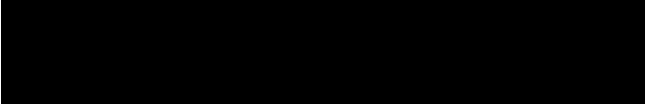
JNCC

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DAERA

Marine Conservation and Reporting Team
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Summary of Conservation Objectives and Advice on Operations

The Conservation Objectives and Advice on Operations are set out for the North Channel Special Area of Conservation (SAC) for harbour porpoise (*Phocoena phocoena*). The site covers both inshore (within 12 nautical miles of coast) and offshore (beyond 12 nautical miles of coast) waters where the Department of Agriculture, Environment and Rural Affairs (DAERA) and the Joint Nature Conservation Committee (JNCC) have respective advisory responsibilities as the Statutory Nature Conservation Body (SNCB).

The general objective of achieving or maintaining Favourable Conservation Status (FCS) for all species and habitat types listed in Annexes I and II of the Habitats Directive needs to be translated into Conservation Objectives for SACs. These objectives describe the condition to be achieved by a site for it to contribute in the best possible way to achieving FCS at the national, bio-geographical and European level¹. The Advice on Operations is site-specific but based on a broad assessment of the sensitivity of the harbour porpoise to anthropogenic pressures at a UK scale.

The advice in this document has been developed using the best available scientific information and expert interpretation as of February 2019. The advice provided here may be subject to change as our knowledge about the site and the impacts of human activities improves.

To ensure the site contributes in the best possible way to achieving FCS, management of human activities occurring in or around the site is required if these activities are likely to have an adverse impact (directly or indirectly) on the integrity of the site, with regards to its Conservation Objectives. It should be noted that as a European Protected Species under Annex IV of the Habitats Directive, harbour porpoises are already strictly protected throughout their European range. As such, several conservation measures are already in place in the UK.

To achieve the Conservation Objectives for the North Channel SAC, the relevant² and competent³ authorities should consider human activities within their remit which might affect the integrity of the site.

¹ <http://jncc.defra.gov.uk/PDF/comm02D07.pdf>

² Relevant authorities are those who are already involved in some form of relevant marine regulatory function and would therefore be directly involved in the management of a marine site lying within territorial waters. The bodies which may be relevant authorities are listed in Regulation 6 of the Conservation of Habitats and Species Regulations 2017. All relevant authorities are also competent authorities.

³ Competent authorities are defined in Regulation 5 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 and Regulation 7 of the Conservation of Habitats and Species Regulations 2017. In summary, a competent authority is any person or organisation that has the legally delegated or invested authority (e.g. Minister, government department, public body of any kind or statutory undertaker) to perform a designated function.

Contents

1	Introduction	3
1.1	Background.....	3
2	Responsibilities of Relevant and Competent Authorities	4
3	Conservation Objectives for harbour porpoise SACs	4
3.1	The role of Conservation Objectives	4
3.2	Background to Conservation Objectives	5
3.3	The North Channel SAC Conservation Objectives	5
4	Advice on Operations.....	8
4.1	Purpose of advice	8
4.2	Background.....	9
5	Operation assessments at UK scale	9
6	Site specific considerations: North Channel SAC	11
6.1	Sensitivity of harbour porpoise to existing activities within or impacting on the site	11
6.2	Limitations of the evidence.....	18
7	References	20
8	Annex A: Assessment of the level of impact risk from operations (activities) on UK harbour porpoise populations	22
9	Annex B: Definitions of Pressures as applied within harbour porpoise SAC Advice on Operations	27

1 Introduction

1.1 Background

Initial advice on a network of sites identified within UK waters for harbour porpoise (*Phocoena phocoena*) was submitted to UK and Devolved Governments as a series of draft SACs in June 2015. The sites were identified within the UK portions of Management Units (MUs⁴) defined for the species (ICES, 2014; IAMMWG, 2015). The Welsh and Northern Irish Governments, along with Defra on behalf of England and relevant offshore waters, gave approval for sites within their areas of jurisdiction to proceed to consultation (January to May 2016). In light of the responses to the consultation, five sites were submitted to the European Commission as candidate SACs in January 2017. These five sites were adopted by the EC as Sites of Community Importance (SCIs) on 12 December 2017 and designated as SACs by Ministers on 26th February 2019. These sites are shown in Figure 1.

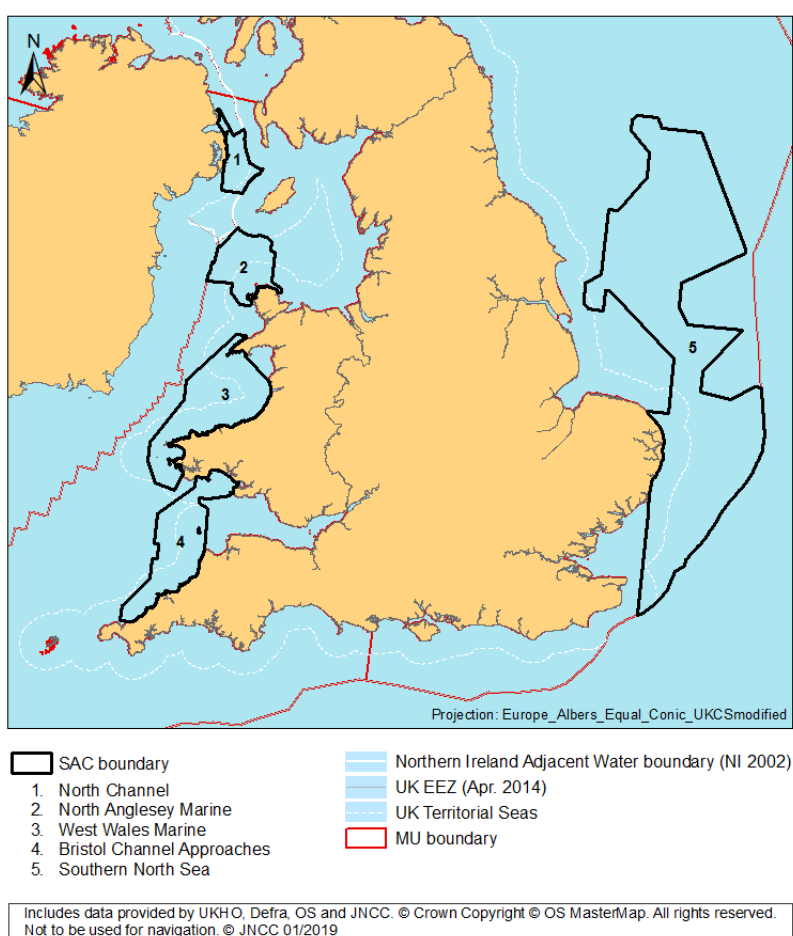


Figure 1: Special Areas of Conservation for the harbour porpoise, *Phocoena phocoena* identified in Northern Ireland, England, Wales and offshore waters. The Management Unit (MU) boundary (red line) refers to the UK portion of the North Sea and Celtic and Irish Seas MUs.

⁴ For conservation and management purposes it is practical to divide the population into smaller units, termed Management Units (MUs). These MUs were developed to take account of biological populations of animals but were also determined by political boundaries and are at an appropriate scale at which to assess human activities. In the UK, three MUs have been defined for harbour porpoise: West of Scotland, Celtic and Irish Seas, and North Sea (IAMMWG, 2015)

This advice document is for the North Channel SAC (Figure 2) which is subject to protection under The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)⁵ and the Conservation of Offshore Marine Habitats and Species Regulation 2017⁶ (collectively referred to as the Habitats Regulations). The advice is given in fulfilment of the duty of the Statutory Nature Conservation Bodies (SNCBs) under the Habitats Regulations to advise Relevant and Competent Authorities as to (a) the Conservation Objectives for the site; and (b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated. The SNCBs aim to ensure that the Conservation Objectives are up-to-date, accessible and enable the assessment of the potential effects of plans and projects.

2 Responsibilities of Relevant and Competent Authorities

Competent Authorities (including those which are also Relevant Authorities) are required to exercise their functions to comply with the Habitats Regulations. Competent Authorities must, within their areas of jurisdiction, consider both direct and indirect effects on the site. This includes considering operations inside and outside the boundary of the SAC, if the impacts could affect the achievement of the site's Conservation Objectives. Decisions on management measures (e.g. the scale and type of mitigation) are the responsibility of the relevant regulatory or management bodies. These bodies will consider SNCB advice and hold discussions with the sector concerned, where appropriate. Where consent is required and the operation (if considered a plan or project) is likely to significantly affect a European Site, Article 6(3) of the Habitats Directive requires that an Appropriate Assessment (AA) is carried out. The AA is part of the "Habitat Regulations Assessment" (HRA), which is a case-specific assessment made in view of the Conservation Objectives for the affected site or sites. Each HRA requires case-specific advice from the SNCB but the assessment is the responsibility of the competent authority concerned.

The variability of harbour porpoise distribution and abundance within sites is in part due to their mobility and wide-ranging nature as well as natural and anthropogenic changes in habitat and prey. Relevant and Competent Authorities are not required to undertake any actions to ameliorate changes in the condition of the site if it is shown that the changes result wholly from natural causes. It is therefore important to contextualise any apparent changes in harbour porpoise presence within the site in terms of natural variability and the abundance and distribution patterns at the population level (i.e. MU).

3 Conservation Objectives for harbour porpoise SACs

3.1 The role of Conservation Objectives

Site level Conservation Objectives (COs) are a set of specified objectives designed to ensure that the site contributes in the best possible way to achieving Favourable Conservation Status (FCS) of the designated site feature(s) at the national and biogeographic level (EC, 2012). Conservation Objectives constitute a necessary reference for:

- identifying any site-based conservation measures that may be required;
- carrying out HRAs of the implications of plans or projects.

The purpose of the HRA is to determine whether a plan or project could adversely affect a site's integrity. The critical consideration in relation to site integrity is not the extent or degree of an impact, or whether an impact is direct or indirect, but whether a plan or project, either

⁵ <http://www.legislation.gov.uk/nisr/1995/380/contents/made>

⁶ <http://www.legislation.gov.uk/ukxi/2017/1013/contents/made>

individually or in combination with other plans or projects, affects the site's ability to achieve its Conservation Objectives and therefore contribute to Favourable Conservation Status.

Harbour porpoise are protected everywhere in European waters under the provisions of the Habitats Regulations. The harbour porpoise in UK waters are considered part of a wider European population and the highly mobile nature of this species means that the concept of a 'site population' is not considered an appropriate basis for expressing Conservation Objectives for this species. Site based conservation measures will complement wider ranging measures that are in place for the harbour porpoise.

3.2 Background to Conservation Objectives

The Conservation Objectives are designed to help ensure that the obligations of the Habitats Directive can be met. Article 6(2) of the Directive requires that there should be no deterioration or significant disturbance of the qualifying species or to the habitats upon which they rely. Therefore, the focus of the Conservation Objectives for harbour porpoise sites is on addressing pressures that affect site integrity and would include:

- killing or injuring harbour porpoise (directly or indirectly);
- preventing their use of significant parts of the site (disturbance / displacement);
- significantly damaging relevant habitats; or
- significantly reducing the availability of prey.

This document includes both a statement of the Conservation Objectives and explanatory text on their intent and interpretation specific to the site. The Objectives have been set taking account of European Commission guidance (EC, 2012). Further guidance on the management of specific pressures on harbour porpoise is being developed.

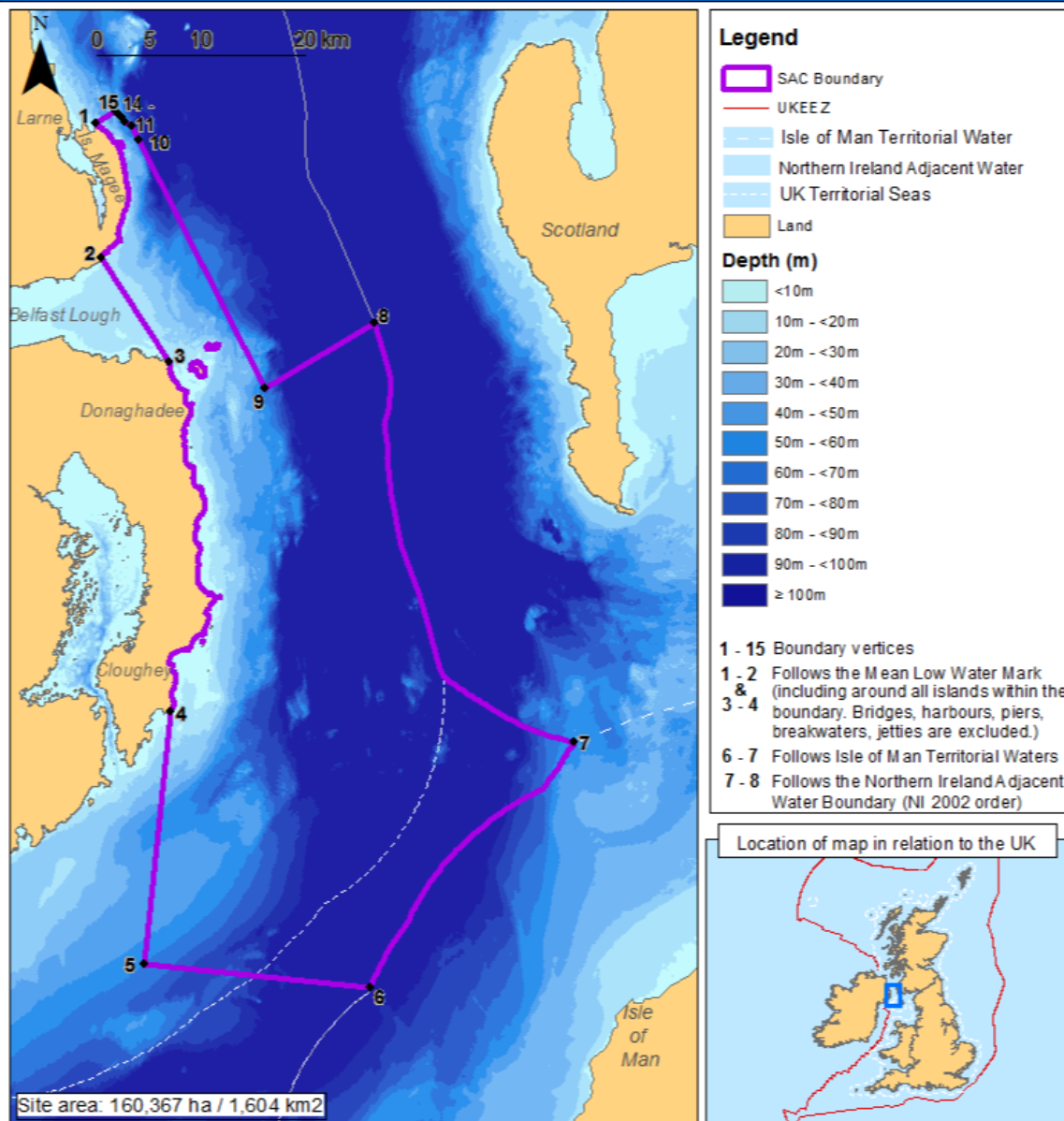
3.3 The North Channel SAC Conservation Objectives

The qualifying feature of the site is the Habitats Directive Annex II species:

- harbour porpoise (*Phocoena phocoena*)

Seasonal differences in the relative use of the site have been identified based on the analyses of Heinänen and Skov (2015). Harbour porpoise sightings data were modelled seasonally (Summer: April-September and Winter: October-March) for each MU. The outputs of this analysis were maps of areas by season and MU that persistently contained elevated densities of harbour porpoises. These areas were used as the basis for site identification and consequently, sites may have seasonal components which should be considered in the assessment of impacts and proposed management. The North Channel SAC (Figure 2) has been designated because of its importance to harbour porpoise in the winter months (October – March).

North Channel



Includes data provided by UKHO, Defra, OS and JNCC. © Crown Copyright © OS MasterMap. All rights reserved. Not to be used for navigation. © JNCC 02/2019. Coordinates displayed in WGS84 geographic coordinate system. Site area calculated using modified Europe_Albers_Equal_Area_Conic_UK projection.

ID	Latitude	Longitude	ID	Latitude	Longitude	ID	Latitude	Longitude
1	54° 51' 34.7" N	5° 45' 46.6" W	6	54° 11' 30.7" N	5° 5' 8.3" W	11	54° 51' 50.6" N	5° 42' 33.9" W
2	54° 44' 55.9" N	5° 42' 33.0" W	7	54° 25' 59.8" N	4° 52' 7.7" W	12	54° 52' 1.0" N	5° 43' 14.3" W
3	54° 40' 30.7" N	5° 34' 37.0" W	8	54° 44' 48.0" N	5° 17' 30.8" W	13	54° 52' 11.2" N	5° 43' 35.8" W
4	54° 23' 6.4" N	5° 27' 40.7" W	9	54° 40' 16.0" N	5° 25' 43.8" W	14	54° 52' 19.8" N	5° 43' 59.1" W
5	54° 10' 8.4" N	5° 25' 0.3" W	10	54° 51' 14.4" N	5° 41' 45.0" W	15	54° 52' 25.8" N	5° 44' 21.3" W

Figure 2: The North Channel Special Area of Conservation for harbour porpoise.

The Conservation Objectives for the site are:

To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters

In the context of natural change, this will be achieved by ensuring that:

1. Harbour porpoise is a viable component of the site;
2. There is no significant disturbance of the species; and
3. The condition of supporting habitats and processes, and the availability of prey is maintained.

Conservation Objective 1: Harbour porpoise is a viable component of the site

The SACs have been selected primarily based on their long-term, relatively higher densities of porpoise in contrast to other areas of the MU. The implication is that SACs provide relatively good foraging habitat and may also be used for breeding and calving. However, because the number of harbour porpoise using the sites naturally varies (e.g. between seasons), there is no exact number of animals within the site.

The intent of this objective is to minimise the risk of injury and killing or other factors that could restrict the survivability and reproductive potential of harbour porpoise using the site. Specifically, this objective is primarily concerned with operations that would result in unacceptable levels of those impacts on harbour porpoises using the site. Unacceptable levels can be defined as those having an impact on the FCS of the populations of the species in their natural range. The reference population for assessments against this objective is the MU population in which the SAC is situated (IAMMWG, 2015).

Harbour porpoise is a European Protected Species (EPS) listed on Annex IV of the Habitats Directive and as such is protected under the Habitats Directive Article 12 and transposing regulations from deliberate killing (or injury), capture and disturbance throughout its range. In addition, Article 12 (4) of the Habitats Directive is concerned with incidental capture and killing. It states that Member States 'shall establish a system to monitor the incidental capture and killing of the species listed on Annex IV (all cetaceans). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned'. Site based measures should therefore be aligned with the existing strict protection measures in place throughout UK waters. Significant disturbance within or affecting the site is considered in the second conservation objective.

Conservation Objective 2: There is no significant disturbance of the species

Disturbance of harbour porpoise typically, but not exclusively, originates from operations that cause underwater noise including, as examples, seismic surveys, pile driving and sonar. Responses to noise can be physiological and/or behavioural. JNCC has produced guidelines to minimise the risk of physical injury to cetaceans from various sources of loud, underwater noise⁷. However, disturbance is primarily a behavioural response to noise and may, for example, lead to harbour porpoises being displaced from the affected area.

This SAC was identified as having persistently higher densities of harbour porpoises (Heinänen and Skov 2015) compared to other areas of the MU. This is likely linked to the habitats within the site providing good feeding opportunities. Therefore, operations within or affecting the site should be managed to ensure that the animals' potential usage of the site is

⁷ <http://jncc.defra.gov.uk/page-4273>

maintained. Disturbance is considered significant if it leads to the exclusion of harbour porpoise from a significant portion of the site. Specifically, draft SNCB advice /guidance for assessing the significance of noise disturbance to a site suggests:

Noise disturbance within an SAC from a plan/project individually or in combination is significant if it excludes harbour porpoises from more than:

1. 20% of the relevant area⁸ of the site in any given day⁹, and
2. an average of 10% of the relevant area of the site over a season^{10,11}.

Conservation Objective 3: The condition of supporting habitats and processes, and the availability of prey is maintained

Supporting habitats, in this context, means the characteristics of the seabed and water column. Processes encompass the movements and physical properties of the habitat. The maintenance of supporting habitats and processes contributes to ensuring that prey is maintained within the site and is available to harbour porpoises using the site. Some evidence shows that the harbour porpoise has a high metabolic rate compared to terrestrial mammals of similar size (Rojano-Doñate et al., 2018) and high feeding rates (Wisniewska et al., 2016). The harbour porpoise is therefore thought to be a species that is highly dependent on a year-round proximity to food sources and its distribution and condition may strongly reflect the availability and energy density of its prey (Brodie 1995 in Santos & Pierce, 2003). The densities of porpoise using a site are likely linked to the availability (and density) of prey within the site. Harbour porpoise eat a variety of prey including gobies, sandeel, whiting, herring and sprat. However, the diet of porpoises when within the sites is not well known but is likely comparable to that in the wider seas.

There are several operations (Table 2) which potentially affect the achievement of this Conservation Objective. Whilst some plans/projects are unlikely to have a significant effect alone, an effect might become significant when considered in combination with other plans/projects and against the background of existing activities/pressures on the site. Further work is needed to assess historic, existing and planned levels of plans/projects in the sites and to better understand their impacts on the habitats and prey within the sites.

4 Advice on Operations

4.1 Purpose of advice

This section details the advice on activities specifically occurring within or close to the North Channel SAC that would be expected to impact the site; this is known as Advice on Operations. Initial assessments were conducted at a UK scale, with subsequent site-level

⁸ The relevant area is defined as that part of the SAC that was designated on the basis of higher persistent densities for that season (summer defined as April to September inclusive, winter as October to March inclusive).

⁹ Applicable only in Habitats Regulations Assessments (HRA / AA stage) due to impracticality of daily noise limit management of activities, but retrospective compliance analysis advised

¹⁰ Summer defined as April to September inclusive, winter as October to March inclusive

¹¹ For example, a daily footprint of 19% for 95 days would result in an average of $19 \times 95 / 183$ days (summer) = 9.86%

assessment detailing our understanding of the operations and their potential to impact the site (Section 5 & 6). Advice is only given where pressures¹² may impact the site and therefore, may require management, if the Conservation Objectives are to be met. Widespread pressures may also act to affect the overall status of harbour porpoise, but their effects are not restricted to specific sites. Such pressures are best dealt with through broader measures. Alongside and in addition to the identification of the network of harbour porpoise sites, an overarching conservation strategy (DETR, 2000) has been in place for harbour porpoise since 2000. In light of a recent conservation literature review (IAMMWG *et al*, 2015), a UK Dolphin and Porpoise Conservation Strategy is being developed.

The advice outlined below should also be used to help identify the extent to which existing operations are, or can be made, consistent with the Conservation Objectives, and thereby focus the attention of Relevant and Competent Authorities and monitoring programmes to areas that may need management measures.

This Advice on Operations will be supplemented through further discussions with the Relevant and Competent Authorities and any advisory groups that may be formed for the site.

4.2 Background

In compiling this Advice on Operations, the SNCBs have considered the pressures that may be caused by human activities and may affect the integrity of the site when considered against the Conservation Objectives. The advice is generated through a broad grading of sensitivity and exposure of the harbour porpoise to pressures associated with activities to gain an understanding of how vulnerable the species is to each activity at a UK level. The activities and their associated pressures to which the harbour porpoise is deemed vulnerable at a UK level are then considered at a site level to inform the risks to achieving the Conservation Objectives along with any potential management that may be required to mitigate against such risks. Annex A details the assessments of the level of impact risk¹³ from operations on harbour porpoise populations at a UK-wide scale. This informs on the activities/operations likely to impact the site.

This document is guidance only and activities/operations and their management within or affecting the site will be considered in the context of a Habitats Regulations Assessment (HRA) and where applicable through other environmental assessment processes, such as Environmental Impact Assessment (EIA).

5 Operation assessments at UK scale

The assessments have been carried out using all available evidence as of February 2019. If further information is made available in future which would improve our understanding of harbour porpoise vulnerability in UK waters, the assessments may be updated. This advice is provided without prejudice for use by the Relevant and Competent Authorities. The level of any impact will depend on the location, timing and intensity of the relevant operation. This advice is provided to assist and focus the Relevant and Competent Authorities in their consideration of the management of these operations.

The harbour porpoise is a wide-ranging species and occurs throughout the UK Continental Shelf area (JNCC, 2013). It does occur in deeper waters but in very low densities, and perhaps only seasonally. As a predominantly continental shelf species, it is exposed to a wide range of pressures that are both ubiquitous (e.g. pollution) and patchy (e.g. bycatch) in nature, and the list of anthropogenic activities leading to these pressures is long. Based on current

¹² See Annex B for definition of key terms

¹³ Risk includes consideration of severity of implications of impact

available information, the operations that pose the most notable risk of impact to UK harbour porpoise are shown in Table 1.

The current levels of impact of the various pressures are based on the Article 17 assessments¹⁴ and the full list of assessed activities (operations) and key references can be found in Annex A. Updates to the assessments will occur as more evidence becomes available.

Definitions of pressures are explained in Annex B.

Activities which currently pose a low risk of impact to harbour porpoise at the UK level (Annex A) have not been considered in this advice. The exposure to the pressures associated with these activities is currently very limited and poses no significant threat to the maintenance of harbour porpoise at FCS. Non-anthropogenic impacts are also not considered, such as attack and predation from other marine mammal species that have the potential to impact harbour porpoise populations.

Table 1: Key activities/operations and the relative level of risk of impact on harbour porpoise throughout UK waters. Those pressures ranked 'high' are known to have the greatest impact relative to other pressures on the population of UK harbour porpoises. Activities which currently pose a low risk are not shown.

Operations	Pressures	Impacts	Current relative level of risk of impact
Commercial fisheries with bycatch of harbour porpoise (predominantly static nets)	Removal of non-target species	<ul style="list-style-type: none"> • Mortality through entanglement/bycatch 	High
Discharge/run-off from land-fill, terrestrial and offshore industries	Contaminants	<ul style="list-style-type: none"> • Effects on water and prey quality • Bioaccumulation through contaminated prey ingestion • Health issues (e.g. on reproduction) 	High
Shipping, drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys, underwater explosion, military activity, acoustic deterrent devices and recreational boating activity	Anthropogenic underwater sound	<ul style="list-style-type: none"> • Mortality • Internal injury • Disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising) 	Medium
Shipping, recreational boating, tidal energy installations	Death or injury by collision	<ul style="list-style-type: none"> • Mortality • Injury 	Medium/Low
Commercial fisheries (reduction in prey resources)	Removal of target species	<ul style="list-style-type: none"> • Reduction in food availability • Increased competition from other species • Displacement from natural range 	Medium

¹⁴ EU Habitats Directive Article 17 assessment, harbour porpoise report: http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/S1351_UK.pdf . Updated Article 17 reports for 2013-2018 will be available in 2019.

6 Site specific considerations: North Channel SAC

6.1 Sensitivity of harbour porpoise to existing activities within or impacting on the site

The North Channel site spans territorial waters of Northern Ireland and offshore waters and covers an area of 1,604km². A summary of the site can be found in the Selection Assessment Document on the Site Information Centre¹⁵.

All available information on activities/operations within or in proximity to the site has been used to assess the threats and pressures within the site. However, precise information on some activities/operations is not currently available due to lack of targeted data collection to date. Assessing exposure carries certain assumptions about the spatial extent, frequency and intensity of the pressures associated with marine activities.

Table 2 is an overview of activities occurring within or in proximity to the North Channel site to which the harbour porpoise has a current level of impact risk of High or Medium at UK level (Table 1) and therefore may require further consideration concerning options for management. The impact of a pressure at the site level can differ to that at UK level dependent on the amount of activity within or adjacent to the site. GIS layers of spatial activity data as well as review of literature, were used to identify the impact risk within the site (where a pressure is concentrated within a site) and whether it differs from the UK level risk. These assessments include all available information as of February 2019.

JNCC and the country SNCBs are working with the Regulators and Industry to ensure that a pragmatic approach to mitigation and management of pressures that may affect the integrity of the site is adopted. Any future guidance documents will be made available on the Site Information Centre on the JNCC website¹⁶.

¹⁵ SAC Selection Assessment Document: <http://jncc.defra.gov.uk/page-7242>

¹⁶ <http://jncc.defra.gov.uk/page-7242>

Table 2: Operations occurring within/near to the North Channel site which may affect the integrity of the site.

Operations	Pressure	Comment on current level of activity	Management considerations
<p>Fisheries (commercial and recreational) with harbour porpoise bycatch</p>	<p>Removal of non-target (bycatch) species</p>	<p>Bycatch of harbour porpoise in fishing gear is one of the most significant anthropogenic pressures impacting the population at a UK level. The relevant commercial fisheries with harbour porpoise bycatch are bottom set nets, such as gillnets and tangle nets.</p> <p>UK registered vessels >12m: According to Vessel Monitoring System (VMS) data, there is no evidence of large vessel UK static net fishing activity within the site¹⁷.</p> <p>UK registered vessels <12m: current exposure is unknown within the site boundary.</p> <p>EU registered >12m vessels: VMS data show potential for low levels of dispersed static netting vessel activity in Northern Ireland waters.</p>	<p>Where bycatch may pose a risk to achieving the site's conservation objectives, mitigation may need to be considered.</p> <p>Where management measures are required, the development of these would be led by fishery managers in discussion with fishing interests and informed by any detailed information about fishing activity that can be made available. Detailed measures, if required, will be developed by the relevant management authority (European Commission/MMO/DAERA /Defra).</p> <p>The site sits within ICES area VIIa and as such, gillnetters > 12m are not legally obliged to use pingers under EU Regulation 812/2004.</p> <p>Additional noise disturbance has to be considered if acoustic deterrent devices are considered to be used as mitigation. A fisheries guidance document will be developed in collaboration with management authorities and stakeholders.</p> <p>Because the effort of static net fisheries within this site is currently considered low, the risk of bycatch is considered low. As such it is unlikely that further management would be required. A revised assessment of the risk would be required where new evidence of activity becomes available.</p>
<p>Discharge /run-off from land-fill, terrestrial/offshore industries</p>	<p>Contaminants</p>	<p>Current exposure within or near the site is unknown.</p>	<p>This pressure generally cannot be managed effectively at the site level. Most of the relevant pollutants have been effectively phased out of use by action under the OSPAR Convention and, more recently, the EU (through Council Directives 67/548/EEC and 76769/EEC and the Stockholm Convention, which restrict the marketing and use of PCBs; plan for disposal of PCBs; and eliminate or restrict the production and use of persistent organic pollutants [POPs]).</p>

¹⁷ The fisheries data are aggregated VMS data collected between 2006 and 2013.

			<p>However, human activities are the most likely cause of the re-release of these chemically stable chemicals into the environment or for introduction of other contaminants of which the impacts are poorly known.</p> <p>Any novel sources of potential contamination and/or activities likely to cause re-release of pollutants from stores associated with a new plan or project will be assessed under HRA both within and outside the site where there is the potential to impact upon site integrity.</p> <p>Current sources of exposure have to be identified and further efforts to limit or eliminate PCB discharges to the marine environment may still be needed.</p>
Shipping	Anthropogenic underwater sound	The Northern Ireland port of Belfast is near the site resulting in large vessel shipping and ferry routes throughout the site.	<p>Harbour porpoise use sound for foraging, navigation, social activities and predator detection. Underwater noise therefore has the potential to interrupt or affect these behaviours as well as cause hearing damage, particularly at short distances. The peak frequency of echolocation pulses produced by harbour porpoise is 120–130 kHz, corresponding to their peak hearing sensitivity although hearing occurs throughout the range of ~1 and 180 kHz (Southall <i>et al</i> 2007).</p> <p>The underwater sounds created by large ships are unlikely to cause physical trauma but could make preferred habitats less attractive as a result of disturbance (habitat displacement, area avoidance). However, additional management is unlikely to be required based on current levels of activity. Significant increases in vessel traffic (e.g. associated with the installation of wind farms in the area), would need further assessment.</p>
Oil and gas drilling		The northern-most area of the site overlaps with current licensed blocks for oil and gas.	Any future applications from existing or inactive (exploratory and dry) wells and oil and gas licensed blocks occurring within the site would be subject to an HRA.
Pile driving		There is overlap with an offshore wind resource zone in the southwest of the site, however, there	A European Protected Species (EPS) licence is already required for any construction activity which carries the risk of significant disturbance or injury

		<p>are currently no plans in place for development of that zone.</p> <p>Although there is currently no pile driving within the site there are planned developments at Belfast Harbour that will engage this activity.</p>	<p>to cetaceans. Developers are required to follow the 'Statutory Nature Conservation Agency protocol for minimising the risk of injury to marine mammals from piling noise'¹⁸.</p> <p>A Habitats Regulations Assessment (HRA) will be considered for all new (or review of consent) developments (coastal and marine) using pile driving within the site or within 26km of site boundaries. If additional mitigation (to that required under EPS licence) is required, planning and management of pile driving activities may be needed within the site to ensure the Conservation Objectives are met. There is potential for a reduction or limitation of the disturbance/displacement effects by varying the schedule of piling, particularly if several developments are constructing at the same time and pile driving footprints do not overlap (i.e. maximising area from which porpoise are excluded). Limited spatio-temporal restrictions may be needed.</p> <p>Other examples of mitigation include the use of sound dampers, methods that create a barrier to sound transfer (e.g. bubble curtains) and, more effectively, the use of alternative foundation types (e.g. gravity foundations, suction cups, floating turbines, drilling). Scheduling of activities may minimise cumulative exclusion from areas.</p> <p>Further advice on assessment and management of noisy activities within the sites is being developed by the SNCBs and Regulators in consultation with industry.</p>
Dredging and disposal		Development and maintenance works at Northern Ireland's primary port at Belfast are ongoing.	Dredging and disposal can cause disturbance leading to changes in harbour porpoise behaviour as well as to their habitat and prey. There is also potential for resuspension of pollutants from the sediment. The risk from single plans/projects may be considered relatively low but is assessed through HRA. However, there is currently considerable uncertainty regarding effects on habitat and prey.

¹⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/50006/jncc-pprotocol.pdf

			New dredge and disposal projects (or licence renewals) are subject to HRA. Cumulative impacts will be considered within the HRA.
Geophysical surveys (including seismic) surveys		A range of acoustic ground discrimination surveys are undertaken within the site, including for scientific research and site surveys undertaken in association with various infrastructure projects.	<p>Some geophysical surveys that may affect the integrity of the site may require consent and be subject to HRA.</p> <p>Each case needs to be assessed individually, and the JNCC Guidelines for minimising the risk of injury to marine mammals from geophysical surveys (updated August 2017¹⁹) are available online. Within the guidance, seismic survey is defined as ‘Any geophysical survey that uses airguns to generate sound which is sent into the seabed and the reflected energy is recorded and processed to produce images of the geological strata below; described as 2D, 3D and 4D and includes any similar techniques that use airguns.’</p> <p>It is currently not known whether sub-bottom profilers cause disturbance to harbour porpoise. Further research is needed to understand the sound propagation and effect ranges from these types of equipment.</p> <p>Cumulative impacts of geophysical surveys will need to be considered.</p> <p>Further advice on assessment and management of noisy activities within the sites is being developed by the SNCBs in consultation with Regulators, industry and NGOs.</p>
Recreational boating activity		Royal Yachting Association (RYA) cruising routes throughout the site, particularly along coast.	<p>Adherence to relevant existing wildlife codes of conduct is already advocated.</p> <p>UK SNCBs are looking at the option of developing an overarching wildlife watching code of conduct to sit alongside the Scottish code.</p>
Acoustic deterrent/mitigation devices		No known use within the site.	No further management required

¹⁹ http://jncc.defra.gov.uk/pdf/jncc_guidelines_seismicsurvey_apr2017.pdf.

Pinger devices		The use of pingers is unknown but unlikely in the site given that the vessels >12m are not required to use pingers under Reg 812/2004 in the wider ICES area VIIa.	See 'Fisheries (commercial and recreational) with harbour porpoise bycatch'. No further management required.
Military activity		Although no active MOD areas are located within the site, MOD can operate anywhere in UK waters.	Activities take place under Range Standing Orders, command guidance and environmental risk management tools, which include measures to reduce the risk of killing, injury and disturbance of marine mammals (for example live firing trials are subject to confirmation that marine mammals are not present in the vicinity of targets). No further management is considered necessary as MOD, which are a Competent Authority, incorporates the SACs into their assessments via their MOD Environmental Protection Guidelines (Maritime) and Marine Environment and Sustainability Assessment Tool (MESAT) ²⁰ .
Unexploded ordnance (UXOs)		Unknown whether they exist in the site. However, unexploded ordnance from WWII can be found in many areas of UK seas. Projects that could inadvertently explode UXOs must undertake a survey to search for possibly ordnance ahead of the project commencing. Any ordnance found must be exploded on site or removed for health and safety reasons.	Although the removal (detonation) of unexploded ordnance (UXOs) is short term, the noise is significant and can cause injury or death to harbour porpoise. A HRA may be required. A European Protected Species licence may also be required. Mitigation is usually required to reduce risk of injury and killing. As a minimum, the JNCC guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives are applied. A combination of Marine Mammal Observers (MMO)s, Acoustic Deterrent Devices (ADD) and occasionally scare charges are used to ensure harbour porpoise and other marine mammals are a sufficient distance from the explosion to prevent death or injury. Discussions are ongoing between industry, regulators and SNCBs on the most appropriate suite of mitigation measures for UXO clearance (including the possible use of bubble curtains). This will depend on the size of UXOs likely to be encountered and the practicality of deployment of the

²⁰ <http://www.royalnavy.mod.uk/-/media/royal-navy-responsive/documents/useful-resources/environmental-protection/environmental-protection-guidelines-maritime-v21.pdf?la=en-gb>

			mitigation measure, amongst other factors.
Shipping	Death or injury by collision	Busy shipping and ferry routes primarily accessing the port of Belfast.	Post mortem investigations of stranded harbour porpoise have revealed some deaths caused by trauma (potentially linked with vessel strikes). However, this is not currently considered a significant risk and no additional management is likely to be required.
Recreational boating activity		RYA cruising routes cross the site, most are coastal.	See 'Shipping' (with death or injury by collision) above. Boats conducting recreational activity should adhere to wildlife codes of conduct to avoid risk of collision (see 'recreational boating activity' with regards to underwater noise). https://www.daera-ni.gov.uk/publications/watch-out-wildlife-crime-marine-wildlife-disturbance
Wet renewable energy installations		There is a small overlap with a Tidal Energy Resource Zone at the Copeland Islands. However, this zone has not been considered suitable for commercial scale development due to potential significant adverse effects on the environment and other marine users (according to the Offshore Renewable Energy Strategic Action Plan for 2012-2020). Test tidal devices (turbine and kite) are currently in operation at Strangford Narrows just west of the site in the entrance to Strangford Lough.	New tidal range, tidal stream and wave projects would be subject to a Habitats Regulations Assessment (HRA). Additionally, an EPS licence is already required if there is a risk of significant disturbance or injury. Any consented, but not yet built, tidal stream and tidal range developments likely to impact the SAC shall undergo a review of consent if the North Channel SAC has not already been taken into consideration. Animal detection systems, e.g. active and passive acoustics, are used to monitor animal presence and behaviour around devices for consented projects. These systems might be used to automate a shutdown procedure which prevents collisions with moving parts or to establish any probable collisions and invoke adaptive management decisions. In addition, the use of ADDs is a possible mitigation tool to exclude animals from the vicinity of devices Potential future mitigation related to death or injury by collision will be based on new and emerging research and evidence.
Commercial fisheries (and	Removal of target (prey) species	Fisheries (UK and EU) targeting pelagic prey species such as herring	Currently, most commercial species are managed at scales relevant for stock management via the Common

recreational set nets)		and mackerel operate throughout the Celtic and Irish Seas although there is little evidence to suggest that they operate within the site boundaries. By contrast there is some demersal trawl activity in the site that could result in removal of potential prey species (e.g. whiting).	<p>Fisheries Policy and not at the site level.</p> <p>Harbour porpoise diet within UK waters includes a wide variety of fish and they will generally focus on the most abundant local species (De Pierrepont <i>et al</i>/2005; Camphuysen <i>et al</i>/ 2006). The predominant prey type appears to be whiting, gobies and sandeel, although shoaling fish such as mackerel and herring are also taken. Harbour porpoise diets overlap extensively with diets of other piscivorous marine predators (notably seals) and many of the main prey species are also taken by commercial fisheries, although porpoises tend to take smaller fish than those targeted by fisheries (Santos and Pierce 2003).</p> <p>The overlap between commercial fisheries and harbour porpoise prey is unknown within the site. Further research is required to establish whether there is any potential for direct overlap.</p>
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6.2 Limitations of the evidence

It is important to note that the information used to catalogue activities/operations occurring within the site is not complete. The available data are drawn from existing monitoring programmes (e.g. the UK's Bycatch Monitoring Scheme for Protected Species and other European datasets linked to VMS monitoring of fishing vessels) but these have limitations, including availability and accessibility of data at the time of preparing this advice. Caveats with how the data have been collected also need to be understood to correctly interpret the information. This has resulted in the use of expert judgement where sufficient evidence is lacking but risk is implied. Below are some points to consider alongside the above table to ensure the information is not taken out of context:

- **Data availability**
 - Globally, the marine environment is generally far behind the evidence levels of that on land, particularly in offshore areas, mainly due to scale and difficulty/cost of data acquisition.
 - There can be sensitivities surrounding data that have been gathered by industry, and some data are not available for use for advice and management purposes. Often these data can become available, but not in time to inform management decisions.
- **Fishing: Limitations of fishing Vessel Monitoring System (VMS) data**
 - VMS positional data are transmitted at approximately 2-hour intervals. There is no information transmitted regarding precise vessel activity, therefore assumptions about activity, based on logbook returns and vessel speed profile are often made.

- Vessel positional data (VMS) cannot inform regulators regarding extent of static gear deployment or soak times.
 - Fishing vessels under 12m long, (and until 2013, vessels under 15m long) are not required to use the VMS, and therefore VMS data tells us nothing regarding the activity of this segment of the fleet. However, local information can be obtained from fisheries management authorities and will be used to develop more detailed guidance to assist with identification of any management measures where considered necessary.
- **Contaminants**
 - Although use of many of the relevant substances (e.g. PCBs) has been heavily regulated for many years, including a ban on further production, re-suspension or reintroduction of pollutants may occur. It is difficult to identify sources of contamination when dealing with highly mobile species.

7 References

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8 Annex A: Assessment of the level of impact risk from operations (activities) on UK harbour porpoise populations

The relative level of risk of impact to harbour porpoise from a range of pressures was assessed at UK level (Table A1) as part of the 3rd reporting round for Article 17²¹. See Annex B for the definitions of pressures as used for the harbour porpoise assessments. For the assessment, the relative importance of the pressure was assessed by considering the evidence available of an impact and the nature of that impact (direct/indirect) together with the area over which the pressure is acting in UK waters in relation to the species distribution. The relative levels are assigned according to the Article 17 guidance (Evans and Marvela, 2013) as:

Code	Meaning	Comment
H	High importance/impact	Important direct or immediate influence and/or acting over large areas
M	Medium importance/impact	Medium direct or immediate influence, mainly indirect influence and/or acting over moderate part of the area/acting only regionally
L	Low importance/impact	Low direct or immediate influence, indirect influence and/or active over small part of the area/acting only regionally

Table A1: Full assessment of level of the impact risk from activities/operations on harbour porpoise in UK waters based on considerations for Article 17 assessment for harbour porpoise conservation status²².

Operations	Pressures	Impacts	Relative level of risk of impact	Evidence		Key references
				Spatial overlap (species & pressure)	Post-mortem examination	
Commercial fisheries with bycatch (predominantly static nets)	Removal of non-target species	<ul style="list-style-type: none"> Mortality through entanglement/bycatch 	High	✓	✓	Deaville and Jepson, 2011; Morizur <i>et al</i> 1999; Read <i>et al</i> 2006; Northridge and Kingston, 2010; Northridge <i>et al</i> 2016; ICES 2015b
Discharge/run-off from land-fill, terrestrial and offshore industries	Contaminants	<ul style="list-style-type: none"> Effects on water and prey quality Bioaccumulation through 	High		✓	Jepson <i>et al</i> 2005; Jepson <i>et al</i> 2016; Deaville & Jepson, 2011; ICES, 2015a; Van De Vijver <i>et al</i> 2003; Law <i>et al</i> 2012;

²¹ <http://jncc.defra.gov.uk/page-6564>

²² EU Habitats Directive Article 17 assessment, harbour porpoise report: http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/S1351_UK.pdf

		<ul style="list-style-type: none"> contaminated prey ingestion Health issues (e.g. on reproduction) 				Pierce <i>et al</i> 2008; Murphy <i>et al</i> 2015.
Noise from shipping, drilling, dredging and disposal, aggregate extraction, pile driving, acoustic surveys, underwater explosion, military activity, acoustic deterrent devices and recreational boating activity	Anthropogenic underwater sound	<ul style="list-style-type: none"> Mortality Internal injury Disturbance leading to physical and acoustic behavioural changes (potentially impacting foraging, navigation, breeding, socialising) Habitat change/loss 	Medium	✓		Deville & Jepson, 2011; Stone & Tasker, 2006; Stone, 2015; Jepson <i>et al</i> 2005; Fernandez <i>et al</i> 2005; Würsig & Richardson, 2009; WGMME, 2012.
Shipping, recreational boating, renewable energy installations	Death or injury by collision	<ul style="list-style-type: none"> Mortality Injury 	Medium/Low	✓	✓	Deville & Jepson, 2011; Dolman <i>et al</i> 2006; ICES 2015a
Commercial fisheries, bycatch	Removal of target species	<ul style="list-style-type: none"> Reduction in food availability Increased competition from other species Displacement from natural range Habitat change/loss 	Medium		✓	Simmonds and Isaac, 2007; OSPAR QSR 2010; MacLeod <i>et al</i> 2007a, b; Thompson <i>et al</i> 2007; Santos and Pierce, 2003; Pierce <i>et al</i> 2007; ICES 2015b
Agriculture, aquaculture, sewage	Nutrient enrichment	<ul style="list-style-type: none"> Effects on water quality Increased risk of algal blooms may present health issues Habitat change/loss 	Low	✓	✓	Craig <i>et al</i> 2013
Agriculture, aquaculture, sewage	Organic enrichment	<ul style="list-style-type: none"> Effects on water quality Increased risk of algal blooms may present health issues Habitat change/loss 	Low	✓		Craig <i>et al</i> 2013
Waste disposal - navigational dredging (capital, maintenance)	Physical change (to another seabed type)	<ul style="list-style-type: none"> Changes in availability of prey species Habitat change/loss 	Low			

Bridges, tunnels, dams, installations, presence of vessels (shipping, recreation)	Water flow (tidal current) changes - local	<ul style="list-style-type: none"> • Changes in location of prey species • Displacement of harbour porpoise • Habitat change/loss 	Low			
Terrestrial and at-sea 'disposal'	Litter	<ul style="list-style-type: none"> • Mortality through entanglement • Ingestion 	Low	✓	✓	Deaville and Jepson, 2011
Bridges, tunnels, dams, installations, presence of vessels (shipping, recreation)	Barrier to species movement	<ul style="list-style-type: none"> • Habitat inaccessible • Potential physiological effects • Habitat change/loss 	Low	✓		WGMME., 2012; ICES 2015a
Sewage	Introduction of microbial pathogens	<ul style="list-style-type: none"> • Increased risk of disease 	Low		✓	Harvell <i>et al</i> 1999; Gulland and Hall, 2007; Van Bresseem <i>et al</i> 2009

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9 Annex B: Definitions of Pressures as applied within harbour porpoise SAC Advice on Operations

Pressures	Definition in the context of harbour porpoise advice
Removal of non-target species	The removal of species not targeted by the fishery; in this case the bycatch (and probable mortality) of harbour porpoise
Contaminants	Introduced material capable of contaminating harbour porpoise, prey or habitat important to harbour porpoise, with a negative impact directly or indirectly on porpoises
Anthropogenic underwater sound	Introduced noise with the potential to cause injury, stress or disturbance to harbour porpoise
Death or injury by collision	Introduction of physical objects; mobile or immobile, that may collide with or result in potential collision of harbour porpoise resulting in injury or mortality
Removal of target species	Removal of harbour porpoise prey, resulting in increased competition amongst porpoise and other species, and/or displacement from their natural range