SHADOW HABITATS REGULATIONS ASSESSMENT

Carlingford Lough Greenway

Section III: Northern Ireland / Republic of Ireland Border to Victoria Lock Amenity Site
Chainage 0075 to 1585

NI2689 Carlingford Lough
Greenway
sHRA
F01
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1 INTRODUCTION

This report has been prepared by RPS on behalf of Newry, Mourne & Down District Council (NMDDC) and Louth County Council (LCC) and examines firstly, whether or not the proposed project is likely to have a significant effect on any European site and subsequently, an assessment of the implications of the proposed project on European sites where likely significant effects could not be excluded.

1.1 The Habitats Directive

Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna, also referred to as the Habitats Directive, aims to promote the conservation of biodiversity through the maintenance and restoration of natural habitats and of wild species.

The Habitats Directive together with the Birds Directive (2009/147/EC) provide for the protection of habitats and species of European importance through the establishment of a European network of protected sites known as European sites. European sites are defined as Special Areas of Conservation (SAC) designated under the Habitats Directive and Special Protection Areas (SPA) designated under the Birds Directive.

Article 6(3) and 6(4) lay down the procedure to be followed for new developments that might affect a European site. The procedure consists of a four staged approach (EC 2002) known as Habitats Regulations Assessment (HRA):

Stage One: Screening or '*Test of Likely Significance*' - the process which identifies the likely impacts upon a European site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

Stage Two: Appropriate Assessment - the consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage Three: Assessment of Alternative Solutions - the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site;

Stage Four: Assessment Where Adverse Impacts Remain - an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

1.2 Northern Ireland Legislation

The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended) provide for the protection of habitats and species of European importance through the designation of European sites as part of the UK national site network. European sites are defined as Special Areas of Conservation (SAC) or Special Protection Areas (SPA).

The relevant consenting authority shall be provided with this shadow Habitats Regulations Assessment (sHRA) report in their role as a Competent Authority fulfilling its duties in accordance with Regulation 43 of the Habitats Regulations which states:

"(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 (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.

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

(3) The competent authority shall for the purposes of the assessment consult the Department and have regard to any representations made by it within such reasonable time as the authority may specify.

(4) The competent authority shall, if it considers it appropriate, take such steps as it considers necessary to obtain the opinion of the general public.

(5) 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.

(6) In considering whether a plan or project will adversely affect the integrity of the site, 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 proposed that the consent, permission or other authorisation should be given."

These regulations transpose *inter alia* Articles 6(3) and 6(4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora and remain relevant following the UK's departure from the EU. This approach is in line with the Habitats Regulations as amended, taking into account the effect of the Conservation (Natural Habitats, etc.) Regulations (Amendment) (Northern Ireland) (EU Exit) Regulations 2019. Terminology used in this report is in line with guidance published by DAERA in light of changes to the status of European sites following the UK's departure from the EU (DAERA 2020).

In simple terms, a project must be screened for appropriate assessment to ascertain whether or not likely significant effects on the UK national site network i.e., Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites; will occur. The sHRA firstly considers the proposed project by itself and secondly in combination with other relevant plans or projects and has been undertaken in view of best available scientific knowledge and in view of the conservation objectives set for the sites concerned and published by the Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland.

2 METHODOLOGY

2.1 Northern Ireland Guidance on Appropriate Assessment

The Environment and Heritage Service of the then Department of the Environment for Northern Ireland published '*Habitats Regulations guidance notes for competent authorities*' (EHS, 2002). Their purpose was to help competent authorities and others with an interest in such sites interpret and implement the Habitats Regulations and were intended to provide a framework for making judgements under the Regulations in order to promote consistency amongst decision-makers.

In addition to the guidelines published by the former Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of AA, most notably including, '*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, 2021), which sets out the principles of how to approach decision making during the AA process.

These guidelines have been followed in the preparation of this report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle., Office for Official Publications of the European Communities, Luxembourg (EC, 2000);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2000b);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001);
- Habitats Regulations Guidance Notes for Competent Authorities. Environment and Heritage Service. Belfast (EHS, 2002) [*not available online*];
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Publications Office of the European Union, Luxembourg (EC, 2007);
- The Appropriate Assessment of Plans in Northern Ireland. RSPB, Belfast (RSPB, 2008);
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. Publications Office of the European Union, Luxembourg (EC, 2009);
- Interpretation Manual of European Union Habitats. Version EUR 28. Publications Office of the European Union, Luxembourg (EC, 2013);
- European Commission Notice C(2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg (EC, 2019);
- Institute of Air Quality Management 'A guide to the assessment of air quality impacts on designated nature conservation sites (Version 1.1)' (IAQM, 2020); and

- European Commission Notice C(2021) 6913 'Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg (EC,2021).

EC (2000) notes that the implementation of an approach based on the precautionary principle should start with a scientific evaluation, as complete as possible, and where possible, identifying at each stage the degree of scientific uncertainty, and also that decisions taken based on the precautionary principle should be maintained so long as scientific information is incomplete or inconclusive. EC (2001) notes also that predicting the response of a receptor to a disturbance effect can be difficult and, in the absence of firm scientific information, requires a precautionary approach.

2.2 Approach

2.2.1 Stages of the Appropriate Assessment Process

An appropriate assessment is a three-stage process:

- The first stage involves a screening for appropriate assessment.
- The second stage arises where, having screened the proposed development, the competent authority determines that an appropriate assessment is required, in which case it must then carry out that appropriate assessment; and
- The third stage is a derogation procedure where adverse effects upon the integrity of a site remain but the project must nonetheless proceed for imperative reasons of overriding public interest.

According to European Commission guidance documents 'Assessment of plans and projects significantly affecting Natura 2000 sites' (EC, 2021) and the 'Managing Natura 2000 sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2019), the obligations arising under Article 6 establish a stepwise procedure for Habitats Regulations Appraisal as follows, and as illustrated in Box 1.

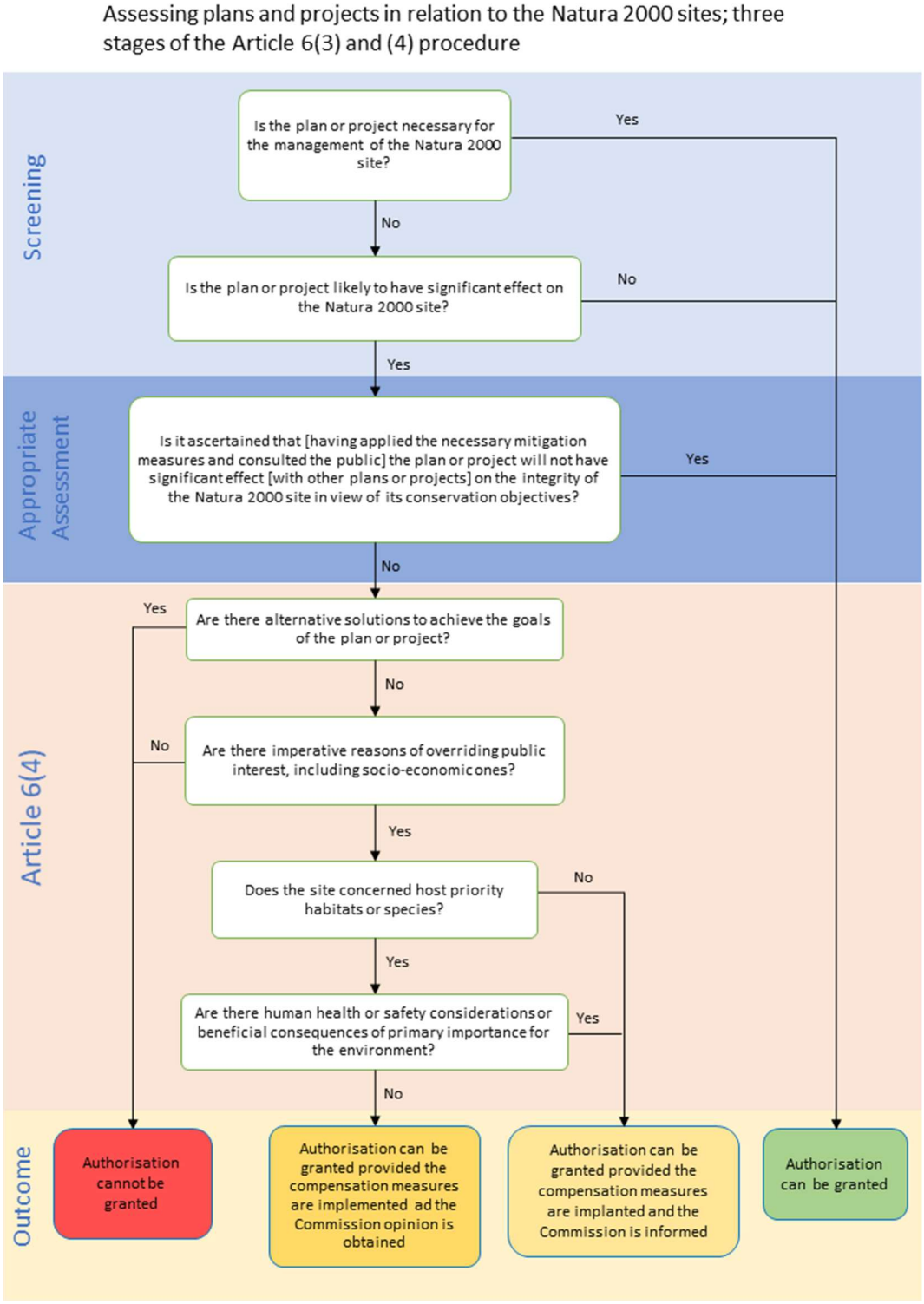
The first part of this procedure consists of a pre-assessment stage ('screening') to determine whether, firstly, a plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site; it is governed by the first sentence of Article 6(3).

The second part of the procedure, governed by the second sentence of Article 6(3), relates to the appropriate assessment and the decision of the competent national authorities.

A third part of the procedure (governed by Article 6(4) comes into play if, despite a negative assessment, it is proposed not to reject a plan or project but to give it further consideration. In this case Article 6(4) allows for derogations from Article 6(3) under certain conditions.

The extent to which the sequential steps of Article 6(3) apply to a given plan or project depends on several factors, and in the sequence of steps, each step is influenced by the previous step. The order in which the steps are followed is therefore essential for the correct application of Article 6(3).

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of a Stage 1 screening appraisal is that significant effects on European sites can be excluded, there is no requirement to proceed to the next step.



Box 1: Stepwise procedure of Article 6 of the Habitats Directive (from EC, 2021)

2.2.2 Likely Significant Effect

The Commission's 2018 Notice (EC, 2019) advises that the appropriate assessment procedure under Article 6(3) is triggered not by the certainty but by the likelihood of significant effects, arising from plans or projects regardless of their location inside or outside a protected site. Such likelihood exists if significant effects on the site cannot be excluded. The significance of effects should be determined in relation to the specific features and environmental conditions of the site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

The threshold for a likely significant effects is treated as being above a *de minimis* level. A *de minimis* effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.

EC (2021) defines a likely significant effect as being "*any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or projects*".

EHS (2002) notes that any effect that may reasonably be predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated but excluding *de minimis* or inconsequential effects.

2.2.3 Mitigation Measures

In determining whether or not likely significant effects will occur or can be excluded during Stage One Screening, measures intended to avoid or reduce the harmful effects of the proposed development on European sites, (i.e. mitigation measures) or best practice measures have not been taken into account. This approach is consistent with up-to-date EU guidance (EC,2019; EC,2021) and the case law of the Court of Justice of the European Union (CJEU):

EC (2001) states that "*project and plan proponents are often encouraged to design mitigation measures into their proposals at the outset. However, it is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site*". This direction in the European Commission's guidance document is unambiguous in that it does not permit the inclusion of mitigation at Stage One Screening.

In April 2018, the Court of Justice of the European Union issued a ruling in case C-323/17 *People Over Wind & Peter Sweetman v Coillte Teoranta* ("People Over Wind") that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site. The judgment in People Over Wind is further reinforced in EC (2019) and EC (2021) which refers to CJEU Case C-323/17.

2.2.4 Consideration of *ex-situ* Effects

EC (2019) advises that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures, including those which are external to European sites but which are likely to have significant effects on any of them.

The CJEU developed this point when it issued a ruling in case C-461/17 *Brian Holohan and Others v An Bord Pleanála* that determined inter alia that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that an appropriate assessment must on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

In that regard, consideration has been given in the sHRA to implications for habitats and species located both inside and outside of the European sites considered during Screening with reference to those sites' Conservation Objectives where effects upon those habitats and/or species are liable to affect the conservation objectives of the sites concerned.

2.2.5 Conservation Objectives

The conservation objectives for each European site are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the site has been selected.

The favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- the conservation status of its typical species is favourable.

The favourable conservation status (or condition, at a site level) of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- 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.

2.2.6 In-Combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the Commission's 2018 Notice (EC, 2019), significance will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned. Whilst the Directive does not explicitly define which other plans and projects are within the scope of the in-combination provision of Article 6(3), it

is important to note that the underlying intention of this provision is to take account of cumulative impacts, and these will often only occur over time.

In addition, other plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that "*as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced".*

EC (2021) additionally advises that –

- an in-combination assessment is often less detailed at the screening stage than in the appropriate assessment;
- there is still a need to identify all other plans or projects that could give rise to cumulative impacts with the plan or project in question; and,
- if this analysis cannot reach definitive conclusions, it should at least identify any other relevant plans and projects that should be scrutinised in more detail during the appropriate assessment.

3 DESCRIPTION OF THE PROJECT

3.1 Carlingford Lough Greenway Section III

The proposed project, known as Carlingford Lough Greenway Section III, will involve construction of an additional 1.51 km of greenway from County Bridge to Victoria Lock to complete the Northern Ireland section of the Carlingford Lough Greenway. The proposed greenway generally runs along the coast of Carlingford Lough. Existing land use consists of grass road verge, sloped stone revetment, and an area of vegetation / scrub known locally as Rough Island. The location of the site and site boundary is presented in **Figure 1 Site Location**.

The proposed project consists of a linear corridor approximately 1.71 km in length from the border to Victoria Lock. An existing application LA07/2020/1082/F has been submitted to get planning consent for the initial 75 m of greenway at the NI/ROI Border (CH 0000 to 0075) and the final 130 m of greenway within Victoria Lock Amenity Site (CH 1475 to 1715).

The proposed application aims to apply for planning consent for the remaining 1.51 km section of Carlingford Lough Greenway Section III (CH 0075 to CH 1585) between the NI/ROI Border and the Victoria Lock Amenity Site.

The following detailed annotated drawings for the proposed project can be found in **Figures**:

- 181146-DC-NI-XX-GA-C-101 – General Arrangement Plan – Sheet 1 of 3
- 181146-DC-NI-XX-GA-C-102 – General Arrangement Plan – Sheet 2 of 3
- 181146-DC-NI-XX-GA-C-103 – General Arrangement Plan – Sheet 3 of 3
- 181146-DC-NI-XX-GA-C-104 – Sample Cross Sections – Sheet 1 of 2
- 181146-DC-NI-XX-GA-C-105 – Sample Cross Sections – Sheet 1 of 2
- 181146-DC-S3-XX-SK-C-050 – Carlingford Lough ASS1 – Sheet 1 of 1

The chainages for the proposed project include:

- Chainage 0-75 m (c.75 m) initial section of the greenway at the NI/ROI border, proposed 2.5-3 m wide bound (asphalt) greenway.
- Chainage 75 m to 510 m (c.435 m) of the greenway, proposed of 4m wide timber boardwalk with steel sub structure, and 1.5 m high timber railings.
- Chainage 510 m to 885 m (c.375 m) of the greenway, proposed 3m wide unbound (gravel) greenway across Rough Island.
- Chainage 885 m to 1475 m (c.590 m) of the greenway, proposed of 4m wide timber boardwalk with steel substructure, and 1.5m high timber railings.
- Chainage 1475 m to 1585 m (c.110 m), section of greenway connecting the boardwalk to Victoria Lock Amenity Site, proposed 3 m wide bound (asphalt) greenway.
- Chainage 1585 m to 1715 m (c.130 m), final section of the greenway within Victoria Lock Amenity Site, proposed 3 m wide bound (asphalt) greenway.

The proposed greenway comprises:

- c. 435 m and c. 590 m of 4 m wide timber boardwalk with steel sub-structure, and 1.5 m high timber railings.
- Associated steel pile installation within the existing roadside grass verge, and within the adjacent sloped rock revetment where required. Piles have been assumed as CHS 219.1mm x 16mm at 2400mm spacing.
- c. 375 m of 3 m wide unbound (gravel) greenway with adjacent grass verges, and associated earthworks to tie into existing ground levels (maximum 1:3) across Rough Island.
- c. 110 m of 3 m wide bound (asphalt) greenway with adjacent edging kerbs, grass verges, and associated earthworks to tie into existing ground levels (maximum 1:2) in the vicinity of the Victoria Lock Amenity Site.
- Boundary treatments generally comprising 1.5 m high timber post & rail fencing.
- Directional and trail head signage, and associated foundations.
- c. 1.2 km of Vehicle Restraint System including associated terminals, lead in lengths, and foundations.
- Drainage comprising filter drains, linear drainage channels, replacement gullies, and connections to existing manholes / outfalls where required.

3.2 Marine Construction Licence

The proposed greenway comprises of a number of sections of interconnecting boardwalk which will require substructure works below Mean High Water Springs (MHWS). Table 3.1 below sets out each section of greenway and highlights the sections that will be located within the MHWS.

Table 3.1 Carlingford Lough Greenway Section III Interconnecting Boardwalk Sections

Section	Chainage	Length	Form of construction	Works below MHWS
3.1	0 to 75m	75m	2.5-3m wide bound (asphalt) greenway	No
3.2	**75m to 510m**	**435m**	**4m wide timber boardwalk**	**Yes**
3.3	510m to 885m	375m	3m wide unbound (Gravel) greenway, across Rough Island	No
3.4	**885m to 1475m**	**590m**	**4m wide timber boardwalk**	**Yes**
3.5	1475m t0 1715m	240m	3m wide bound (asphalt) greenway	No

Sections 3.1, 3.3 and 3.5 of the boardwalk are ground bearing and are located 5 m – 10 m inland from the MHWS.

Section 3.2 and Section 3.4 of the boardwalk comprise a 4 m wide timber boardwalk with steel sub-structure founded on piles and 1.5 m high timber railings. A typical cross section and structure of the boardwalk is shown below on Plate 1 and Plate 2.

The proposed boardwalk's associated steel pile installation will utilise the existing roadside verge and adjacent rock amour - sloping masonry. Between Chainages 425 m to 525 m and Chainages 1150 m to 1200 m piles will be fixed at, and just beyond the bottom of the sloping masonry creating a small footprint

within the Carlingford Lough. In total, circa 106 piles, resulting in a total footprint is 31.8m², will be installed within the intertidal zone comprising a mixture of soft muds, rock and fucoid seaweeds as set out below:

- Chainage 75 m to 510 m installation of c.43 no. piles
- Chainage 1050 m to 1200 m installation of c.63 no. piles

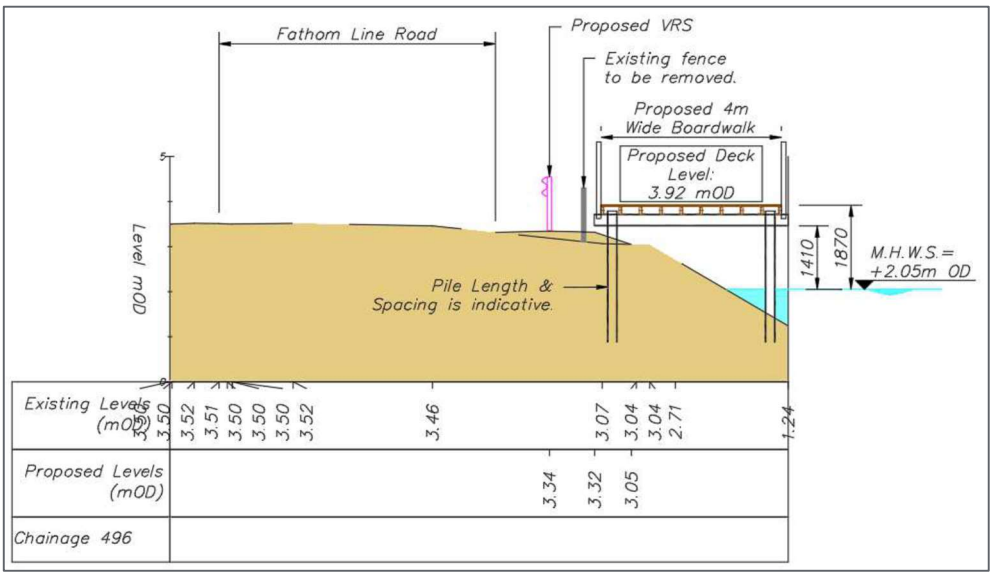


Plate 1: Typical Boardwalk Section

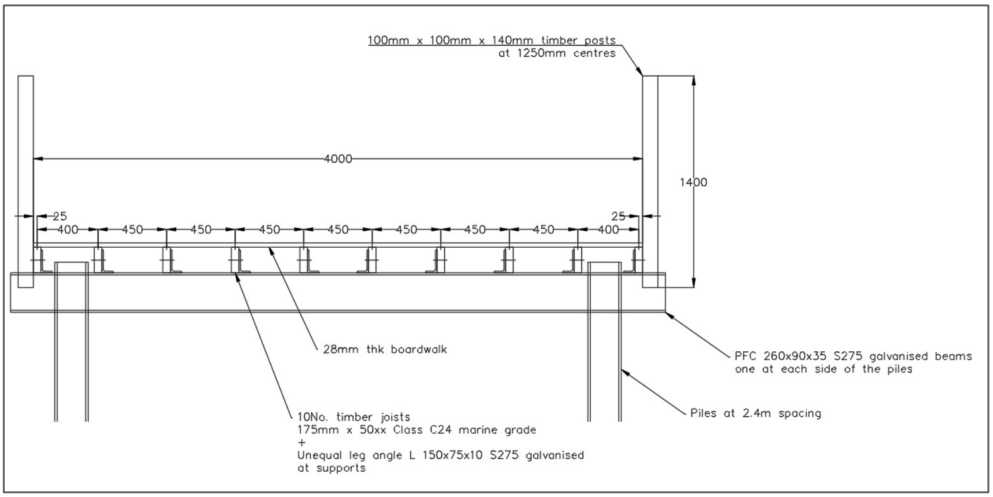


Plate 2: Typical Boardwalk Structure

3.3 Construction Methodology

The proposed construction method for the boardwalk includes the following elements:

3.3.1 Setting Out and Site Clearance

Vegetation and scrub clearance where required. It is anticipated that a small section of rock armour revetment at the seaward pile location will be removed and temporarily relocated on-site for reinstatement following driving of the piles. Removal of existing rock armour will be performed by an excavator and set on a loader/dumper and transported to the nearby temporary stockpile area.

Plate 3: Existing Rock Armour Section

3.3.2 Temporary working platform, if required by the Contractor

Construction of a temporary working platform seaward of the boardwalk. Platform to be enveloped in geotextiles, with a geogrid separator layer placed directly onto the foreshore and timber mats placed above, which would be recoverable at a later date following the completion of the works. There is the potential that a layer of sacrificial material may be required to aid the recovery of the geogrid separator layer. The use of the sacrificial materials could comprise biodegradable materials such as straw or reeds. Where these are unsuitable, locally sourced sand could be used sparingly through agreement with DAERA.

Plate 4: Mudflats – Temporary Working Platform to be Placed on Top of Mudflats with Geogrid Separator Layer

3.3.3 Piling Method Statement

It is anticipated that the piles will be installed using a pile driver mounted to a large excavator. Circular Hollow Section (CHS) steel piles to be driven to design depth using vibration techniques and, if design depth is not achieved, an impact hammer may instead be used to drive the piles to the design toe level.

The pile driver mounted to a large excavator location will be determined by the contractor – we anticipate the below options:

a. Temporary Road closure and both piles to be driven from the road.

b. Landward piles to be driven from the road and seaward pile to be driven on rigs mounted on a floating plant.

c. Plant working from a temporary platform.

3.3.4 Rock Armour Reinstatement

Rock armour units will be retrieved from the temporary stockpile area via excavator and delivered to a designated unloading. A long-reach excavator will be positioned at the adjacent road or temporary working platform and will lift the rock armour units into position on the seabed using a grab, ensuring they are not dropped from height to prevent damaging the armour and dislodging sediment. Any rock armour to be placed above the waterline will be monitored closely until the desired profile is achieved.

The steel substructure and boardwalk superstructure can then be constructed.

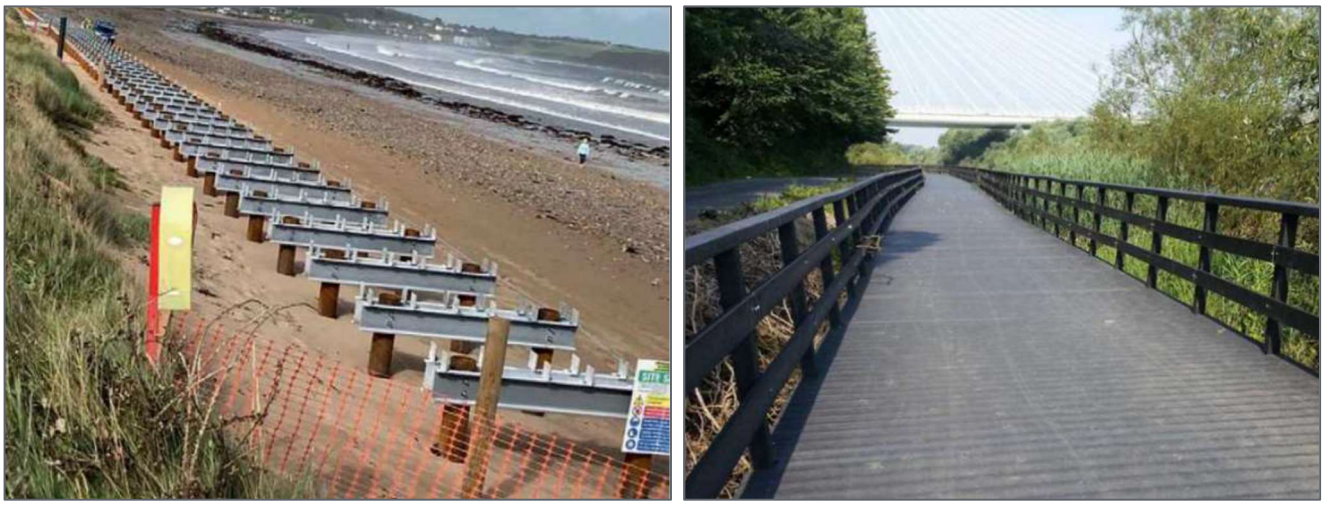


Plate 5: Examples of Piled Boardwalk

4 STAGE ONE: SCREENING

4.1 Introduction

The screening assessment examines the likely effects of the project, either alone or in combination with other projects or plans, upon European sites and considers whether it can be objectively concluded that the effects will not be significant. The screening assessment is carried out in the absence of any consideration of mitigation measures that form part of the project and are designed to avoid or reduce the impact of the project on a European site (EC 2002). Mitigation measures are defined as '*measures aimed at minimising or even cancelling the negative impact of a plan or project during or after its completion*' (EC 2000).

4.2 Management of the Site

Projects related to the conservation management of a European site are generally excluded from assessment (EC 2000). The proposed project is not directly connected with or necessary to the management of any European site and is therefore subject to assessment.

4.3 Zone of Influence

The Zone of Influence (ZoI) for a project is the area over which ecological features may be affected by biophysical changes as a result of a proposed project and its associated activities.

These include European sites located within the boundary of the project; European sites in immediate proximity to the boundary of the project; and European sites outside the boundary of the project that may be connected to the project through an identifiable impact pathway. Table 4.1 below lists the European sites within the ZoI of the project and their qualifying interests. The location of the proposed project in relation to these European sites is illustrated in **Figure 2.0 European Sites**.

The site of the proposed project is not located within the boundary any European site. A total of eleven European sites were identified within 15 km radius of the proposed project, of which seven have a hydrological linkage.

Table 4.1: European Sites and their Qualifying Interests within the Zone of Influence (ZoI) of the Proposed Project

Site	Location	Selection feature	Conservation Objectives	Zone of Influence
Carlingford Shore SAC (ROI) [IE0002306]	62m SE straight-line distance, circa 80m via hydrological connection	• Annual Vegetation of Drift Lines • Perennial Vegetation of Stony Banks	To maintain the favourable conservation condition of the following: • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220]	The site is hydrologically linked to Carlingford Shore SAC (ROI) and therefore this European site is considered within the ZoI of the proposed project.
Carlingford Mountain SAC (ROI) [IE000453]	530m S straight-line distance, no hydrological connection	• Northern Atlantic wet heaths with Erica tetralix [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] • Blanket bogs (* if active bog) [7130] • Transition mires and quaking bogs [7140] • Alkaline fens [7230] • Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220]	To restore the favourable conservation condition of: • Northern Atlantic wet heaths with Erica tetralix in Carlingford Mountain SAC, as defined by list of 20 attributes and targets. • European dry heaths as defined by list of 29 attributes and targets. • Alpine and Boreal heaths as defined by list of 14 attributes and targets • Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) as defined by list of 18 attributes and targets. • Blanket bogs (* if active bog) as defined by list of 18 attributes and targets. • To maintain the favourable conservation condition of: • Transition mires and quaking bogs as defined by list of 13 attributes and targets • Alkaline fens as defined by list of 19 attributes and targets. • Siliceous scree of the montane to snow levels (Androsacetalia alpinae	No identifiable impact pathway between the site and Carlingford Mountain SAC (ROI). The SAC is located over 500 m away from the proposed project and over 50 m vertically above it.

Site	Location	Selection feature	Conservation Objectives	Zone of Influence
			and Galeopsietalia ladani) as defined by list of 12 attributes and targets. • Calcareous rocky slopes with chasmophytic vegetation as defined by 9 attributes and targets. • Siliceous rocky slopes with chasmophytic vegetation as defined by 8 attributes and targets.	
Derryleckagh SAC (NI) [UK0016620]	3.2km N straight-line distance, no hydrological connection	• Transition mires and quaking bogs • Old sessile oak woods with Ilex and Blechnum in the British Isles	• To maintain (or restore where appropriate) the Transition mires and quaking bogs and Old sessile oak woods with Ilex and Blechnum in the British Isles to favourable condition.	No identifiable impact pathway between the site and Derryleckagh SAC (NI).
Rostrevor Wood SAC (NI) [UK0030268]	7km SE straight-line distance, no hydrological connection	• Old sessile oak woods with Ilex and Blechnum in the British Isles	• To maintain (or restore where appropriate) the Old sessile oak woods with Ilex and Blechnum in the British Isles to favourable condition.	No identifiable impact pathway between the site and Rostrevor Wood SAC (NI).
Slieve Gullion SAC (NI) [UK0030277]	7.5km W straight-line distance, no hydrological connection	• European dry heaths	• To maintain (or restore where appropriate) the European Dry Heaths to favourable condition	No identifiable impact pathway between the site and Slieve Gullion SAC (NI).
Carlingford Lough SPA (NI) [UK9020161]	8.3km ESE straight-line distance, 8.5km via hydrological connection	• Light-bellied brent goose (Branta bernicla hrota) • Common tern (Sterna hirundo) • Sandwich Tern (Sterna sandvicensis)	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:	The site is hydrologically linked to Carlingford Lough (NI) and therefore this European site is considered within the ZoI of the proposed project.

Site	Location	Selection feature	Conservation Objectives	Zone of Influence
			• 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.	
Carlingford Lough Ramsar Site [UK12004]	8.3km ESE straight-line distance, 8.5km via hydrological connection	The site qualifies under Criterion 3c by supporting internationally important breeding populations of Sandwich Tern (Sterna sandvicensis). The site also qualified under criterion 2a for supporting nationally important breeding populations of Common tern (Sterna hirundo). The site forms an extended cross border site qualifying under Criterion 3c for regularly supporting internationally important numbers of overwintering Brent Geese (Branta bernicla). The Ramsar site boundary is entirely coincident with the SPA (NI)		The site is hydrologically linked to Carlingford Lough Ramsar Site and therefore this European site is considered within the ZoI of the proposed project.
Carlingford Lough SPA (ROI) [IE0004078]	10.5km SW straight-line distance, and 10.6km via hydrological connection	• Light bellied brent goose (*Branta bernicla hrota*) • Wetland and waterbirds	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;	The site is hydrologically linked to Carlingford Lough SPA (ROI) and therefore this European site is considered within the ZoI of the proposed project.

Site	Location	Selection feature	Conservation Objectives	Zone of Influence
			• 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.	
Dundalk Bay SPA (ROI) [004026]	10.2km S straight-line distance, and 28km via hydrological connection	• Great Crested Grebe (Podiceps cristatus) [A005] • Greylag Goose (Anser anser) [A043] • Light-bellied Brent Goose (Branta bernicla hrota) [A046] • Shelduck (Tadorna tadorna) [A048] • Teal (Anas crecca) [A052] • Mallard (Anas platyrhynchos) [A053] • Pintail (Anas acuta) [A054] • Common Scoter (Melanitta nigra) [A065] • Red-breasted Merganser (Mergus serrator) [A069] • Oystercatcher (Haematopus ostralegus) [A130] • Ringed Plover (Charadrius hiaticula) [A137] • Golden Plover (Pluvialis apricaria) [A140] • Grey Plover (Pluvialis squatarola) [A141] • Lapwing (Vanellus vanellus) [A142] • Knot (Calidris canutus) [A143] • Dunlin (Calidris alpina) [A149]	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.	The site is hydrologically linked to Dundalk Bay SPA (ROI) and therefore this European site is considered within the ZoI of the proposed project.

Site	Location	Selection feature	Conservation Objectives	Zone of Influence
		• Black-tailed Godwit (Limosa limosa) [A156] • Bar-tailed Godwit (Limosa lapponica) [A157] • Curlew (Numenius arquata) [A160] • Redshank (Tringa totanus) [A162] • Black-headed Gull (Chroicocephalus ridibundus) [A179] • Common Gull (Larus canus) [A182] • Herring Gull (Larus argentatus) [A184] • Wetland and Waterbirds [A999]		
Dundalk Bay SAC (ROI) [000455]	10.0km S straight-line distance, and 27.8km via hydrological connection	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410]	• To maintain the favourable conservation condition of Estuaries in Dundalk Bay SAC, which is defined by the following list of two attributes and targets. • To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide which is defined by the following list of two attributes and targets. • To maintain the favourable conservation condition of Perennial vegetation of stony banks in which is defined by a list of six attributes and targets. • To restore the favourable conservation condition of Salicornia and other annuals colonizing mud and sand which is defined by a list of ten attributes and targets. • To maintain the favourable conservation condition of Atlantic salt meadows which is defined by a list of ten attributes and targets.	The site is hydrologically linked to Dundalk Bay SAC (ROI) and therefore this European site is considered within the ZoI of the proposed project.

Site	Location	Selection feature	Conservation Objectives	Zone of Influence
			To maintain the favourable conservation condition of Mediterranean salt meadows which is defined by a list of ten attributes and targets.	
Dundalk Bay Ramsar Site [no. 834]	10.0km S straight-line distance, and 27.8km via hydrological connection	• Criterion 1: Representative, rare or unique natural or near-natural wetland types • Criterion 3: Biological diversity • Criterion 5: >20,000 waterbirds The site is of international importance as the extensive intertidal habitats within the site support significant populations of over wintering waterbirds.		The site is hydrologically linked to Dundalk Bay Ramsar Site (ROI) and therefore this European site is considered within the ZoI of the proposed project.
Murlough SAC [UK0016612]	26.4km NE straight-line distance, and 35.8km via hydrological connection	• Atlantic decalcified fixed dunes (Calluno-Ulicetea) • Atlantic salt meadows (GlaucoPuccinellietalia maritimae • Dunes with Salix repens ssp. Argentea (Salicion arenariae) • Embryonic shifting dunes • Fixed dunes with herbaceous vegetation (grey dunes) • Mudflats and sandflats not covered by seawater at low tide • Sandbanks which are slightly covered by sea water all the time • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) • Marsh Fritillary Euphydryas aurinia • Harbour (Common) Seal Phoca vitulina	To maintain (or restore where appropriate) the following features: • Atlantic decalcified fixed dunes (Calluno-Ulicetea) • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • Dunes with Salix repens ssp. Argentea (Salicion arenariae) • Embryonic shifting dunes • Fixed dunes with herbaceous vegetation (grey dunes) • Mudflats and sandflats not covered by seawater at low tide • Sandbanks which are slightly covered by sea water all the time • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) • Marsh Fritillary Euphydryas aurinia • Harbour (Common) Seal Phoca vitulina To favourable condition	The site is hydrologically linked to Murlough SAC (NI) and is within the foraging range of harbour seals and therefore this European site is considered within the ZoI of the proposed project.

4.4 Establishing an Impact Pathway

The possibility of significant effects is considered in this report using the source-pathway-receptor model.

'Source' is defined as the individual elements of the proposed project that have the potential to affect the identified ecological feature (or receptor).

'Pathway' is defined as the means or route by which a source can affect the ecological feature.

An 'Ecological Feature' is defined as qualifying features of the SPA or SAC for which conservation objectives have been set for the European sites under consideration (refer to **Table 4.1**).

Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor.

Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor. Possible effects are discussed under four themes at construction phase:

- Habitat loss
- Water quality and habitat deterioration
- Aerial noise and disturbance
- Underwater noise and disturbance

4.4.1 Carlingford Shore SAC

The proposed project is circa 60 m from the north-westerly extent of Carlingford Shore SAC (ROI). The possibility of pollution events causing deterioration of water quality leading to likely significant effects on the two coastal Annex I qualifying habitats namely Annual vegetation of drift lines [1210] and Perennial vegetation of stony banks [1220] must be examined further. There are no Annex II qualifying species in Carlingford Shore SAC and as such there is no open pathway for potentially likely significant noise and disturbance effects.

4.4.2 Carlingford Lough SPA (NI & ROI)

Carlingford Lough SPA (NI) was originally notified as an intertidal SPA for its overwintering population of light-bellied brent goose *Branta bernicla hrota* and has been more recently re-notified to also include marine areas of open water within the Lough and in the area of the Lough mouth seawards to the limits of territorial waters, as well as coastal waters northwards to the Bloody Bridge on the Mournes Coast. This marine area is considered to be important for breeding colonies of sandwich tern *Sterna sandvicensis* and common tern *Sterna hirundo* in Carlingford Lough.

Carlingford Lough SPA (ROI) has been notified for its overwintering population of Light-bellied Brent Goose and the intertidal wetland habitats of the SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

The possibility of construction or operation of the proposed project triggering disturbance to the wintering waterbird or breeding seabird qualifying species of Carlingford Lough SPA must be examined further.

The possibility of construction or operation of the proposed development resulting in pollution events causing a deterioration of water quality leading to likely significant effects on the intertidal or marine wetland habitats of Carlingford Lough SPA must also be examined further.

4.4.3 Carlingford Lough Ramsar Site

Carlingford Lough Ramsar site is entirely coincidental with the boundary of Carlingford Lough SPA (NI). Carlingford Lough Ramsar site has similar qualifying interests to the Carlingford Lough SPA (NI), these include Light-bellied Brent Geese, Sandwich Tern and Common Tern. The Ramsar site includes all land and intertidal areas seawards to the limits of territorial waters, marine areas below the mean low water are not included.

The possibility of construction or operation of the proposed project triggering disturbance to the wintering waterbird or breeding seabird qualifying species of Carlingford Lough Ramsar Site must be examined further.

The possibility of construction or operation of the proposed development resulting in pollution events causing a deterioration of water quality leading to likely significant effects on the intertidal or marine wetland habitats of Carlingford Lough Ramsar Site must also be examined further.

4.5 Potential Effects

4.5.1 Habitat Loss

It can be excluded, on the basis of objective information, that the proposed development will have a significant effect on any European site as a result of habitat loss and no scientific doubt remains as to the absence of such effects.

The proposed works do not lie within the boundary of any European site. The works are hydrologically linked to Carlingford Shore SAC (ROI) via the Newry River and rising tides. There are two qualifying interests including Annual vegetation of drift lines and Perennial vegetation of stony banks, none of which are in close proximity to the works. The habitats in close proximity to the works, notably sea walls do not provide any supporting function to these habitats. The nearest recorded Annex I qualifying Interest habitat namely, Annual vegetation of drift lines [1210], is 2.3 km downstream. This shingle shore/beach habitat was recorded in a 2019 habitat survey between Rose Cottage and Lower Shore Road at Drummullagh for Carlingford Lough Greenway Section II.

All other European sites are located much further away from the proposed project and there is no risk of habitat loss within any of those sites. It can be excluded, on the basis of objective information, that the proposed project will not have a significant effect on any European site as a result of habitat loss and no scientific doubt remains as to the absence of such effects. This is the case in the absence of mitigation measures.

4.5.2 Water Quality & Habitat Deterioration

It can be excluded, on the basis of objective information, that the proposed development will have a significant effect on any European site as a result of water quality and habitat deterioration and no scientific doubt remains as to the absence of such effects.

4.5.2.1 Suspended Solids

The construction of the boardwalk will involve associated steel pile installation which will utilise the existing roadside verge and adjacent rock amour revetment. The design process has however identified two areas between Chainages 425 m to 525 m and Chainages 1150 m to 1200 m where the road verge and rock armour revetment narrows. These constraints necessitate the fixing of piles, at bottom of the rock armour revetment, or just beyond, in the upper most reaches of the intertidal zone. A total of circa 106 CHS 219.1mm x 16mm piles at 2400mm spacing will be installed within the intertidal zone resulting in a total footprint is 31.8 m². For the purposes of this assessment, all seaward piles are presumed to occur below the MHWS.

It is considered that any sediments arising as a result of the proposed works are highly likely to be deposited within the immediate locality of the works, and not distributed further into the marine environment. It is anticipated that this element of the proposed works will have potential to give rise to temporary and localised increases in the level of suspended sediments in small quantities within the immediate environment, which are unlikely to give rise to any detectable increases to suspended sediment within the wider marine area.

The potential effects of suspended sediment upon the site are assessed further below in respect of the conservation objectives of Carlingford Shore SAC (ROI) and Carlingford Lough SPA (NI & ROI).

4.5.2.2 Pollution Incidents

There is a risk involved with any activity involving the use of machinery within or in proximity to the marine environment that a pollution incident might arise and result in spills or leaks of polluting substances into the water. The risk of such pollution events occurring must be managed to ensure their likelihood is low and that there are effective measures will be put in place in the event that they do occur to prevent any wide reaching or short-term adverse effects.

As set out above, the proposed works will take place at a location which is spatially separated from the majority of European Sites considered within this assessment. It is considered that given the nature of the proposals, which are small in scale and will not involve the use of large volumes of hydrocarbon fuels or other chemicals, that any potential pollution incidents potentially arising as a result of the proposed development will be minor. Significant mixing of seawater occurs in Carlingford Lough with freshwater flowing in from the Newry River. The mixing of any polluting materials that escape to the marine environment as a result of the proposed works is further aided by the tidal currents, wind and wave climate which transport and continue to mix the seawater and freshwater (and any polluting substances), and help it disperse widely and dilute to much lower concentrations throughout the Lough, to the point where it cannot be detected above background levels.

On this basis any potential minor inputs arising as a result of the proposed works are highly likely to be undetectable at the point at which any such materials reach Dundalk Bay SPA, Dundalk Bay SAC, Dundalk Bay Ramsar Site, and Murlough SAC. The proposed works will not have any potential to give rise to any likely significant effects upon on these sites.

However, those sites in closer proximity warrant further consideration namely Carlingford Shore SAC (ROI), Carlingford Lough SPA (NI & ROI), and Carlingford Lough Ramsar Site. These sites are assessed individually below.

4.5.2.3 Carlingford Shore SAC (ROI)

The qualifying Annex I habitats of Carlingford Shore SAC (ROI) have conservation objectives published for them as set out in Table 4.1. The conservation objectives for Annual vegetation of drift lines and Perennial vegetation of stony banks are very similar.

4.5.2.3.1 Annual vegetation of drift lines [1210]

The objective is to maintain the favourable conservation condition of this habitat in Carlingford Shore SAC (ROI), as defined by 6 no SSCO attributes and targets:

Habitat area:	Area stable or increasing, subject to natural processes, including erosion and succession
Habitat distribution:	No decline or change in habitat distribution, subject to natural processes
Physical structure: functionality and sediment supply:	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation:	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: typical species and sub-communities:	Maintain the presence of species-poor communities with typical species: sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*), prickly saltwort (*Salsola kali*) and orache (*Atriplex* spp.)
Vegetation composition: negative indicator species	Negative indicator species (including non-native species) to represent less than 5% cover

4.5.2.3.2 Perennial vegetation of stony banks [1220]

The objective is to maintain the favourable conservation condition of this habitat in Carlingford Shore SAC (ROI), as defined by 6 no SSCO attributes and targets:

Habitat area:	Area stable or increasing, subject to natural processes, including erosion and succession
Habitat distribution:	No decline or change in habitat distribution, subject to natural processes

Physical structure: functionality and sediment supply:	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation:	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: typical species and sub-communities:	Maintain the typical vegetated shingle flora including the range of sub-communities within the different zones
Vegetation composition: negative indicator species	Negative indicator species (including non-native species) to represent less than 5% cover

The Carlingford Shore SAC (ROI) conservation objectives supporting document for coastal habitats (NPWS, 2013) notes that the SAC stretches for approximately 15 km along the shoreline to the low water mark (LWM) of Carlingford Lough. The Annex I Perennial vegetation of stony banks habitats is associated with shingle beaches. The Annex I Annual vegetation of drift lines habitat is often associated with sand dune systems but as there are no dunes present anywhere at Carlingford Lough, it is assumed that these two habitats occur in close association with each other.

Perennial vegetation of stony banks is vegetation that is found at or above the HWMS on shingle beaches (i.e., beaches comprised of cobbles and pebbles). It is dominated by perennial species (i.e. plants that continue to grow from year to year). The first species to colonise are annuals or short-lived perennials that are tolerant of periodic displacement or overtopping by high tides and storms. Level, or gently-sloping, high-level mobile beaches, with limited human disturbance, support the best examples of this vegetation. More permanent ridges are formed by storm waves.

Annual vegetation of drift lines, or strandline vegetation, is found on beaches along the HWM, where tidal litter accumulates. It is dominated by a small number of annual species (i.e. plants that complete their life-cycle within a single season). Tidal litter contains the remains of marine algal and faunal material, as well as a quantity of seeds. Decaying detritus in the tidal litter releases nutrients into what would otherwise be a nutrient-poor environment. The habitat is often represented as patchy, fragmented stands of vegetation that are short-lived and subject to frequent re-working of the sediment. The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable substrate and lack of soil moisture. Typical species include spear-leaved orache *Atriplex prostrata*, frosted orache *A. laciniata*, sea rocket *Cakile maritima*, sea sandwort *Honckenya peploides* and prickly saltwort *Salsola kali*.

4.5.2.3.3 Shingle Beach Habitat

This habitat was recorded in 2019 along Carlingford Lough Greenway Section II between Rose Cottage and Lower Shore Road at Drummullagh, 2.3 km downstream of the proposed project. It is consistent with the Annex I qualifying interest namely Annual vegetation of drift lines. Other known shingle beach habitat within the SAC is based primarily on the findings of the 1999 National Shingle Beach Survey (NSBS). The shingle beach habitat occurs as three sub-sites which are contiguous, forming a band of shingle extending from Greenore southwards to just beyond Cooley Point. The distance of these known sites along the undulating coastline are:

- Greenore (14 km ESE of the proposed project)
- Ballagan Point (16.8 km SE of the proposed project)

- Whitestown to Cooley Point (17.5 km SE of the proposed proposed)

4.5.2.3.4 Supratidal habitats

These Annex I habitats are found at or above the high tide line on the coast, i.e., they are supratidal (or supralittoral) habitats. The supratidal zone, also known as the splash zone, is the area above the HWMS that is regularly splashed, but not submerged by ocean water. Seawater penetrates these elevated areas only during storms with high spring tides. During those events, there is a hydrological link between the marine water of Carlingford Lough and its Annex I shingle beach habitats. Outside of such high tide storm events, no open hydrological link persists. There are two spring tides each lunar month, and so 24 each year but not every spring tide is a storm event. A source of pollution must also be present during the spring tide is a storm event window in which the hydrological pathway is open in order to mobilise and migrate. This would require the piling works to take place during a spring tide storm event.

4.5.2.3.5 Physical Characteristics of Carlingford Lough

Should the piling works occur during a spring tide storm event, the potential risk of pollution must be viewed in the context of the physical and hydraulic characteristics of Carlingford Lough. It is a sea lough approximately 16.5 km long and covering an area of over 50 km^2 (of which approximately 15 km^2 is intertidal).

The Lough drains a catchment of approximately 475 km^2 including in Northern Ireland the Newry (Clanrye) River, Moygannon River, Ghann River, Kilbroney River, Causeway Water, Cassy Water and White Water; and in the Republic of Ireland, the Ryland River, Two Mile River, St. Patrick's River and Golder River. It drains areas of agricultural land between Banbridge and Newry, Carlingford Mountain, and southern parts of the Mourne Mountains. The Newry (or Clanrye) River is the main freshwater flow into the Lough, providing approximately 70% of the total freshwater and freshwater-derived nutrient input and sediment loading into the Lough. Ball *et al*. (1997[1]) found the concentration of suspended particulate matter in the Lough ranged between 5 mg/l and 66 mg/l, with the highest values found at Omeath.

The Lough is generally shallow with the average depth between 2 m and 10 m, although the narrow channels that run along the centre of the Lough may be as deep as 25 m. The maximum depth of the Lough is 36 m. The volume of water contained in the Lough is estimated at 146 million m^3 (Taylor *et al.*, 1999[2]).

4.5.2.3.6 Risk of Pollution

Any accidental spillage that might arise at the site of proposed project at construction phase, or any sediment run off that might occur during high rainfall events will not 'flow' into any Annex I habitat. It will drain to ground in the immediate area of the piling works. If such an occurrence were to happen precisely at the time when the tide is at its highest and a hydrological pathway opened up between the source of a

[1] Ball, B., Raine, R. & Douglas, D., 1997. Phytoplankton and particulate matter in Carlingford Lough, Ireland: an assessment of food availability and the impact of bivalve culture. Estuaries. 20, 430-440

[2] Taylor, J. Charlesworth, M, & Service, M. (1999) Nutrient Inputs and Trophic Status of Carlingford Lough. Unpublished EU INTERREG II output report to Department of Agriculture (NI).

pollution event and Annual vegetation of drift lines and Perennial vegetation of stony banks, then that pathway must be considered.

Recall, the nearest Annual vegetation of drift lines habitat is 2.3 km downstream of the works. Significant mixing of seawater occurs in Carlingford Lough with freshwater flowing in from the Newry River and smaller rivers. If suspended sediments or pollutants somehow managed to reach the waters of the Lough and flow into it, the mixing of any polluting materials that escape to the marine environment as a result of the construction is further aided by the tidal currents, wind and wave climate which help mixing and dilution throughout the downstream distance that any polluting substance must travel before it reaches the Annual vegetation of drift lines, between Rose Cottage and Lower Shore Road at Drummullagh.

The Carlingford Shore SAC (ROI) is designated on account of its shoreline habitats including Annual vegetation of drift lines and Perennial vegetation of stony banks. Neither of these habitats are typically submerged by marine waters except in storm conditions or during particularly high tides and as such are unlikely to be affected by elevated sediment or contaminant levels within marine waters. As such it is considered unlikely that the proposed project would have potential to give rise to likely significant habitat deterioration effects upon this SAC.

4.5.2.3.7 Summary

Based on the foregoing analysis and evaluation, at construction phase there is no potential for significant water quality or downstream wetland habitat deterioration effects to offend in any way, the conservation objectives and conservation targets set for the qualifying interest Annex I habitats of Carlingford Shore SAC. Accordingly, the possibility of likely significant effects can be excluded. That is the case in the absence of any mitigation measures.

4.5.2.4 Carlingford Lough SPA (NI & ROI)

For Carlingford Lough SPA (NI) conservation targets have been set for habitat extent and extent of different habitats for both the wintering waterfowl and breeding seabird populations; and in the case of the wintering population of Light-bellied Brent Goose, roost sites:

Habitat extent:	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes
Extent of different habitats:	Maintain the extent of main habitat components subject to natural processes
Roost sites:	Maintain all locations of roost sites.

A conservation target for wetland habitat has been set for Carlingford Lough SPA (ROI). It is that the permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 595 hectares, other than that occurring from natural patterns of variation. As the proposed project does not include any intertidal habitat loss, and does not interfere with any natural coastal processes, the piling works cannot result in a reduction in wetland area of the SPA. The conservation target cannot be offended.

As the proposed project does not include any intertidal or wetland habitat loss, and does not interfere with any natural coastal processes that could indirectly result in deterioration or loss of the natural and semi-natural habitats or extent of main habitat components, the proposed project cannot result in a reduction in:

- area of natural and semi-natural habitats used by notified species in the SPA

- extent of main habitat components subject to natural processes
- number or location of roost sites

The conservation targets set for wetlands in Carlingford Lough SPA (ROI) and habitat extent, extent of different habitats and roost sites in Carlingford Lough SPA (NI) cannot be offended. Accordingly, the possibility of likely significant effects can be excluded at the screening stage. That is the case in the absence of any mitigation measures.

4.5.2.5 Carlingford Lough Ramsar Site

The Carlingford Lough SPA (NI) is entirely coincidental with the boundary of the Carlingford Lough Ramsar site. The Carlingford Lough Ramsar site has similar qualifying interests to the Carlingford Lough SPA (NI), these include Light-bellied Brent Geese, Sandwich Tern and Common Tern. The Ramsar site includes all land and intertidal areas seawards to the limits of territorial waters, marine areas below the mean low water are not included. The proposed project does not include intertidal habitat loss and does not interfere with any natural processes that could indirectly result in deterioration or loss of the natural and semi-natural habitats or extent of main habitat components of the qualifying species of the Ramsar.

The criterion for Carlingford Lough Ramsar site for the qualifying species cannot be offended. Accordingly, the possibility of likely significant effects can be excluded at the screening stage. That is the case in the absence of any mitigation measures.

4.5.3 Aerial Noise & Visual Disturbance

It can be excluded, on the basis of objective information, that the proposed project will have a significant effect on any European site as a result of Aerial noise and visual disturbance and no scientific doubt remains as to the absence of such effects.

4.5.3.1 Carlingford Lough SPA (NI & ROI)

Conservation objectives have been set for Light-bellied Brent Goose in Carlingford Lough SPA (NI & ROI):

Distribution:	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation
Population	No significant decrease in population against national trends

Conservation objectives have also been set for breeding terns in Carlingford Lough SPA (NI)

Sandwich Tern breeding population	No significant decrease in Sandwich Tern breeding population against national trends
Sandwich Tern fledging success	>1 fledgling per pair successfully raised per year over five-year period
Common Tern breeding population	No significant decrease in Common Tern breeding population against national trends
Common Tern fledging success	>1 fledgling per pair successfully raised per year over five-year period

4.5.3.2 Dundalk Bay SPA and Ramsar Site (ROI)

Conservation objectives have been set for Common Gull and Herring Gull in Dundalk Bay SPA (ROI).

Distribution:	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation
Population trend	Long term population trend stable or increasing

Conservation Objectives have been set for Wetlands and Waterbirds

Habitat Area:	The permanent area occupied by the wetland habitat is stable and not significantly less than the areas of 8136, 4374 and 649 hectares respectively for subtidal, intertidal, and supratidal habitats, other than that occurring from natural patterns of variation.

4.5.3.3 Carlingford Lough Ramsar Site

This Ramsar site boundary is entirely coincident with Carlingford Lough SPA (NI).

- The site qualifies under Criterion 3c by supporting internationally important breeding populations of Sandwich Tern.
- The site also qualified under criterion 2a for supporting nationally important breeding populations of Common tern.
- The site forms an extended cross border site qualifying under Criterion 3c for regularly supporting internationally important numbers of overwintering Brent Geese.

4.5.3.4 Waterbird response to construction disturbance

Species can be vulnerable to aerial noise and visual triggers of disturbance. The Ramsar site and all SPAs considered in this exercise are designated for waders or waterbirds falling into that category. Carlingford Lough SPA (NI & ROI) and Carlingford Lough Ramsar Site are nearest to the proposed works.

The proposed works will involve activities emitting aerial noise and associated with the movement of machinery and staff. Given that the proposed works will occur within and be restricted exclusively to the site boundary there is no potential for disturbance to the overwintering special conservation interests of Carlingford Lough SPA (NI & ROI) from aerial noise or visual disturbance associated with the proposed works.

The sounds that birds hear can be divided into threatening and non-threatening sounds. Examples of non-threatening sounds are wave noise on a beach or constant traffic noise from a road. Threatening sounds include impulsive sounds such as gunfire, explosion or barking of a dog. The sound of construction is not impulsive (sudden, loud or shocking) but tends to be continuous and low frequency noise such as that made by machinery and vehicular traffic. Disturbance often implies a short-term or temporary effect that is unlikely to impact upon the individuals or populations of waterbirds concerned. However, it is a term that covers a wide range of responses in waterbirds. The resulting effects of disturbance stimuli on waterbirds are variable. Disturbance can lead to a reduction in feeding time, and birds can expend greater levels of energy walking or flying away in response to disturbance. It is important to note that not all observed effects (e.g. walking or flying away) equate to negative impacts (e.g. reduced foraging success, decrease in survival, reduced fitness of the population). The term habituation is used to describe birds that have become accustomed to particular sources of disturbance.

Cutts *et al*. (2009) considered impacts to birds utilising the Humber Estuary and summarised the general thresholds due to the potential effects of construction disturbance on birds. Noise up to 50dB(A) is found to have no effect whereas noise between 50dB(A) and 85dB(A) causes head turning, scanning behaviour, reduced feeding and movement to nearby areas. Above 85dB(A), response includes preparing to fly away, flying away and possibly leaving the area.

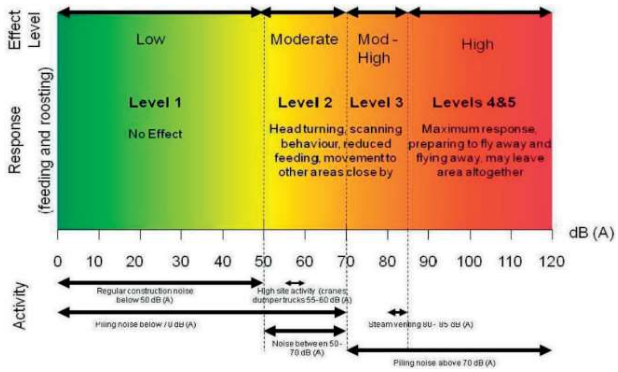


Plate 6: Waterbird response to construction disturbance (from Cutts et al. 2009)

The proposed site is located 8.3 km from Carlingford Lough SPA and Ramsar Site (NI), 10.5 km from Carlingford Lough SPA (ROI), 10.2 km from Dundalk Bay SPA (ROI) and 10.0 km from Dundalk Bay Ramsar Site. There is sufficient separation between the proposed project and these European sites to conclude that visual movement of construction operatives or plant will not trigger any behavioural change in any SPA feature species and will certainly not trigger disturbance events.

Overwintering waterbirds using intertidal areas of the SPA and breeding seabirds using marine waters of the SPA will not be disturbed by construction of the proposed project. There is no possibility of the proposed project resulting in:

- a significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation
- a significant decrease in the overwintering population of light-bellied brent goose against national trends
- a significant decrease in Sandwich Tern breeding population against national trends
- a significant decrease in Common Tern breeding population against national trends
- any effect on Sandwich Tern fledgling at the known breeding sites
- any effect on Common Tern fledgling at the known breeding sites
- a significant decrease in the range, timing or intensity of use of areas by Common Gull, other than that occurring from natural patterns of variation
- a significant decrease in the overwintering population of light-bellied brent goose against national trends
- a significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation for Common and Herring Gulls
- a long term population trend stable or increasing for Common and Herring Gulls

Accordingly, the possibility of likely significant effects as a result of noise and disturbance can be excluded at the screening stage. That is the case in the absence of any mitigation measures.

4.5.4 Underwater Noise and Disturbance

It cannot be excluded, on the basis of objective information, that the proposed project will have a significant effect on any European site as a result of underwater noise and disturbance.

As described in Section 3, some aspects of the proposed works will require activities in the foreshore /upper intertidal zone of Newry River including the potential for activities producing underwater noise, including:

- Piling using a pile-driver mounted to a large excavator to facilitate installation of CHS steel piles in the roadside grass verge and the rock revetment situated below the MHWS. If not able to achieve design depth of the piles an impact hammer may be used.
- A small section of rock armour revetment removal will occur initially to allow the piling works where they will be removed using an excavator and transported to a stockpile area and placed back after the

piling works are done. This will be achieved using an excavator to place the rock armour units into place ensuring not from a height to prevent damaging the armour and dislodging sediment.

- Soft-start procedures will be used to ensure incremental increase in pile power over a set time period until full operational power is achieved to minimise environmental effects.

These activities carry an inherent risk of noise induced effects upon some marine species as a result of underwater acoustic energy being released into the marine environment. The purpose of the screening assessment is to determine whether or not such risks can be excluded.

Underwater noise is not a persistent effect, and once the noise source ceases noise levels drop very quickly to pre-existing levels. The natural underwater soundscape of Newry River and Carlingford Lough is not silent - biological sounds from fish and marine mammals are mixed with sounds from waves and surface noise; current flow and turbulence; rain and wind/storm noise; and noise from boating and leisure craft activities. The ambient noise levels in coastal and inshore water and bays are subject to huge variation.

Murlough SAC (NI) is designated for its populations of harbour seals, and this European site is located 35.8 km hydrologically from the site of proposed development. Although Carlingford Shore SAC (which lies 62m southeast to the site boundary) has no marine mammals as qualifying features for the SAC it has seal haul out site on reefs between Greenore and Carlingford (NPWS, 2014). The NPWS Map Viewer highlights records of harbour seals from around the mid-lough to mouth of the Carlingford Lough estuary.

An aerial thermal imaging study of seals in N. Ireland included in that study the site on the northern shores of Carlingford Lough between Warrenpoint to Cranfield Point. The highest counts for harbour seal were from Carlingford Lough, Murlough SAC and Rathlin Island (Morris & Duck, 2018).

There is negligible potential for exposure to underwater noise to affect individuals of the Murlough SAC harbour seals community outside of the SAC (i.e. *ex situ* effects) through disturbance during piling works. Marine mammals are mobile species which can roam a great distance. Vibration arising from the piling activities will not directly affect any part of Murlough SAC or its habitat features as it is located a great distance from it. The harbour seal qualifying feature of the site comprises a population of mobile marine mammals that forage much further afield than Murlough SAC marine waters and individuals of this population can travel further still (<50km). Individuals of this population could potentially travel into Carlingford Lough and the Newry River.

It follows that the risk of underwater acoustic energy escaping into the marine environment during piling works to provide a pathway of effect leading to disturbance to individual harbour seals that may be in the area at the time remains, in the absence of further evaluation and analysis and possibly the application of measures intended to avoid or reduce the harmful effects of the proposed project on Murlough SAC. LSEs cannot be excluded at this stage.

4.6 In-Combination with Other Plans and Projects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are considered. The significance of any identified combined effects of the proposed project and other past, present or reasonably foreseeable future plans or projects must also be evaluated. On this basis, a range of other projects were considered in terms of their potential to have in-combination effects with the proposed development:

- Erection of residential development and associated works (comprising 10 dwellings, with individual accesses off Smalls Road and Burren Road) (Renewal of P/2005/1384/F). Application no. **LA07/2023/2117/F**
- Proposed residential development of 20 No. dwelling units (comprising 8 No. apartments, 10 semi-detached dwellings, 2 No. detached dwelling houses) Associated car-parking, site access, ancillary site works, private open space and associated landscaping. Application no. **LA07/2022/1236/F**
- Erection of a 16,730sqm storage and distribution warehouse including ancillary office accommodation. Application no. **LA07/2022/1168/F**
- Development of replacement soccer and GAA pitches, changing pavilion, fencing, ball catch nets and pathways (Amended Plans Uploaded 31.03.22). Application no. **LA07/2021/0804/F**

The plans and projects listed above were all supported by a Habitats Directive appraisal., These projects were considered in terms of their potential to result in 'in-combination' effects likely to have a significant effect on any European site.

No negative operational phase effects were predicted for any of the projects listed above. Therefore, the possibility of significant impacts either cumulatively or in combination with the other projects listed above project can be excluded beyond scientific doubt.

4.7 Conclusion of the Stage One Screening

Stage One Screening was completed in accordance with Section 2 of this report. The proposed project has been considered in the context of the European sites identified within the ZoI of the proposed project, their Qualifying Interests and Special Conservation Interests and any Conservation Objectives which have been set.

From the finding of the Screening, it is concluded that:

- the proposed project is not directly connected with or necessary to the management of any European site.
- the possibility of likely significant Water Quality and Habitat Deterioration effects can be discounted for Carlingford Lough SPA (NI & ROI) and Carlingford Shore SAC (ROI) without further evaluation and analysis, or the application of measures intended to avoid or reduce harmful effects of the potential project on European sites.
- The possibility for likely significant underwater noise and disturbance effects could not be discounted at this stage for Murlough SAC without further evaluation and analysis.
- All other likely significant effects can be excluded.

Having regard to the methodology employed and the findings of the Screening, it has been concluded that a Stage 2 Appropriate Assessment of the implications of the proposed project on any European site is required for:

- Underwater noise and disturbance effects on Murlough SAC seal populations

From the findings of the Screening presented, the possibility of Likely Significant Effects upon the European sites considered in the appraisal is set out below and summarised in Table 4.2, which notes the outcome of the screening exercise for each European site considered.

Table 4.2: Screening Summary for European sites considered

Site Code	Site Name	Can the possibility of Likely Significant Effects be excluded at the Screening Stage of assessment?			
		Habitat Loss	**Water Quality and Habitat Deterioration**	**Noise and Visual Disturbance**	**Underwater noise and Disturbance**
IE002306	Carlingford Shore SAC	✓	✓	✓	✓
IE004078	Carlingford Lough SPA	✓	✓	✓	✓
UK9020160	Carlingford Lough SPA	✓	✓	✓	✓
UK12004	Carlingford Lough Ramsar Site	✓	✓	✓	✓
UK0016612	Murlough SAC	✓	✓	✓	***X Harbour seal***
IE000455	Dundalk Bay SAC	✓	✓	✓	✓
IE004026	Dundalk Bay SPA	✓	✓	✓	✓
834	Dundalk Bay Ramsar Site	✓	✓	✓	✓

5 STAGE 2 APPROPRIATE ASSESSMENT

Appropriate Assessment considers the impact of the project (either alone or combination with other projects or plans) on the integrity of a European site with respect to the conservation objectives of the site and to its structure and function. Integrity of the site is defined as '*the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is… classified*' (EC 2000).

Stage One Screening concluded that Appropriate Assessment of the implications of the proposed works on the following European sites is required in view of their conservation objectives, and in combination with any other relevant plans or projects:

Murlough SAC

Underwater Noise and Disturbance effects

- Harbour seals

5.1 Underwater Noise and Disturbance Effects

5.1.1 Disturbance to Harbour Seals from Murlough SAC community

The potential for disturbance to marine mammals is greatest when elevated levels of underwater noise occur. Marine mammals, especially cetaceans, have well developed acoustic capabilities and are sensitive to sound at much higher frequencies than humans (Richardson et al. 1995). They are less sensitive to the lower frequencies but there is still great uncertainty over the effects of sound pressure levels on marine mammals and thus the assessment of its impact. Sources of noise include that generated through vibration piling to facilitate marine investigations.

The piling works will be temporary and short-term in nature and will take place within the Carlingford Lough and Newry River and at a location 35.8 km from Murlough SAC. As such, the works will have relatively limited potential to give rise to underwater noise and vibration which would result in an adverse impact upon the integrity of the SAC. Furthermore, it is noted that the works will take place within the Newry River which supports activities leading to underwater noise, through vessel traffic and other human activities.

Proposed piling will be relatively small scale and will utilise using a pile driver mounted to a large excavator using vibration techniques. The upper intertidal zone material into which the piles will be driven is variable proportions small rocks and soft muds. It is not anticipated therefore that the proposed piling activities will give rise to long term underwater noise or vibrational effects which are likely to be detectable in Murlough SAC and cause behavioural responses from the seals when in the SAC.

Notwithstanding this, to reduce the risk of disturbance to 'wandering' individuals of the species, measures intended to avoid or reduce the harmful effects of proposed piling must be applied. Those measures are set out in Section 6.2 of this document.

6 MITIGATION MEASURES

To minimise any disturbance effects on individual harbour seals that may be in the area at the time of piling works the following mitigation measures are proposed to minimise the potential impacts on marine mammals and to allow animals move away from the area of operations:

- Soft-start procedures will be used to ensure incremental increase in pile power over a set time period until full operational power is achieved to minimise environmental effects. These measures will follow the Joint Nature Conservation Committee recommendations and guidance for minimising risk to marine wildlife (JNCC, 2010)
- If there is a break in piling activity for a period greater than 30 minutes then all ramp-up measures will recommence as for start-up.
- Once normal operations commence, there is no requirement to halt or discontinue the activity at night-time, nor if weather or visibility conditions deteriorate.
- Any approach by marine mammals into the immediate (<50m) works area will be reported to the DAERA Marine Conservation and Reporting Team.

7 CONCLUSION OF THE HABITATS REGULATIONS ASSESSMENT

Having regard to the relevant legislation and the methodology followed, a Stage One Screening appraisal was prepared as to whether or not the proposed Carlingford Lough Greenway Section III is likely to have a significant effect on any European site.

Likely significant Underwater Noise and Disturbance effects on Murlough SAC could not be excluded at screening stage, without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the proposed project on the sites concerned:

A Stage Two appraisal for Appropriate Assessment of the implications of the proposed project on European sites in view of their conservation objectives was then undertaken to determine if the proposed project would adversely affect the integrity of a European site. The HRA considered impact themes and focused on the following possible Likely Significant Effects:

- Underwater Noise and Disturbance effects

Having conducted further investigation and analysis and applied mitigation measures where necessary, there will be no adverse effects upon the integrity of any European site and no scientific doubt remains as to the absence of such effects.

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The Planning Inspectorate (May 2018) Pins Note 05/2018: Consideration of avoidance and reduction measures in *Habitats Regulations Assessment: People over Wind, Peter Sweetman v Coillte Teoranta*

Figures

Planning boundary

RPS MAKING COMPLEX EASY A TETRA TECH COMPANY
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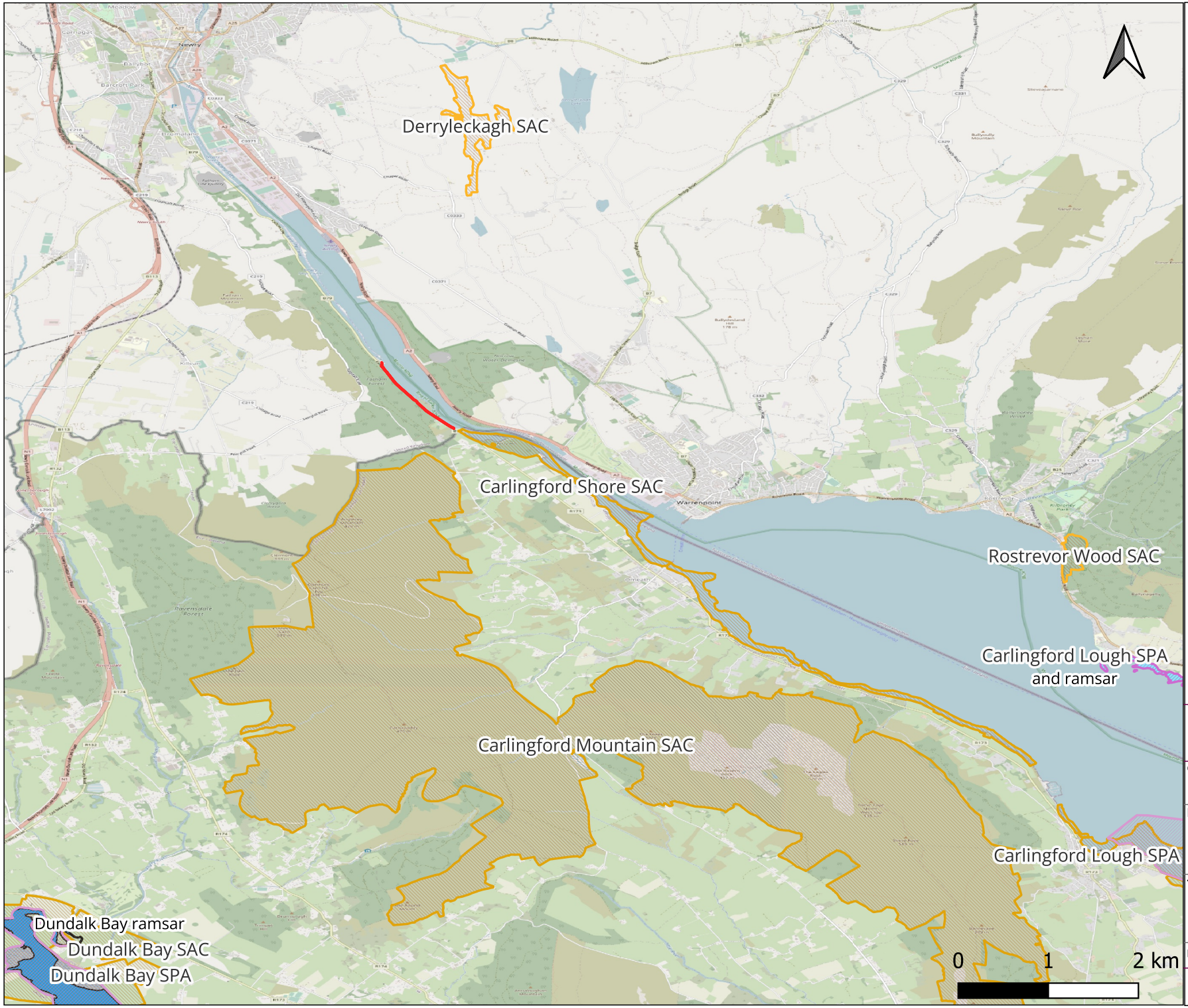
Client: Newry, Mourne & District Council and Louth County Council

Project: Carlingford Lough Greenway

Title: Site Location

Figure No. 1.0

Project No.	Date	Revision
NI1809	06.04.2023	D01



Legend

- Planning_boundary
- SPA (ROI)
- SAC (ROI)
- SPA (NI)
- SAC (NI)
- ramsar (ROI)
- ramsar(NI)

rps
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Client: Mourne & Down District Council and Louth County Council

Project: Carlingford Lough Greenway

Title: Designated Sites

Figure No. 2.1

Project No.	Date	Revision
NI1809	06.04.23	D01