## **APPROPRIATE ASSESSMENT** NATURA IMPACT STATEMENT

# RECEIVED. 2710212025 IN ACCORDANCE WITH THE REQUIREMENTS OF **ARTICLE 6(3) OF THE EU HABITATS DIRECTIVE**

Mixed-use multi-storey building with basement car park at Lynn's Dock, Sligo, Co. Sligo

Compiled by Jessica Devlin BSc. MSc.

for

Paul Doherty Architects Ltd. on behalf of Dockside New Properties Ltd.

JESSICA DEVLIN **PROJECT MANAGEMENT & ENVIRONMENTAL SERVICES** 

Date: 19 February 2025



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This document has been produced by Jessica Devlin for Paul Doherty Architects Ltd. on behalf of Dockside New Properties Ltd. for the purpose of a Planning Permission Application pertaining to the development of a mixed-use multi-storey building with basement car park and central landscaped courtyard at Lynns Dock, Sligo, Co. Sligo, Ireland. It may not be used by any person for any other purpose, other than that specified without the express written permission of Jessica Devlin. Any liability arising out of use by a third party of this document for purposes not wholly connected with the above shall be the responsibility of that party who shall indemnify Jessica Devlin against all claims, costs, damages and losses arising out of such use.

#### 1.0 Introduction

This Natura Impact Statement (NIS) report has been prepared by Jessica Devlin, Project Management and Environmental Services for Paul Doherty Architects Ltd. on behalf of Dockside New Properties Ltd. for the purpose of a Planning Permission Application pertaining to the development of a mixed-use multi-storey building with basement car park and central landscaped courtyard at Lynns Dock, Sligo, Co. Sligo, reland.

This report has been compiled to provide the competent authority (Sligo County Council (SCC)) with adequate information to make an Appropriate Assessment (AA) of the Project under Article 6(3) of the Habitat Directive. The NIS will assist SCC in determining whether or not the proposed development will adversely affect the integrity of any Natura 2000 sites, either alone or in combination with other plans and projects, taking into account their conservation objectives. The report should be read in conjunction with the Screening for Appropriate Assessment Report (Devlin, 2024)

The purpose of this NIS is to provide an examination, analysis and evaluation of the potential impacts of the proposed development on Natura 2000 sites and to present findings and conclusions with respect to the proposed development in light of the best scientific knowledge in the field.

It considers the implications of the proposed development, on its own and in combination with other plans or projects, for Natura 2000 sites in view of the conservation objectives of those sites. It includes a scientific examination of evidence and data to identify and assess the implications of the proposed development for any Natura 2000 sites in view of the conservation objectives of those sites. It considers whether the proposed development, by itself and in combination with other plans or projects, would adversely affect the integrity of Natura 2000 sites. In reaching a conclusion in this regard, consideration is given to any mitigation measures necessary to avoid or reduce any potential negative impacts.

#### **1.1** Appropriate Assessment

The introduction of the EU Birds Directive and the Habitats Directive in 1979 and 1992 respectively, made member states legally obliged to establish a Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species. This comprises Special Areas of Conservation (SACs, including candidate SACs), and Special Protection Areas (SPAs, including proposed SPAs). SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites; from these the conservation objectives of the site are derived.

Articles 6(3) and 6(4) of the Habitat Directive 92/43/EEC require an Appropriate Assessment of plans and projects to prevent significant adverse effects on Natura 2000 sites. The Assessment must determine whether the plan or project is likely to have significant effects on the site and whether these effects will adversely affect the integrity of the site in terms of its nature conservation objectives.

The assessment can be broken down into 4 main stages:

Stage 1 - Screening: Results of preliminary impact identification and assessment of significance of impacts.

**Stage 2 - Appropriate Assessment**: Assessment of the impact on the integrity of the site(s) and assessment of mitigation measures (NIS Report).

#### Stage 3 - Assessment of alternative solutions.

Stage 4 - Imperative Reasons of Overriding Public Interest (IROPI): IROPI test and assessment of compensatory measures.

#### 2.0 Statement of Authority

#### Jessica Devlin

Jessica graduated from the National University of Ireland, Galway in 1997 with a BSc. honours degree in Geology and obtained a MSc. in Applied Environmental Science from Queens University Belfast in 2001. She attained a National Certificate in Eco-Tourism, from Sligo Institute of Technology in 2005 and in 2014 completed Geographical Information Systems for Environmental Investigations, University College Dublin.

Over the years, Jessica has gained a wide range of experience in research, consultancy and project management with particular emphasis on sustainable development in freshwater, marine and coastal environments.

As field scientist with the Queens University Marine Station in Portaferry, Jessica carried out habitat surveys with respect to the decline of salmonid populations in Northern Ireland Rivers. She project manager for the Donegal County Council - Marine & Water Leisure Programme, she managed projects on sustainable development of the marine leisure product. Jessica also worked with the University College Cork Coastal and Marine Research Centre in partnership with Donegal County Council and the University of Ulster, as manager of the Donegal element of a North West Europe Interreg Project called IMCORE (Innovative Management of Europe's Changing Coastal Resource). For the past 12 years Jessica has been self-employed working as a project manager and environmental consultant, specialising in freshwater, marine, coastal and environmental projects. Her client base is wide reaching from state agencies to community groups, individuals, angling clubs and private developers.

#### 3.0 Methodology

- Liaison with Paul Doherty Architects Ltd. and Dockside New Properties Ltd.
- Site visits and walkover surveys on 16 October 2024.
- Desk research (see section 11)
- Online data available on Natura 2000 sites and protected habitats/species as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie, including conservation objectives documents.
- Online data available on protected and invasive species as held by the National Biodiversity Data Centre (NBDC) from www.biodiversityireland.ie.
- Information on www.catchments.ie and www.epa.ie with regard to water quality.
- Information on groundwater resources and groundwater quality in the area available from www.epa.ie and www.gsi.ie
- OPW CFRAMS floodinfo.ie

This report has been prepared using the following guidance. A full list of research sources and references can be seen in section 12.

- Dept. of Environment Heritage and Local Government (2009) Appropriate Assessment of plans and projects, Guidance for planning authorities.
- European Commission Environment DG (2001) 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 November 2001.
- *Guidelines for Ecological Impact Assessment in the UK and Ireland* (Chartered Institute of Ecology and Environmental Assessment, 2024)

#### 4.0 Project proposals

Planning permission is being sought for the development of a mixed use multi storey wilding with basement car park and central landscaped courtyard as follows:

Basement level: car parking, storage and service facilities with vehicular access onto Pirnmill Road

Ground level: 3 commercial units, 5 own door two storey residential units to Ballast Quay, 2 own door residential units on Pirnmill Road, 3 own door 2 storey residential units opening on to the central court yard, 2 entrance stair and lift cores to the apartments with a central landscaped courtyard with access from Pirnmill Road.

First floor level: upper floor level of own door residential units, 2 own door apartments on Pirnmill Road and common allotment area over entrance car park.

Second floor level: 4 x 3-bedroom apartments, 5 x 2-bedroom apartments.

Third floor level: 4x 3 bedroom apartments, 5 x 2-bedroom apartments.

Fourth floor level: 4 x 3-bedroom apartments, 5 x 2-bedroom apartments.

Fifth floor level: 2 x 3-bedroom apartments, 1 x 2-bedroom apartments.

Sixth floor level: 1 x 3-bedroom apartments, 1 x 2-bedroom apartments.

Seventh Floor level: 1 x 3bedroom apartment.

To include service routes with connections to all existing services and all associated site development works.



Figure 4.1 Extract from proposed site elevations drawing as supplied by architect (not to scale)



Figure 4.2. Extract from site drawings of project proposals as supplied by architect. (not to scale)

#### Method Statement Standard Construction (as supplied by Paul Doherty Architects Ltd.)

Ground works to include clearing of the site levelling of the site

Piling the boundary edges of the site with sheet piling and thereafter excavation of basement car parking area. The excavated material will be disposed of off-site by licenced waste disposal specialist. The proposed volume to be excavated is approx. 10,626 cubic meters. Water will need to be pumped out during construction.

Installation of infrastructure for services e.g. surface water drainage, water mains and electricity supply, hydrocarbon traps, stormwater attenuation.

Construction of concrete basement foundations basement floor and basement walls and construction thereafter of cast in situ concrete frame and floors for all levels.

#### Construction

Construction of a concrete building superstructure internal completion;

External completion and external finishes;

Basement development car parking;

Common area development to include landscaping gardens and completion.

#### Operation

Maintenance of the building and surrounding public realm areas;

Discharge of wastewater and surface stormwater and management of same.



Figure 4.3 Example and proposed method of piling



#### **Phasing Schedule**

It is proposed that the project will be constructed in 1 single phase over the two-year period (basement 6 months) following the following stages.

- Stage 1 Site Clearance, Sheet Piling & Basement Excavation & Construction of basement floor and walls.
- Stage 2 Concrete superstructure to include all rising columns and floor slabs. The upper level will be constructed using concrete post and beam form construction.
- Stage 3 Completion of building works to include all external walls glazing and roof and internal walls finishes and installation of services.
- Stage 4 External works, public realm, landscaping and external services and connections to existing public services.

The overall site is small and is surrounded by existing road network.

During the excavation works for the basement, all surface waters will be directed to a temporary settlement tank located at basement level and via an oil and grit interceptor combination.

This will be kept in place as long as possible during the works and will be removed and the final stages of construction whereafter a permanent oil and grit interceptor will be positioned at the final stormwater outlet prior to discharging into the harbour.

The stormwater discharge into the harbour will be controlled by Hydra Break and a SUDS system will be constructed in the courtyard area to control the run-off of floodwater to that of the existing brown field site run-off calculation.

#### 5.0 Appropriate Assessment Screening Results

#### Zone of influence

The approach to screening is likely to differ somewhat for plans and projects, depending on scale and on the likely effects and should include any Natura 2000 sites within the likely zone of impact of the plan or project. The zone of influence (ZoI) of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a Natura 2000 site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km) (OPR, 2021).

The Natura 2000 Sites have been assessed in terms of whether a Source - Pathway - Receptor relationship exists, and screened out accordingly. Where no source - pathway- receptor relationship is considered to exist these Natura 2000 sites are screened out and will not be discussed further in this report.

The project at its nearest point is 30 meters from Cumeen Strand / Drumcliffe Bay SAC and Cumeen Strand SPA. The site is downstream of Lough Gill SAC.



Figure 5.1 Project location in relation to Natura 2000 Sites

Cumeen strand / Drumcliffe Bay SAC, Cumeen Strand SPA, Lough Gill SAC, Drumcliff Bay SPA, Ballysadare Bay SAC and Ballysadare Bay SPA are within the ZoI of the proposed development based on distance from the site boundary, the potential hydrological links and the nature of the qualifying interests involved. The remaining Natura sites that were initially considered were found to be outside of the ZoI as they are located too far away or there is no hydrological links present for any significant effects to occur.

	Source Pathway Receptor
Natura 2000 Site / (Site Code) / Distance from project (m)	Relationship
	Screened IN/ OUT
Cumeen strand / Drumcliffe Bay SAC / (00627)/ c30m	Close proximity to the
Qualifying Interests:	Retential hydrological link with the
Estuaries [1130]	project via drainage or in a
Mudflats and sandflats not covered by seawater at low tide [1140]	flooding incident.
Embryonic shifting dunes [2110]	vibration.
Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	S-P-R relationship considered to exist.
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	SCREENED IN.
<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	
Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	
Petrifying springs with tufa formation (Cratoneurion) [7220]	
Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	
Petromyzon marinus (Sea Lamprey) [1095]	
Lampetra fluviatilis (River Lamprey) [1099]	
Phoca vitulina (Harbour Seal) [1365]	
Cumeen strand SPA / (004035)/ c.30m	Close proximity to the
Qualifying Interests:	development site.
Light-bellied Brent Goose (Branta bernicla hrota) [A046]	Potential hydrological link with the
Oystercatcher (Haematopus ostralegus) [A130]	project via drainage or in a
Redshank (Tringa totanus) [A162]	Potential for noise and/or
Wetland and Waterbirds [A999]	vibration.
	S-P-R relationship considered to exist.
	SCREENED IN.
Lough Gill SAC / (1976) / c.450m	Upstream of project location no
Qualifying Interests:	direct hydrological link. Migratory
Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]	returning to the SAC may be impacted by effects of the
Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]	development. S-P-R relationship considered to exist.
Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion, Alnion incanae, Salicion albae</i> ) [91E0]	
Austropotamobius pallipes (White-clawed Crayfish) [1092]	
Petromyzon marinus (Sea Lamprey) [1095]	
Lampetra planeri (Brook Lamprey) [1096]	
Lampetra fluviatilis (River Lamprey) [1099]	
Salmo salar (Salmon) [1106]	

Natura 2000 Site / (Site Code) / Distance from project (m)	Source Pathway Receptor Relationship	
	Screened IN/ OUT	
Lutra lutra (Otter) [1355]	TO.	
Drumcliff Bay SPA / (004013) / 5km Qualifying Interests: Sanderling ( <i>Calidris alba</i> ) [A144] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Wetland and Waterbirds [A999]	Sufficient distance from the development – hydrological, acoustic or visual link not considered to exist. However waterbirds may use the habitat close to the project area. S-P-R relationship is considered to exist. SCREENED IN.	101 <sup>2</sup>
Sligo / Leitrim Uplands SPA / (004187)/ c.5.6km Qualifying Interests:	No suitable habitat present, SPA is sufficient distance from the development. No links.	
Chough ( <i>Pyrrhocorax pyrrhocorax</i> ) [A346]	No S-P-R relationship is considered to exist.	
Ballysadare Bay SAC / (000622) / c.7km Qualifying Interests: Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Phoca vitulina (Harbour Seal) [1365]	Sufficient distance from the development – hydrological, acoustic or visual link not considered to exist. However Harbour seal travel far and wide remote potential for impacts S-P-R relationship considered to exist. SCREENED IN.	
Qualifying Interests: Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) [A046] Grey Plover ( <i>Pluvialis squatarola</i> ) [A141] Dunlin ( <i>Calidris alpina</i> ) [A149] Bar-tailed Godwit ( <i>Limosa lapponica</i> ) [A157] Redshank ( <i>Tringa totanus</i> ) [A162] Wetland and Waterbirds [A999]	development –no hydrological, acoustic or visual link not considered to exist. However, waterbirds may use the habitat close to the project area. S-P-R relationship is considered to exist. SCREENED IN.	

Table 5.1. Extract from Screening Report (Devlin, 2024) - Summary of Assessment of Qualifying Interests at Natura 2000 sites (\* = priority; numbers in brackets are Natura 2000 codes)

The project proposal has been assessed in the Screening process in terms of the likely impacts the proposal may have, <u>before mitigation</u>, on the Natura 2000 sites in the area. The significance of impacts identified has been determined. The assessment undertaken in terms of the proposed development concludes that the there is potential for the project to significantly impact on the following designated sites:

Cumeen strand / Drumcliffe Bay SAC Drumcliffe Bay SPA Cumeen Strand SPA Lough Gill SAC Ballysadare SAC Ballysadare SPA



Potential impacts were identified as:

- Habitat degradation due to hydrological impacts via surface water and groundwater during construction and operation;
- Habitat degradation due to noise and vibration causing disturbance, displacement or injury;
- Habitat degradation due to light emissions and reflection;
- Habitat degradation due to the spread of the invasive species;
- Reduction in species density and
- In combination effects;

Step 2 of the Appropriate Assessment process was therefore undertaken. Further assessment of the likely impacts of the project and assessment of mitigation measure has also been undertaken.

There is no Source Pathway Receptor relationship between the project and the remaining Natura Sites. These have been screened out. Not all qualifying interests, in the Natura 2000 sites that have been screened in, have the potential to be impacted. These qualifying interests are therefore screened out and will not be discussed further in the Assessment. See table 5.2.

Natura 2000 site	Qualifying Interests Screened IN	Qualifying Interests Screened OUT		
Cumeen strand / Drumcliffe Bay	Estuaries [1130]	Embryonic shifting dunes [2110]		
SAC (00627)	Mudflats and sandflats not covered by seawater at low tide [1140]	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]		
	Petromyzon marinus (Sea Lamprey) [1095] Lampetra fluviatilis (River	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]		
	Lamprey) [1099] <i>Phoca vitulina</i> (Harbour Seal) [1365]	Juniperus communis formations on heaths or calcareous grasslands [5130]		
		Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (* important orchid sites) [6210]		
		Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) [7220]		
Drumcliffe Bay SPA (004013)	A144 Sanderling Calidris alba;			
	A157 Bar-tailed Godwit Limosa			

	lapponica and	
	A999 Wetland habitat	T.C.
Cumeen Strand SPA (004035)	Sanderling ( <i>Calidris alba</i> ) [A144]	
	Bar-tailed Godwit ( <i>Limosa</i>	
	lapponica) [A157]	102
	Light-bellied Brent Goose (Branta bernicla hrota) [A046]	LOS CONTRACTOR
	Oystercatcher ( <i>Haematopus</i> ostralegus) [A130]	
	Redshank ( <i>Tringa totanus</i> ) [A162]	
	Wetland and Waterbirds [A999]	
Lough Gill SAC (001976)	Petromyzon marinus (Sea	Natural eutrophic lakes with
	Lamprey) [1095]	Magnopotamion or Hydrocharition
	Lampetra fluviatilis (River	- type vegetation [3150]
	Calmo calar (Colmon) [1106]	scrubland facies on calcareous
	Jutra lutra (Ottor) [1255]	substrates ( <i>Festuco-Brometalia</i> ) (*
	Lutra lutra (Otter) [1355]	important orchid sites) [6210]
		Old sessile oak woods with <i>llex</i> and <i>Blechnum</i> in the British Isles [91A0]
		Alluvial forests with Alnus
		glutinosa and Fraxinus excelsior
		(Alno-Padion, Alnion Incande, Salicion albae) [91E0]
		Austronotamobius nallines (White-
		clawed Crayfish) [1092]
Sligo / Leitrim Uplands SPA (004187)		Peregrine (Falco peregrinus) [A103]
		Chough (Pyrrhocorax pyrrhocorax)
		[A346]
Ballysadare Bay SAC (000622)	Phoca vitulina (Harbour Seal)	Embryonic shifting dunes [2110]
	[1365	Shifting dunes along the shoreline
		with Ammophila arenaria (white
		dunes) [2120]
		Fixed coastal dunes with
		dunes) [2130]
		Humid dune slacks [2190]
		Vertigo angustior (Narrow-
		mouthed Whorl Snail) [1014]
Ballysadare SPA (004129)	Light-bellied Brent Goose (Branta	
	pernicia nrota) [AU46]	
	Crow Disver (Disvisition constants)	
	Grey Plover (Pluvialis squatarola)	

[A141]	∕ <b>⊳</b>
Dunlin ( <i>Calidris alpina</i> ) [A149]	'* <u>C</u> ^
Bar-tailed Godwit ( <i>Limosa</i> <i>lapponica</i> ) [A157]	EN ED
Redshank (Tringa totanus) [A162]	· · · · · · · · · · · · · · · · · · ·
Wetland and Waterbirds [A999]	102
	TO.

Table 5.2 Natura 2000 sites and the relevant qualifying interests for further assessment.

#### 6.0 Current baseline status of the site and surrounds

#### 6.1 Threats and pressures

Threats to and pressures on Cumeen strand / Drumcliffe Bay SAC (00627) have been identified in the Standard Data Form for the site, see table 6.1.

Code	Description	Level
NEGATIVE		
D03	shipping lanes, ports, marine constructions	medium
A02.01	agricultural intensification	medium
G01.02	walking, horseriding and non- motorised vehicles	medium
E03.03	disposal of inert materials	low
G05.01	Trampling, overuse	Low
J02.12.01	sea defense or coast protection works, tidal barrages	low
J02.11.01	Dumping, depositing of dredged deposits	low
D03.01	port areas	medium
G02.01	golf course	medium
J01.01	burning down	low
G02.08	camping and caravans	low
G01.03.02	off-road motorized driving	medium
E01.03	dispersed habitation	medium
101	invasive non-native species	medium
F01.01	intensive fish farming, intensification	high
POSITIVE		
G02.01	wildlife watching	medium

Table 6.1 Threats and pressures in Cumeen strand / Drumcliffe Bay SAC (00627)

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#### 6.2 Site Description

A walkover survey of the site was undertaken on the 16th of October 2024 by Jessica Devlin MSc. in line with CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester. This was a rapid assessment of the ecological features present, or potentially present, within a site and its surrounding area in relation to the project. On this occasion this incorporated a desk study and walkover survey. All habitat types were classified using the Guide to Habitats in Ireland (Fossitt, 2000). The objective of the survey was to scope out the site and to determine where the focus of any additional assessment should be.

The site was visited after relatively dry weather the light showers on the day but visibility was excellent between showers. Within the site, the ground was generally dry underfoot. It is a brown-field site which was used previously as a construction yard (BL3, buildings and artificial surfaces). Some materials remain. The site is surrounded by a wall and is below the height of the public foot path on the outside perimeter of the site. There are a number of weeds and some sparse vegetation growing in the site. No third schedule invasive alien plant species were noted in the site, there are a number of Butterfly bush (*Buddleja davidii*) plants (Medium impact - non native) dotted around the perimeter. Other species include Black Medick (*Medicago lupulina*), Coltsfoot (*Tussilago farfara*), Horsetail spp (*Equisetum arvense*) and ivy (*Hedera Helix*).

The site is surrounded by roads (BL3, buildings and artificial surfaces); Lynns dock runs along the northern boundary, Pirn Mill Road runs along the western boundary and Finisklin road is to the south of the site and the busy N15 dual carriageway runs along the eastern boundary. There are traffic lights adjacent to the site on the east. The site is c.30m from the docks which buffer it from the bay. Mains water, waste water and drainage services exist in the immediate vicinity of the site.

Signs of otter were not noted within the project site. The Garavogue River (FW2 Depositing lowland rivers) is found upstream of the project east of Hughes Bridge. The Garavogue estuary (MW4, Estuary) adjacent is visually buffered by existing infrastructure and boats at the docks.



Plate 1. Looking southeast towards site from Pirn Mill Road.





Plate 3. Looking south east along site perimeter along Ballast Quay.

Plate 2. Looking north along fence boundary towards Garavogue Estuary from Pirn Mill Rd.



Plate 4. Looking southwest from Ballast quay towards site.



Plate 5. Looking east from entrance gate across site.



Plate 7. Looking northwest across site



Plate 6. Looking north inside the site



Plate 8. Looking west towards site from Michael Hughes Bridge.

#### 6.3 Hydrology

The Garavogue River\_010 flows from the east into Garavogue Estuary along the northern border of the site According the EPA website, catchments.ie, the WFD water quality status 2016 to 2021 for the Garavogue \_010 is poor; Garavogue estuary and the wider Sligo Bay are moderate water quality status. Groundwater status is good. In terms of risk of not meeting WFD requirements: the Garavogue River and Sligo Bay are both At Risk. The Garavogue Estuary was under review at the time of writing. The latest Q value rating for the Garvogue dates back to 2021, scoring 3, Poor.

Surface water currently percolates to ground at the site.

According to floodinfo.ie CFRAMS data for the site is currently under review. PUNCH Consulting Engineers were appointed by CST Group to carry out a Site-Specific Flood Risk Assessment for the proposed mixed-use development which concludes the following:

A review of the flood risk in the area was carried out as the site is located near the Garavogue River. Flood Maps produced as part of the CFRAMS and the Sligo CDP SFRA were consulted to establish the Flood Zone. It was determined that the proposed development site is currently located in Flood Zone A for coastal flooding (Punch, 2025).



Figure 6.1 River network and water quality in the project area. (Map source catchments.ie accessed 19 Nov 2024, © ESRI, ©OSI).



Figure 6.2 Project location in relation to Natura 2000 Qualifying Interests.

#### 6.4 Estuaries [1130]

River estuaries are coastal inlets where there is generally a substantial freshwater infuence. The mixing of freshwater and sea water and the reduced current flows in the shelter of the estuary lead to deposition of fine sediments, often forming extensive intertidal sand and mud flats.

The estuarine and intertidal sand and mud flat habitats at this site are extensive in area, generally of good quality and show a good diversity of species and biotopes. *Zostera spp.* occur. These habitats are considered typical for the north-west region. Intertidal fine sand with *Peringia ulvae* and *Pygospio elegans* community complex, Estuarine mixed sediment to sandy mud with *Hediste diversicolor* and oligochaetes community complex, Fine sand with crustaceans and *Scolelepis (Scolelepis) squamata* community complex, *Zostera*<sup>2</sup> dominated community, *Mytilidae*-dominated community complex, Fine sand with *Angulus spp.* and *Nephtys spp.* community complex, Sand to mixed sediment with amphipods community and intertidal reef community (NPWS, 2013a).

#### 6.5 Mudflats and sandflats not covered by seawater at low tide [1140]

Sligo Bay has an extensive habitat of Mudflats and Sand Flats. Mudflats adjacent to the project location comprise nine community types: Intertidal fine sand with *Peringia ulvae* and *Pygospio elegans* community complex, Estuarine mixed sediment to sandy mud with *Hediste diversicolor* and oligochaetes community complex, Fine sand with crustaceans and *Scolelepis (Scolelepis) squamata* community complex, *Zostera*-dominated community, *Mytilidae*-dominated community complexa and Fine sand with *Angulus spp.* and *Nephtys spp.* community complex (NPWS, 2013a).

#### 6.6 Harbour Seal (Phoca vitulina) [1365]

Harbour seal is a successful aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species. For individual harbour seals of all ages intervals between foraging trips in coastal or offshore waters are spent resting ashore at terrestrial or intertidal haul-out sites, or in the water. Harbour seals in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC occupy both aquatic habitats and intertidal shorelines that become exposed during the tidal cycle. The species is present at the site throughout the year during all aspects of its annual life cycle which includes breeding (May to July approx.), moulting (August to September approx.) and non-breeding foraging and resting phases (October to April) (NPWS, 2013a).

In August of 2017 and 2018, the Sea Mammal Research Unit (SMRU) of the University of St Andrews carried out an aerial thermal-imaging survey of Harbour Seal (*Phoca vitulina vitulina*) and Grey Seal (*Halichoerus grypus*) numbers and distribution around Ireland. The survey was commissioned by the National Parks and Wildlife Service (NPWS), Department of Culture, Heritage and the Gaeltacht (DCHG) and it was the third such nationwide survey of seals in Ireland in summer.

In the 2017/2018 survey, 4,007 Harbour Seals were counted, compared with 3,489 counted in 2011/2012 (Duck & Morris, 2012; 2013). In 2017/2018, 3,698 Grey Seals were counted in Ireland compared with 2,964 counted in 2011/2012 and 1,309 counted in 2003. The survey results suggest that the populations of both species are either stable or increasing in all regions of Ireland. The 2017/2018 survey produced the highest total count of the three nationwide summer surveys for both species. The 2017/2018 survey found that there is currently only very little spatial overlap between major haul-out aggregations of Harbour Seals and Grey Seals (Duck and Morris, 2018). There are no haul out sites near the project location, with haul out areas for harbour seal (no.50) recorded in Ballysadare Bay, see figure 6.3.



Figure 6.3 Numbers and distribution of Harbour Seals (red circles) and Grey Seals (blue circles) in Ireland in August 2017 and August 2018. The displayed symbol size represents the recorded group size with count guides given in the Legend (top left) (Morris & Duck, 2019).

#### 6.7 Otter (Lutra lutra) [1355]

Otter was previously listed as "near threatened" in Ireland in the Ireland (Marnell *et al.*, 2009), however following a revised assessment in Marnell *et al.* (2019) its conservation status is now listed as "least concern". It is believed that this is due to population recovery (Marnell *et al.*, 2019) and Ireland is a stronghold for Otter, and they are widespread and relatively common throughout the island (Reid et al., 2013). It is possible that

Otter commute and forage around the estuary. According to Biodiversity Ireland records there have been numerous otter sightings over the years in an around Sligo Harbour and the Garavogue River.

#### 6.8 Atlantic Salmon (Salmo salar) [1106]

A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long term average maximum sustainable yield as derived from the dult to adult stock and recruitment relationship". The target is based on the Technical Expert Group on Salmon's (TEGOS) annual model output of CL attainment levels. Stock estimates are either derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. Lough Gill SAC is just below its CL for one-seawinter (1SW) and just above its CL for multi-seawinter (MSW) salmon (NPWS, 2021).

#### 6.9 Sea Lamprey (*Petromyzon marinus*) [1095]

Cummeen Strand/ Drumcliff Bay SAC only covers marine/estuarine habitat and it is not anticipated that it contains suitable spawning or nursery habitat. Migrating adult lamprey pass through the SAC en route to/from the Garavogue River, which flows out of Lough Gill. Lough Gill SAC, which is adjacent to this SAC, encompasses the freshwater elements of sea lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants (NPWS, 2013(b)).

Lough Gill SAC: Artificial barriers can block or impede the passage of upstream migrating lamprey, thereby restricting access to spawning areas (Gargan et al., 2011; Rooney et al., 2015 as cited in NPWS, 2021). The weir on the Garavogue River in Sligo town is currently not considered an issue for sea lamprey. However, there is a significant natural barrier, consisting of a sequence of waterfalls, at the village of Dromahair in the lower reaches of the River Bonet. Only a small number of records exist for sea lamprey in Lough Gill SAC. An individual lamprey was observed immediately downstream of the weir in Sligo in 2015 and there have been anecdotal records of sea lamprey nests in the Garavogue in Sligo town. Significantly, two juvenile lake-feeding sea lampreys were recorded from Lough Gill in 2018 attached to pike (King and O'Gorman, 2018as cited in NPWS, 2021) (NPWS, 2021)

#### 6.10 River Lamprey (Lampetra fluviatilis) [1099]

Cummeen Strand/ Drumcliff Bay SAC only covers marine/estuarine habitat and it is not anticipated that it contains suitable spawning or nursery habitat. Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill. Lough Gill SAC, which is adjacent to this SAC, encompasses the freshwater elements of river lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants (NPWS 2013b).

Lough Gill SAC: There is a substantial weir on the Garavogue River in Sligo town, but this is currently not considered an issue for river lamprey migration as there is a working fish pass and, failing that, one of the weir arches is open to enable fish passage. Of more significance is a possible natural barrier in the form of a substantial bedrock outcrop at the village of Dromahair in the lower reaches of the River Bonet. At this point, the river falls approximately 9m in a short distance over a series of bedrock outcroppings, creating a sequence of waterfalls. This feature poses a significant barrier to anadromous and catadromous fish species. At present, there are no records for adult river lamprey in the Garavogue-Bonet system (NPWS, 2021).

It is not possible to distinguish between larval brook lamprey (*Lampetra planeri*) and river lamprey in the field and they are therefore considered together in conservation targets. That said, it is likely that the majority, if not all, records are for brook lamprey, particularly those recorded above barriers to river lamprey upstream passage. A survey for larval lamprey was carried out on the Garavogue-Bonet catchment in 2009 (IFI, 2010 as cited in NPWS, 2021), with a repeat survey in 2016 (Gallagher et al., 2017 as cited in NPWS, 2021). Results were broadly similar for both years. To achieve favourable condition, *Lampetra spp.* should, as a minimum, be present in not less than 50% of all sampling sites surveyed with suitable habitat present within the natural range (JNCC, 2015 as cited in NPWS, 2021). Of the 23 sites sampled in 2016, *Lampetra spp.* larvae were present in 47% of sites with suitable nursery habitat, indicating this catchment does not achieve favourable condition for this attribute (NPWS, 2021).

#### 6.11 Water Birds

Cummeen Strand is a large shallow bay stretching from Sligo Town westwards to Coney Island. It is one of three estuarine bays within Sligo Bay and is situated between Drumcliff Bay to the north and Ballysadare Bay to the south, both of which are designated SPAs forming the Sligo Bay Complex. The Garavogue River flows into the bay and forms a permanent channel. The Sligo Bay Complex is important for wintering birds and for estuarine and coastal habitats. I-WeBS is a volunteer survey carried out across Ireland aimed at estimating population size, species distribution and trends of non-breeding/wintering water birds. The area near the project site falls within an I-WeBS subsite Sligo Docks (subsite 0C484) in Sligo Harbour (site 0C492), see Tigure 6.4.



Figure 6.4 Project size and location relative to I-WeBS survey locations. Map shows I-WeBS Sites: Sligo Harbour, Drumcliff Bay and Ballysadare Bay. Subsite Sligo Docks highlighted in blue.



A good diversity of waterbirds winter at Cummeen strand SPA, notably internationally important populations of Barnacle Goose (*Branta leucopsis*) and Light-bellied Brent Goose (*Branta bernicla hrota*). The site has regular populations of European Golden Plover (*Pluvialis apricaria*) and Bar-tailed Godwit (*Limosa lapponica*), both Annex I Bird Directive species, and eight other species winter in nationally important numbers. Great Cormorant (*Phalacrocorax carbo*) has a nationally important breeding colony and small numbers of other breeding seabirds occur.

The adjacent SPAs namely Drumcliffe Bay SPA and Ballysadare SPA have qualifying interests in common with Cummeen strand SPA, so it is possible that birds commute from one SPA to the other in times, for example, of disturbance at their preferred site.

Qualifying interest	Drumcliffe Bay SPA	Cumeen Strand SPA	Ballysadare SPA
Sanderling ( <i>Calidris alba)</i> [A144];	yes	yes	no
Bar-tailed Godwit ( <i>Limosa lapponic)a</i> [A157]	yes	yes	yes
Light-bellied Brent Goose (Branta bernicla hrota) ) [A046]	no	yes	yes
Oystercatcher (Haematopus ostralegus) [A130]	no	yes	no
Redshank ( <i>Tringa</i> <i>totanus</i> ) [A162]	no	yes	yes

			∕₽ <sub>₽</sub>			
Grey Plover ( <i>Pluvialis</i> squatarola) [A141]	no	no	yes			
Dunlin ( <i>Calidris alpina</i> ) [A149]	no	no	yes			
Wetland and waterbirds [A999]	yes	yes	yes Providence			
Table 6.2 Qualifying interests in common across relevant SPAs						

The project at its nearest point is 30m from the Cummeen Strand SPA boundary. Historical Irish Wetland Bird Survey (IWeBS) data for the subsite closest to the project site was consulted. The area of bay at the site is small relative to the Sligo Docks subsite and Sligo Bay, see figure 6.4. I-WeBS data shows that Sligo Docks subsite does not have a significant number of wintering waterbirds; records are generally well below 1% national figures, see table 6.3. The IWeBS data presented is for the subsite only; the IWeBS subsite is significantly larger than the relevant project area. SCI species Redshank and Oystercatcher occur in the subsite within this dataset, below national and international 1% figures. Redshank is the only other SCI common with Ballysadare SPA that has been recorded in the Sligo Docks subsite.

The ecological value of the habitat adjacent to the Project area is considered locally important.

Sligo Docks (subsite 0C484) Sligo Harbour (site 0C492)									
		All							SPA
Species		Ireland	Flyway		2018/	2019/	2021/	2022/	SCI
Name	Latin Name IOC	_1pc	_1pc	Peak	19	20	22	23	Y/N
Mute Swan	Cygnus olor	90	100	14	14		3	4	Ν
Wigeon	Mareca penelope	560	14000	57	57	7	11	5	N
Teal	Anas crecca	360	5000	2			2		Ν
Mallard	Anas platyrhynchos	280	53000	56	56	35	20	26	N
Red- breasted Merganser	Mergus serrator	25	860	7	3	3	7	6	Ν
Red- throated Diver	Gavia stellata	20	3000	2	1			2	N
Great Northern Diver	Gavia immer	20	50	5	5		3	1	N
Little Grebe	Tachybaptus ruficollis	20	4700	4	4	4	3	2	N
Cormorant	Phalacrocorax carbo	110	1200	6	6	5	1	4	N
Shag	Gulosus aristotelis			2	2		1		Ν
Little Egret	Egretta garzetta	20	1100	4	4	1	4	4	N
Grey Heron	Ardea cinerea	25	5000	6	6	2	2		Ν
Oystercatch er	Haematopus ostralegus	610	8200	402	6	17	402	122	Y
Lapwing	Vanellus vanellus	850	72300	6		6			N
Curlew	Numenius arquata	350	7600	27	8	6	8	27	N
Redshank	Tringa totanus	240	2400	98	34	17	10	98	Y

Greenshank	Tringa nebularia	20	3300	2	1	2	<u>م</u>	1	N	
Black- headed Gull	Chroicocephalus ridibundus			199	199	100	199	135	N	
Common									N	
Gull	Larus canus			94	7	10	30	94		
Herring Gull	Larus argentatus			252	81	62	120	252	<sup>N</sup>	
Great Black-									Ň	
backed Gull	Larus marinus			8	2	8	1	1		ন্থ
Iceland Gull	Larus glaucoides			2				2	Ν	

Table 6.3 IWeBs Data for Sligo Docks Subsite for years 2018 to 2023.

#### 6.12 Invasive Alien Plant Species (IAPS)

Buddleia (*Buddleja davidii*) is present in the site; this is a medium risk invasive species ranking 14 on the Biodiversity Ireland Scale.

#### 7.0 Assessment of Impacts

Significance of impacts	Significance Criteria
No impact	No recordable change on the ecology of the feature
Negligible impact	A change to the ecology of the site, however the change is small and is confined to the development site
Minor Impact	A change the ecology of the effected site and has recordable effects outside site boundary, however changes do not affect the distribution or abundance of the ecological feature, locally or nationally
Moderate Impact	A change the ecology of the effected site and has recordable effects outside site boundary. These changes do significantly affect the distribution or abundance of an important ecological feature and potentially affect the overall viability of the species or habitat in the wider area.
Significant impact	A change the ecology of the effected site and has recordable effects outside site boundary. These changes due to their character, magnitude, duration or intensity do significantly affect the distribution or abundance of an important ecological feature and will pose a high degree of threat to the overall viability of the species or habitat in the wider area.

Table 7.1 Significance of impacts and significance criteria

To determine fully how the project may potentially impact the relevant qualifying interests of the Natura 2000 sites a better understanding of the species and habitats in question is required. Information has been collated from conservation objectives documents and supporting documentation, as detailed in section 11. Table 7.2 details general habitat and species requirements. The pressures and threats to these habitats and species have also been identified. The pressures and threats that the project may contribute to are highlighted in bold.

Relevant Qualifying	Habitat description / Species requirement	General Pressures / Threats
Interests of Cumeen		Identified
strand / Drumcliffe		
Bay SAC, Drumcliffe		
Bay SPA, Cumeen		×Q.
Strand SPA, Lough Gill		TT_
SAC, Ballysadare SAC		22
		TOS
Ballysadare SPA.		13
Estuaries [1130]	Estuaries occur as coastal embayments that come under the influence of a large river. They are diverse, dynamic habitats that help maintain the health of coastal ecosystems. At low water, there can be extensive areas of mudflats or sandflats. Typically, estuaries are long narrow seaward parts of river valleys. Estuarine sediments are typically soft muds with a shallow redox depth due to the sheltered nature of the system and the large freshwater inputs. Where stones or shells occur, the green algae <i>Enteromorpha</i> sp. And <i>Ulva</i> sp., and, the brown algae <i>Fucus ceranoides</i> and other fucoids are generally present. Salt marshes are also characteristic of estuaries. Infaunal species numbers are generally low with oligochaetes dominating. Estuaries are located on all parts of the coastline. Typical Irish estuarine species include Waterbirds,	Various sources of <b>pollution</b> , including domestic wastewater, agriculture and marine aquaculture. Alien invasive species such as the naturalised Pacific oyster ( <i>Magallana gigas</i> ) are also recognized as a significant pressure. The Overall Status of the habitat is Inadequate and deteriorating.
	invertebrate communities, and mammals including the Harbour Seal, Grey Seal and Otter.	
[1140] Mudflats and sandflats not covered by seawater at low tide.	Intertidal mudflats and sandflats are submerged at high tide and exposed at low tide and are normally associated with inlets, estuaries or shallow bays. The physical structure of these intertidal flats ranges from mobile, coarse-sand beaches on wave exposed coasts to stable, fine-sediment mudflats in estuaries and other marine inlets. These habitats support diverse communities of invertebrates, algae and eel grass ( <i>Zoster</i> sp). Mudflats are usually located in the most sheltered areas of the coast where large quantities of silt from rivers are deposited in estuaries. In sheltered areas communities are typically dominated by polychaete worms, e.g. <i>Arenicola</i> and bivalve molluscs and may support very high densities of the mud-snail <i>Hybrobia ulvae</i> .	Water traffic in shallow areas close to the coast can damage the habitat through coastal erosion. Dredging Recreational use of the shore. Eutrophication due to nutrient run-off from the catchment area threatens the quality of the habitat. <b>Run-off from urban areas</b> can introduce various hazardous substances, that can accumulate in the soft sediments.
	Sand flats occur on open coast beaches and bays where wave action or strong tidal currents prevent the deposition of finer silt. On more exposed coasts the biodiversity may be lower and the communities dominated by crustaceans such as <i>Bathyporeia</i> . The strand line on most shores is characterised by Talitrid amphipods. Where <i>Zostera</i> occurs, faunal diversity is higher. The high biomass of	and Shellfish Aquaculture; Professional fishing; fixed Location fishing; Leisure fishing; bait digging; WWTP <b>Discharges; Water pollution</b> ; Trampling, overuse and Erosion.

Relevant Qualifying	Habitat description / Species requirement	General Pressures / Threats
Interests of Cumeen		Identified
Bay SAC. Drumcliffe		SIL.
Bay SPA, Cumeen		<b>\$</b> 0.
Strand SPA, Lough Gill		· 27
SAC, Ballysadare SAC		02
and		703
Ballysadare SPA.		5
	invertebrates in such sediments often provides an important food source for waders and waterfowl, such as Knot ( <i>Calidris canuta</i> ), Dunlin ( <i>Calidris alpine</i> ) and Sanderling ( <i>Calidris alba</i> ). Intertidal mudflats and sandflats can be part of a mosaic of habitats that occur in estuaries and shallow inlets and bays.	
[1365] Harbour Seal (Phoca vitulina)	The harbour seal is a marine mammal species which occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important functions such as breeding, moulting, resting and social activity. It is a successful aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species. Its aquatic range for foraging and inter-site movement extends into continental shelf waters. When hauling out ashore harbour seals tend to prefer comparatively sheltered locations where exposure to wind, wave action and precipitation are minimised.	Harbour seals are most vulnerable to disturbance during periods when time is spent ashore or in shallow waters. This is immediately prior to and during the annual breeding season, which takes place predominantly during the months of May-July. Pups are born on land, usually on sheltered shorelines, islets and uninhabited islands removed from the risk of predation and human interference.
[1355] Otter (Lutra lutra)	Otter cover large distances, are widespread but have a low density distribution. Otter are known to dig out their own burrows but they usually use existing cavities for example river banks, rock piles, or under fallen trees, as resting places or for breeding sites. Breeding females generally use secluded holts away from the main river. They can breed in Ireland all year round but mating usually occurs in spring and summer, with females breeding only once per year. Births occur predominately between May and August. Otters will give birth to an average of three cubs preferably in summer to maximize their chances of survival. The mother Otter will nurse the cubs for up to fifteen weeks. Otters are nocturnal carnivorous hunters remaining within a holt for most of the day. Otters prefer rivers and streams which provide good cover and plenty of food. The preferred option is to run along the bank especially if moving upstream, against the flow of water. Otters tend to use the bank that is free of obstructions and so it may only have low lying vegetation with a path indicating its use by Otters (NPWS, 2009). Reeds and other emergent vegetation have been	Otters are subject to pressures in both the terrestrial and the aquatic (freshwater and marine) environments. Impacts that reduce the availability or quality of, or cause disturbance to, these habitats are likely to affect otters. These factors may act directly (e.g. through road kills or the removal of holt sites) or indirectly (e.g. by reducing prey availability)(NPWS, 2009) 1. Direct and indirect habitat destruction, drainage being a major factor. 2. Pollution, particularly organic pollution resulting in fish kills. Agricultural sources of pollution of particular concern. 3. Accidental deaths (traffic and fish traps) and persecution pollution, fragmentation or loss of their habitat

Relevant Qualifying	Habitat description / Species requirement	General Pressures / Threats
Interests of Cumeen		Identified
Strand / Drumcliffe		N/L
Bay SPA Cumeen		The second se
Strand SPA, Lough Gill		· · 2_
SAC. Ballysadare SAC		10-
and		P2
Ballysadare SPA.		. 25
	shown to be an important resource for providing shelter and food.	
[1106] Atlantic Salmon	The Atlantic salmon is native to Ireland, and its	Deterioration of quality of
(Salmo Salar)	geographic range includes the North Atlantic Ocean	freshwater environment:
	and in rivers around the Atlantic coasts of Europe	water quality, spawning
	and eastern North America. The Atlantic salmon is	gravels, temperature, barriers
	one of the most widespread fish in Ireland and is	to spawning grounds
	nonulations have distinct requirements at each	(including noise/vibration).
	stage of their lifecycle. The life cycle of the Atlantic	sea such as diseases and
	Salmon has different stages occurring in both	parasites. <b>marine pollution.</b>
	freshwater and saltwater. While at sea, adult	availability of prey, predator
	salmon are steel-blue or silver in colour. Salmon	populations and climate
	that mature after one year at sea are called grilse	change.
	and usually return to rivers in the summer. Bigger,	Marine survival continues to
	older fish that return after multiple winters at sea	be of significant concern
	are often called <i>springers</i> and usually return to	throughout the southern range
	rivers in the spring or early summer. Adult salmon	of Atlantic salmon in the North
	their way unstream becoming dull in colour: the	East Atlantic.
	males often develop a book on their jaw called a	
	kype. Salmon usually spawn between November	
	and March in gravelly, well-oxygenated rivers. They	
	need cool, clean, flowing freshwater with adequate	
	pool and riffle sequences, and suitable gravel for	
	survival. The female salmon beats her tail against	
	the gravel to dig out a shallow nest for eggs called a	
	redd. Spent fish that make their way downstream	
	The eggs remain in the redd throughout winter and	
	hatch in spring as alevins. As alevins they depend	
	on a yolk sac for primary nutrition until they	
	become fry/ parr when they feed mainly on	
	invertebrates. As smolt, usually after around 2	
	years, they migrate to sea (Hendry & Craig, 2003).	
Lamprey	Lampreys are members of a primitive group of fish	
	called the Agnatha or jawless fish (Loughs Agency	
	ZUIUJ. All three species of Lamprey are native to	
	have an oral sucker disc instead of a mouth with	
	jaws. Lamprevs have seven gill openings on each	
	side of their body with distinct eyes forming prior	
	to adulthood. As mature adults the three species	
	native to Ireland can easily be distinguished by	
	their size, colour, shape of dorsal fins and the	
	arrangement of their teeth (Kurz and Costello,	

Relevant Qualifying Interests of Cumeen	Habitat description / Species requirement	General Pressures / Threats Identified
strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC		CHINED. STOR
and Ballysadare SPA		PO2
	1999). They spawn in summer in nests called redds, which they evacuate from stony riverbeds using their suckers to move stones. After hatching, larval lamprey drift downstream until they find a suitable muddy or silty part of the riverbed to burrow into. Lamprey then spend several years in a blind, worm- like juvenile form known as <i>ammocoetes</i> , which filter feed microscopic organisms from the water and mud. Then depending on the species (sea and river lampreys are anadromous migrating between the freshwater and marine environments) they either migrate back to sea or remain in the river as free swimming adults. Species differ in their life cycle, which are discussed further below (IFI, 2023) All adult lampreys die after spawning (Loughs Agency 2010).	
[1095] Sea Lamprey (Petromyzon marinus)	The sea lamprey ( <i>Petramyzon Marinus</i> ) geographic range includes the Atlantic coastal waters of Europe and North America and their inflowing rivers. Adult sea lamprey are about a metre in length and have a dark, mottled colour, with rows of curved teeth in their suckers, which gives them a striking appearance. Sea lamprey spawn annually in the lower reaches of large rivers sea lamprey prefer cobbles and pebbles for spawning, where they spawn in pairs or small groups (Loughs Agency 2010). Adult lamprey die after spawning, and their carcasses can sometimes be seen in rivers. After about six to eight years, sea lamprey ammocoetes develop eyes and turn silvery, transforming into free-swimming adults as they make their way downstream and migrate to sea. Sea lamprey are external parasites that attach to host fish with their oral disc to feed on their flesh and blood. They spend up to three years at sea before returning back up into the river to spawn. The conservation status of sea lamprey in Ireland is classified as near threatened (IFI, 2023).	Issues that may have an impact on their long-term future include <b>pollution</b> , instream works in river channels and <b>barriers to</b> <b>migration</b> (IFI, 2023). Threats to the species are similar to those of the Atlantic Salmon, because they share similar habitat requirements; these include sedimentation of gravel beds, <b>deterioration of</b> <b>water quality</b> inadvertent removal of silt and muddy substrate for <i>ammocoetes</i> .
[1099] River Lamprey (Lampetra fluviatilis)	The river lamprey <i>Lamptera fluviatilis</i> is also distributed throughout Europe. River lamprey spawn in rivers in mid to late spring, they prefer sandy or gravelly sediment where they spawn in pairs (Loughs Agency, 2010). After hatching, like Brook and Sea lamprey, River larval lamprey drift	Issues that may have an impact on their long-term future include <b>pollution</b> , instream works in river channels and <b>barriers to</b>

Relevant Qualifying	Habitat description / Species requirement	General Pressures / Threats
Interests of Cumeen		Identified
strand / Drumcliffe		
Bay SAC, Drumcliffe		The second se
Bay SPA, Cumeen		
Strand SPA, Lough Gill		57
and		2
Ballycadaro SDA		TO A
Dallysauare SrA.	downstroom until those find a suitable mudde or	migration (IEL 2022)
	downstream until they find a suitable muddy or silty part of the riverbed to burrow into. After about four years, river lamprey ammocoetes develop eyes and turn silvery, transforming into free-swimming adults as they make their way downstream and migrate to sea. Adult river lamprey are external parasites that attach to host fish with their oral disc to feed on their flesh and blood. River lamprey remain relatively close to the coast for about 18 months before migrating back up into the river to spawn.	Threats to the species are similar to those of the Atlantic Salmon, because they share similar habitat requirements; these include Sedimentation of gravel beds, <b>deterioration of</b> <b>water quality</b> inadvertent removal of silt and muddy substrate for <i>ammocoetes</i> .
	Although they are not considered to be at risk in this country, impacts including pollution, instream works in river channels and barriers to migration remain potential threats to river lamprey. (IFI, 2023).	
[A144] Sanderling	Sanderling do not breed in Ireland. Winter visitor.	The main threats to Waterfowl
(Calidris alba) [A157] Bar-tailed Godwit ( <i>Limosa</i> <i>lapponica</i> ) [A046] Light-bellied Brent Goose ( <i>Branta</i> <i>bernicla hrota</i> )	Most birds wintering in Ireland are of Siberian origin, while birds on passage are Nearctic, and pass through on their way towards more southerly wintering areas as far as South Africa. First seen along the Irish coastline in July or August, though most arrive in Ireland between September & April. Often forage along the tide line, where they rush in and out with the waves searching for small prey, such as sandhoppers. Sanderlings are shorebirds characteristic of sandy shorelines.	and wetlands leading to displacement and /or reduction in numbers are: Habitat modification: activities that modify discreet areas or the overall habitat(s) in terms of how one or more of the listed species use the site (e.g. as a feeding resource).
		Disturbance: anthropogenic
[A130] Ovstercatcher	Bar-tailed Godwit	disturbance that occurs in or
(Haematopus	Breeds in northern Norway, Finland and further to	near the site, and is either
ostralegus)	the north and east. Winter visitor to coastal	singular or cumulative in
	estuaries from October to April. Usually seen	nature.
[A162] Redshank ( <i>Tringa totanus</i> )	feeding along outer shoreline of estuaries. Sometimes in large flocks. Wintering distribution entirely coastal. They are largely confined to estuaries, with largest numbers recorded using non	Activities include: bait digging, aquaculture activities, walking, motorised vehicles, hand gathering of molluscs.
[A141] Grey Plover	estuarine coastline Feed along the tidal edge or in	
(Pluvialis squatarola) [A149]Dunlin (Calidris alpina)	shallow water (up to 15 cm depth). They usually commence feeding on an ebbing tide, and feed continuously for up to 6 hours. Polychaete worms, particularly lugworms, form a large proportion of their diet. On the muddier estuaries, where lugworms may be absent they take ragworms and	Significant habitat change or increased levels of disturbance within habitats in the hinterland areas of the SPA.
[A999] Wetland and	וועקאטוווז וומי של משזכוו, נווכי נמגל ומצאטוווז מווע	

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Habitat description / Species requirement	General Pressures / Threats
Interests of Cumeen		Identified
strand / Drumcliffe		
Bay SAC, Drumcliffe		The second se
Bay SPA, Cumeen		
Strand SPA, Lough Gill		57
and		22
Ballysadare SPA.		TO 25
waterbirds	bivalves.	
	Brent Geese	
	Do not breed in Ireland. Winter migrant from high- Arctic Canada. Most occur in Ireland between October and April. Mostly found on coastal estuaries during the autumn and early winter, and also on grasslands from mid-winter, until departure for the breeding grounds begins in late April. They are grazers, their principal supporting habitat is Intertidal mud and Sand flats (when foraging), and they are known for their preference for foraging in	
	intertidal areas with the Eelgrass <i>Zostera</i> sp.	
	Oystercatcher Resident in Ireland. Nests principally on shingle beaches, dunes, salt marshes and rocky shores around the coast. Also winter visitor (from Iceland and the Faeroes) - largest numbers in Ireland between September and March. Use all coastal habitats, and particularly favour open sandy coasts.	
	The main food resource includes the larger invertebrates, particularly mussels and cockles that proliferate along sandy coasts. They also occasionally feed on grasslands where they prey on tipulid larvae and earthworms. They feed by both sight (for polychaete worms) and touch (bivalve mussels).	
	Resident in Ireland. Nests on the ground in grassy tussock, in wet, marshy areas and occasionally heather. Adults often keep guard standing on fence posts or high rocks. Breeds mainly in midlands (especially Shannon Callows) and northern half of the country, but not commonly anywhere in Ireland. Winter visitor from Iceland and passage migrant (birds on passage from Scandinavia/the Baltic breeding areas to west African wintering areas). Highest numbers occur during the early autumn, when there is overlap of the populations. A common wader of wetlands throughout the country, though mainly coastal estuaries in winter. Winters all around the coasts of Ireland, Britain and many European countries. Favours mudflats, large estuaries and inlets. Smaller numbers at inland	

Relevant Qualifying Interests of Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Habitat description / Species requirement	General Pressures / Threats Identified
	Grey PloverDo not Breed in Ireland. Winter visitor from Siberia- first birds arrive in Ireland and Britain towards theend of July but most here between September andApril. Feeds on a wide variety of burrowingintertidal invertebrates, particularly polychaeteworms, molluscs and crustaceans.DunlinBreeds in Ireland; summer visitor from NWAfrica/SW Europe. A limited number breed in somesandy / grassy locations along the west and northcoasts. Nests on the ground in sparse, lowvegetation – in Ireland favours machair habitats.Also winter visitor from Scandinavia to Siberia,passage migrant from Greenland (heading south towinter in Africa). Most occur during the mid-winterperiod. Common along all coastal areas - especiallyon tidal mudflats and estuaries. Very few inland.Feed predominantly on small invertebrates ofestuarine mudflats, particularly polychaete wormsand small gastropods. They feed in flocks, in themuddier sections of the estuaries and close to thetide edge.Wetland habitatwaterbird species that make up the total waterbirdassemblage. These species may include those thatutilise the site during passage, those that arepresent in months of the year outside of the non-	
	breeding season or species that use the site at certain times only (e.g. as a cold weather refuge).	

Table 7.2 Habitat / species requirements and general pressures and threats.

The Screening assessment identified the following potential impacts:

- Habitat degradation due to hydrological impacts via surface water and groundwater during construction and operation;
- Habitat degradation due to noise and vibration causing disturbance, displacement or injury;
- Habitat degradation due to light emissions and reflection;
- Habitat degradation due to the spread of the invasive species;
- Reduction in species density and
- In combination effects;

#### 7.1 Habitat degradation due to hydrological impacts via surface water and groundwater.

#### Construction

Emissions to air, soil and water during site preparation and construction activities: While temporary in nature, construction operations can, sometimes, result in pollution or sedimentation incidents, which can impact negatively on habitat quality. Inadvertent release of suspended solids (from excavation, movement of soils, and construction materials) and other pollutants and hydrocarbons into the Estuary could contribute to nutrient enrichment and sedimentation, and could also impact on the water quality.

The Garavogue Estuary includes Mudflats and sandflats not covered by seawater at low tide are surface and marine water dependant. The habitat is moderately sensitive to hydrological change and has moderate sensitivity to pollution. It can be sensitive to changes in salinity and tidal regime as well as coastal development and recreational activities.

Harbour seal are likely to occur throughout the Bay and depend on good water quality in the Bay. Favoured areas for moulting and breeding are over 8km away from the project area. Otter also rely on good water quality and it is likely that Otter commute and forage in the Sligo Dock area. Garavogue Estuary is also home to wintering waterfowl. As discussed in section 6.11 the ecological value of the habitat adjacent to the Project area is considered locally important for wintering waterfowl, which depend on the wetland habitat and the water quality in the bay. Salmon and Lamprey require clean water and low turbidity levels in their marine environment. An acute pollution incident could have significant effects on Qualifying Interests, potentially causing death and/or pollution and degradation of marine habitats and feeding sources.

The main pathway for transporting sediments from the development site is via storm/surface water runoff during construction. If this pathway is eliminated then this risk is reduced significantly. Other pollutants that could enter the system via percolation through soils or groundwater require careful site management, in particular hydrocarbon, fuel, chemicals and any other hazardous materials on site.

#### Operation

Run off of polluted surface water from hard surfaces from the developed site could cause an ongoing source of pollution. The area is in a Flood Zone A, meaning aspects of the development are highly vulnerable to coastal flooding, (Punch, 2025), which could lead to pollution incidents at times of flood.

All of these issues if they were to occur individually or together could have significant effects on the Qualifying Interests causing death and /or pollution and degradation of marine habitats and feeding sources.

## 7.1.1 Mitigation Measures - Habitat degradation due to hydrological impacts via surface water and groundwater.

A full suite of mitigation measures can be seen in section 8. These should be integrated into the method statements prepared by the appointed contractor it is recommended that this should be a condition of planning permission.

#### **Construction & Environmental Management Plan**

A project-specific Construction and Environmental Management Plan (CEMP) has been developed see appendix 1, with input from the projects' environmental consultant and is included within the planning application. An Ecological Clerk of Works (ECoW) will be appointed to the project. The ECoW will review the CEMP and the mitigation measures therein, in consultation with the appointed contractor prior to commencement of works. The appointed contractor will be responsible for adherence to and implementation of the mitigation measures. The ECoW will be responsible for the monitoring of adherence and implementation, and keeping records or same. The ECoW will have full stop-works powers. NPWS require that contact be made prior to commencement of works close to a Natura 2000 Site. The ECoW will provide on-site training to staff.

It is proposed that the ECoW will monitor water quality at the development site. Water monitoring will take place on a regular basis throughout the construction phase, with daily visual checks, and weekly checks using hand held devices for Hydrocarbon, pH, Turbidity and Dissolved Oxygen. Frequency and parameters to be confirmed by the ECoW in consultation with the NPWS and the appointed contractor.

Figure 7.1 shows the proposed site layout including location of the compound and settlement tanks. It is proposed to store hazardous materials on a raised platform to protect the receiving environment in the event of flooding.

Water discharged from the construction site will be treated prior to controlled release in a silt buster (or similar).

Inland Fisheries Ireland and NPWS will be contacted prior to commencement of works to agree the necessary parameters.



Figure 7.1 Site management plan

#### Operation



Figure 7.2 Surface / storm water management and SuDs design

During the operation phase the inner courtyard has a SuDs design which will capture excess surface water to slow and control the flow to the drainage system out to the estuary.

The basement will be equipped with a pump and sump which will automatically start in the event of flood water. The electric board will be located above likely flood levels and the system will have a back-up generator in the event of power failure.

A non return valve and hydrobreak will be installed to ensure water ingress cannot occur and to control the discharge rates.

Waste water will enter the existing mains system.

#### According to the Site Specific Flood Risk Assessment carried out by PUNCH Consulting Engineers

Elements of the proposed developed are classified as "Highly Vulnerable" and given that the site is located in Flood Zone A, Box 5.1 of the Development Management Justification Test has been applied. The proposed ground floor level is set to 4.26mOD for residential units and 4.06mAOD for commercials units. These FFLs incorporates the prescribed freeboard above the predicted 0.5%AEP MRFS coastal flood level. It is concluded that the proposed development is deemed appropriate at the site location. The proposed development is at a low risk of flooding and will not increase the risk of flooding to any adjacent or nearby area provided the residual risk of flooding is addressed by implementing the mitigation measures (Punch, 2025)

#### Mitigation measure include

– Minimum FFLs for the proposed development are:

4.26mAOD for the residential element and

4.06mAOD for the commercial element.

These levels are in accordance with best practice and are 500mm and 300mm above the CFRAMS

0.5% AEP MRFS coastal water level respectively.

- The ground level at the top of the access ramp to the basement car park will be 3.76mAOD which is at the same level as the 0.5%AEP MRFS coastal water level. In the event of a flood warping, a demountable flood barrier should be placed at this location to raise the height of flood protection to 4.26mAOD.
- To mitigate against any residual flood risk, flood resilient design should be incorporated into the development design, such as keeping electrical appliances off the ground, locating electrical sockets at a higher level, incorporating wall and floor coverings that can be easily cleaned, etc.
- All ventilation shafts, ducts, and other access/utilities entering the development should do so at a height greater than the surrounding ground level in order to remove potential flowpaths of surface water along Pirn Mill Road and Ballast Quay. Utility opes should be sealed to prevent ingress of floodwaters.
- Emergency access/egress to the proposed development is available onto Pirn Mill Road during a flood event.
- All fuels and oils stored on site will be stored within sealed tanks. In the event of inundation of the site by natural floodwaters, the risk of damage to the environment from hydrocarbons on site will be minimised.
- PUNCH Consulting Engineers recommend that as part of the site maintenance plan, all future
  proprietors inspect all road gullies in the vicinity and report any blockages to the Local Authority
  and/or Irish Water. The proprietor should also inspect all surface water drainage within the site, in
  particular following heavy rain which may cause debris to obstruct the ACO drain and road gullies;
- PUNCH Consulting Engineers recommend that a Flood Emergency Response Plan be prepared for the property. While the details of this plan will be the responsibility of the proprietor of the site, PUNCH recommend that consideration be given to evacuation of guests and the shutting down of services such as gas and electricity.
- Periodic monitoring of national weather warning should be undertaken. National weather warnings are announced via the Irish Meteorological Service Online, Met Éireann, typically 48 hours in advance of a weather event.
- The proposed development will provide stormwater drainage in accordance with the Local Authority Development Plan to alleviate pluvial flooding risk.

With the implementation of the above measures the site will be at low risk of flooding and will not increase the risk of flooding to any adjacent or nearby area.

#### 7.1.2 Residual effects hydrological impacts via surface water and groundwater

Following application of the proposed mitigation measures, which have been designed to negate the identified effects, it can be concluded that the proposed project will not result in any significant impacts on Cumeen strand / Drumcliffe Bay SAC, Cumeen Strand SPA, Lough Gill SAC, Drumcliff Bay SPA, Ballysadare Bay SAC and Ballysadare Bay SPA.

#### 7.2 Noise and vibration causing disturbance, displacement or injury

Potential effects on marine mammals (Harbour seal and Otter), Atlantic Salmon, Lamprey, Waterbirds.

#### 7.2.1 Construction

There is a high level of activity and noise on a construction site. Sources include noise and activity from excavation machinery, increased human activity during construction processes and increased heavy traffic to and from site. Pile driving is a static activity that usually takes place in a fixed location for a prolonged period of days or weeks, depending on the scale of development. Given that piling noise is impulsive and loud, under suitable conditions, all species can potentially be at risk. All this increased activity and noise will potentially have a significant impact on species using the adjacent coastal site through indirect habitat loss caused by disturbance, displacement or injury. Construction activity on site will not however be permanent and activity levels will vary greatly during the construction period. Disturbance events are therefore temporary in nature.
### 7.2.2 Construction - Harbour seal

Under Irish legislation, it is an offence to disturb or injure a marine mammal whether this occurs via introduced sound or another anthropogenic source (DAHG, 2014). It is considered that anthropogenic sound sources with the potential to induce TTS in a receiving marine mammal contain the potential for both (a) disturbance, and (b) injury to the animal (DAHG, 2014).

Seals are marine mammal species which occurs in estuarine, coastal and offshore waters but also utilise a range of intertidal and terrestrial habitats for important functions such as breeding, moulting, resting and social activity. If noise levels are at an animals' most sensitive hearing frequency, sounds can result in Temporary Threshold Shift (TTS)<sup>1</sup> and Permanent Threshold Shift (PTS)<sup>2</sup>. Lower intensity sounds could cause changes in behavior for example avoidance and vocalisiation alterations. Masking<sup>3</sup> can also reduce the ranges at which mammals communicate (Todd *et al* 2015).

Piling has the potential, in most circumstances, to introduce persistent anthropogenic sound at levels that may impact upon marine mammal individuals and/or populations, and would constitute an important conservation risk (DAHG 2014)

... low frequency pulse sounds present the possibility of permanent hearing injury (i.e., PTS), temporary hearing loss (i.e., TTS) or other injury for some marine mammals in close proximity to such operations. The multiple pulses of some pile driving works can also be detected at received levels (RL) well exceeding ambient sound more than 10km from the operating source, sufficiently high therefore to potentially cause significant behavioural disturbance to marine mammals at distances of several kilometers... DAGH 2014.

It is important to note that this relates to piling within the marine environment. The development is only 30m from the estuary and will require piling at depth.

Seals demonstrate differing auditory ability in air and in water, in this case pinnipeds in air is relevant, should Seals be in close proximity of the site during loud activities such as piling, see table 7.3.

<sup>&</sup>lt;sup>1</sup> Temporary Threshold Shift: A temporary increase in hearing threshold following exposure to loud noise.

<sup>&</sup>lt;sup>2</sup> PTS: Permanent Threshold Shift: A permanent increase in hearing threshold following exposure to loud noise.

<sup>&</sup>lt;sup>3</sup> Masking: Sounds which coincide with hearing ranges of a marine mammal mask important signals and reduce the distance over which individuals can communicate.

$\gamma_{\infty}$	
Pinnipeds	
in air	RS.
75 Hz-30 kHz	· ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
All species	
Species– Ireland	
Grey seal	
Harbour seal	
Criteria for permanent injury –	
estimated values for PTS onset	
Single Pulse:	
149 dB SPL	
144 dB SEL	
Multiple Pulse	
149 dB SPL	
144 dB SEL	
Non Pulses:	
149 dB SPL	
144.5 dB SEL	
Criteria and values for TTS onset (single pulses only) and	
Disturbance/ behavioural response (multiple pulses/non pulses)	
Single Pulse:	
109 dB SPL	
100 dB SEL	
Multiple Pulse:	
Data unavailable	
Not applicable	
Non Pulses:	
110 – 120 dB RL	
Not applicable	
Units of measurement	
Sound Pressure Level, SPL (in water): measured in dB re: 1µPa (peak) (find the set of t	at)
Sound Exposure Level, SEL ( in water): measured in dB re: $1\mu$ Pa <sup>2</sup> -s	
Sound Pressure Level, SPL (in air): measured in dB re 20 $\mu$ Pa (peak) (flat)	
Sound Exposure Level, SEL ( in air): measured in dB re: $(20\mu Pa)^2$ -s	

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Table 7.3 Marine mammal auditory abilities and marine frequencies including transcript of marine mammal noise exposure criteria given by Southall *et al* (as cited in DAHG 2014). Includes received levels (RL) from multiple pulse / non pulse events reported to elicit significant behavioural responses in previous studies, with respect to Irish occurring species. Extract from DAHG, 2014.

While there is no recognised haul out, moulting or breeding sites in the vicinity of the project, see figure 6.3, due to the close proximity of the project to the estuary, and the loud piling activity that will occur it is possible that seals may experience some effects from the project. If levels were to exceed those in table 7.3 there is possibility of causing injury to or disturbance and displacement of seals. Works will be temporary. Displacement, if any, is likely to be temporary and seals will return to the area after works are complete.

It can be concluded that construction disturbance may cause a minor impact and will not be permanent in nature.

# 7.2.3 Operation - Harbour Seal

The operational phase of the project is unlikely to have any significant effects on Harbour Seal in terms of disturbance, displacement or injury.

# 7.2.4 Mitigation measures - Noise and vibration causing disturbance, displacement or injury Harbour sease Construction

Noise and vibration monitoring shall be carried out during construction and piling operations to ensure that levels are kept within acceptable limits. Limits shall be agreed with the relevant statutory authorities.

If piling is likely to produce damaging levels of noise and vibration as per table 7.3 Soft Start / Ramp-Up Procedures for piling will give Harbour Seal warning of works, and time to leave the vicinity. Piling shall commence from a lower energy start-up and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20-40 minutes. This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.

If there is a break in pile driving sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down or location change) a subsequent Ramp-up Procedure must be undertaken.

# 7.2.5 Residual Effects on Harbour Seal

Following application of the proposed mitigation measures, which have been designed to negate identified effects, it can be concluded that the proposed project will not result in any significant impacts on Harbour Seal. There will be no significant residual effects on Harbour Seal arising from the proposed development, either alone or in combination with other plans or projects. The conservation status of Harbour Seal will not be affected in any away.

# 7.2.6 Construction - Otter

In general, according to NRA guidance 2009, disturbance effects from construction would not be expected to extend beyond 150m. Otter are largely nocturnal species and may be impacted by noise or vibration during the day if they are resting in the area when construction is ongoing.

It is likely Otter commute and forage around the dock area. Disturbance, displacement and potential hearing injury from loud construction activities like piling are possible if otter are in the vicinity of works.

Being inquisitive animals, they may investigate the work site, or conversely, they may be alarmed and be diverted from their normal paths on to a more dangerous route to avoid the construction site. As a result there are many possible hazards that could be fatal to animals such as being hit by cars or caught in machinery.

There is a lot of alternative habitat in the area, works are on dry land, and are not near any holts or haul out sites. During breaks in works and once works cease completely, it is reasonable to assume that all species will return to the area.

Using the precautionary principle it is assumed that there will be potential for some degree of disturbance to mammals in the vicinity of the project. It can be concluded that construction disturbance may cause a minor impact and will not be permanent in nature.

#### 7.2.6 Opertation - Otter

During operation, activities at the development are not likely to have a significant effect on Otter. Unpublished observations by Kruuk and colleagues indicate that Otters will rest under roads, in industrial buildings, close to quarries, and at other sites close to high levels of human activity. These observations clearly indicate that Otters are very flexible in their use of resting sites and do not necessarily avoid 'disturbance' in terms of noise or proximity to human activity (Chandin, 2003). Potential effects of the project in the operational phase, alone or in combination with others, in terms of disturbance or displacement are not significant.

# 7.2.7 Mitigation Measures - Noise and vibration causing disturbance, displacement or injury Otter Construction

A preconstruction survey should be undertaken to determine if there are any signs of holt / couch/ habitat in active use within 150m of the project.

"Pre-construction Otter surveys should be undertaken prior to the commencement of any works in order to identify any changes in Otter activity, holt locations. It is important to ensure that no new holts have been created in the intervening period.

Where more than 36 months has elapsed between the time of a statutory approval of a development and the initiation of the construction phase, an appropriate level of resurvey will be required - because the baseline data may have altered during the intervening period. This will allow adjustments to be made to the mitigation strategy specified in the CEMP, where appropriate.

No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place - provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site. No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, Otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence."

Night working should be suspended in areas where Otters are thought to be active.

A derogation licence is required if for any unforeseen reasons the Otter holt has to be disturbed or destroyed.

Noise and vibration monitoring and Soft Start / Ramp-Up Procedures for piling as detailed in section 7.2.4 will give commuting/foraging Otter warning of works, and time to leave the vicinity.

All works will be restricted to daylight hours, so as to cause as little disturbance as possible to these largely nocturnal creatures.

All construction pits and trenches will be covered outside of construction hours to avoid animals such as Otters becoming trapped within and injured and/or killed.

Machinery and equipment should be made safe, or cordoned off with temporary fencing at the end of the working day.

#### 7.2.8 Residual Effects on Otter

Following application of the proposed mitigation measures, which have been designed to negate identified effects, it can be concluded that the proposed project will not result in any significant impacts on Otter. There will be no significant residual effects on Otter arising from the proposed development, either alone or in combination with other plans or projects. The conservation status of Otter will not be affected in any away.

#### 7.2.9 Construction – Salmon and Lamprey

Knowledge on hearing abilities of Atlantic Salmon and potential impacts of underwater noise such as pile driving is incomplete (Harding et al, 2016). Atlantic salmon are known to detect low frequency acoustic stimuli below 380 Hz (Hawkins & Johnstone, 1978 as cited in Harding et al, 2016), coinciding with the dominant frequencies produced during impact piling operations (100 Hz to 2 kHz; Bailey et al., 2010; Hawkins et al., 2015 as cited in Harding et al, 2016).

In his study of pile driving associated with the removal and reconstruction of a jetty at a busy harbor in the North East of Scotland, adjacent to an important Atlantic Salmon river Hawkins (2005) concludes that noise from pile driving in the harbor was high enough to be detected by salmon in the river, at considerable distances from the source. The levels of sound from both percussive and vibro-piling were well above the hearing thresholds of the fish. As salmon could not be observed during this exercise, it was not possible to determine whether salmon reacted adversely to the sounds. However, he found there was a risk that their upstream migration may have been delayed or prevented with consequent effects upon spawning populations. The measurements indicated that any pile driving within the river itself would have the potential to injure or induce hearing loss in salmon and might have adverse effects upon their behavior.

While this research relates to in water piling, the project is very close to the Garavogue River, the Project may therefore have the potential to interact with two life stages of the Atlantic Salmon; the concerns being the impact pile driving may have on the smolt stage, when the juvenile salmon move from freshwater to the feeding grounds in the sea, and the adult spawning migration when adults return to their nata river to spawn. Piling may impact salmon populations by delaying or preventing migration to and from the Garavogue River

Similar to Salmon there is the potential for piling to interfere with the migration and spawning stages of Lamprey.

It can be concluded that construction disturbance may cause a minor impact and will not be permanent in nature.

# 7.2.10 Operation – Salmon and Lamprey

The operational phase of the project will not have any significant effects on Salmon or Lamprey in terms of disturbance, displacement or injury.

# 7.2.11 Mitigation Measures Noise and vibration causing disturbance, displacement or injury - Salmon and Lamprey

#### Construction

Salmon and Lamprey use the Garavogue Estuary as a migratory route, smolts tend to leave in the spring with adults returning to their native river to spawn in the Autumn months. Ideally piling should take place outside of smolt stage and spawning season. If this is not possible due to operational requirements, piling will only take place during daylight hours, because migratory movement for both species usually occurs in the hours of darkness.

Soft start/ Ramp up procedures will give Salmon and Lamprey in the area warning of works.

It is reasonable to assume that during periods of low or no activity on site, fish will continue to use the route unhindered.

#### 7.2.12 Residual Effects on Salmon and Lamprey

Following application of the proposed mitigation measures, which have been designed to negate identified effects, it can be concluded that the proposed project will not result in any significant impacts on Salmon and Lamprey. There will be no significant residual effects on Salmon and Lamprey arising from the proposed development, either alone or in combination with other plans or projects. The conservation status of Salmon and Lamprey will not be affected in any away.

#### 7.2.13 Construction - Waterbirds

For waterbirds, construction-related disturbance effects would not be expected to extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance (Cutts et al., 2009). As shown in the IWEBS data the study area is locally important to waterbirds and numbers that use the subsite adjacent are low with only 2 SCI SPA species recorded in numbers well below national or international importance. Tidal mudflats are common around the Estuary area, so there is ample suitable alternative habitat in the surrounding area for temporarily displaced birds. It is reasonable to assume that during periods of low or no activity on site birds will continue to use the adjacent mudflats as normal.

It can be concluded that construction disturbance may cause a minor impact and will not be permanent in nature.

#### 7.2.14 Operation - Waterbirds

The development is set back from the estuary and is within an existing busy town and thoroughfare to which birds using the site are accustomed, any potential for impact is therefore reduced.

The normal intensity of activity during project operational phase will be significantly lower than that of the time-limited construction phase. The operational phase of the project will not have any impact in terms of noise and vibration causing disturbance, displacement or injury.

# 7.2.15 Mitigation Measures Noise and vibration causing disturbance, displacement or injury - Waterbirds

Soft start/ Ramp up procedures will give birds in the area warning of works.

As a minor negative impact is predicted on wintering birds using the mudflats, it is proposed that a temporary visual screening structure will be erected during the period of construction. This structure should be approximately 2.5 metres in height and will screen the majority activity within the construction site. The majority of work and machinery will take place in the courtyard area of the site. As the building increases in height it will provide its own barrier to activity within the site. The exterior of the building will be covered in scaffolding which will also screen movement and activity.

# 7.2.16 Residual effects on Waterbirds

Following application of the proposed mitigation measures, which have been designed to negate the identified effects, it can be concluded that the proposed project will not result in any significant impacts on the water bird species listed as ecological features in the SPA documents. There will be no significant residual effects on Waterbirds arising from the proposed development, either alone or in combination with other plans or projects. The conservation status of Waterbirds will not be affected in any away.

#### 7.3 Habitat degradation due to light emissions and reflection - Waterbirds

#### **Refection and Light**

Bird strikes are not believed to be an issue of major conservation concern in Ireland, particularly when compared to other major pressures such as habitat loss (Birdwatch Ireland, 2024). Given the proximity of the development to Cummeen Strand SPA and the amount of glazing proposed it is prudent to consider it.

Birds cannot recognize that reflective and transparent glass is a solid object. To help reduce bird collisions, birds need visual cues that a barrier is present.

Glass collisions can occur by day or night at any sized building. Day-time collisions can occur when a bird sees the reflection of the sky or sea in the glass and flies towards it, unaware that there is a glass barrier between them and their perceived destination. At night, artificial light from buildings can divert birds from their path and draw them into urban centres, where they are at a higher risk of collision.

# 7.3.1 Mitigation Measures for light emissions and reflection causing injury to QI species Waterbirds

# Construction

The mitigation measures detailed in section 7.2.15 will serve to block construction light from the construction site.

# Operation

There is already a busy road bridge and pontoon/pier area at the docks adjacent to the project. This will provide screening from the building. There is a considerable drop down to the mudflats therefore adding further protection to birds.

Lighting both inside and outside the building can increase light pollution in the area. Measures to reduce the effects of lighting can be undertaken to reduce this effectively, these can be carried out by build management and will be automatic as much as possible

Interior Lighting

- The apartments will be for domestic use and will have blinds/curtains to block light.
- Automatic turn off of all lights in unused interior spaces.
- Automatic dim lights from 10pm to 6am in public areas, i.e., lobbies, retail, etc.
- Confine safety and security lighting to areas required by the law/building code.
- Install motion sensors or an auto shutoff system with a maximum 30-minute vacant period.

#### Exterior Lighting

- No lighting on roof of the building.
- Lighting to be primarily in the courtyard of the building screened from the Estuary

- Install only shielded, downward-directed fixtures. \_
- Limit lighting to areas where required for safety and security.
- Prohibit spots, floods, and advertising lighting. \_

# Reflection

RECEIVED The best way to deter birds from reflective surfaces and windows is by placing markers on the exterior surface of the glass, ensuring that the spacing between them is tight enough so that the bird does not think  $\mathfrak{M}$  can fly through the gaps. Research has shown that most birds will not attempt to fly through spaces less than two inches high or four inches wide, though research suggests that reducing this to two by two inches would make it more effective for smaller species.

It is possible to introduce measures to reduce bird collisions without changing the aesthetics of a building. Unlike humans, birds can see ultraviolet (UV). With this in mind, UV stickers or markers on the exterior of the glass which will be invisible to our eyes but very clear to birds. Commercial UV stickers are available for this purpose (Birdwatch Ireland, 2023).

Other alternatives include:

- Patterned glass: This type of glass has a certain pattern or texture, and it can be used in a variety of applications. As previously mentioned, the patterns must respect specific rules. New technologies such as laser engraved marking are being tested and developed.
- Coated glass: This type of glass has a patterned coating that disrupts the reflection on the glass, which birds can see as barriers (e.g. magnetron coated).
- Laminated glass with a PVB with a specific pattern.
- Fritted glass has a patterned layer of ceramic or enamel baked onto the surface of the glass,
- Acid-etched glass is treated with acid to create a full frosted or opaque surface, which reduces the reflectivity of the glass.

#### 7.3.2 **Residual Effects of light emissions and reflection on Waterbirds**

Following application of the proposed mitigation measures, which have been designed to negate the identified effects, it can be concluded that the proposed project will not result in any significant impacts on the water bird species listed as ecological features in the SPA documents. . There will be no significant residual effects on Waterbirds arising from the proposed development, either alone or in combination with other plans or projects. The conservation status of Waterbirds will not be affected in any away.

#### 7.4 Habitat degradation due to the spread of the invasive species

#### Construction

The accidental spread of non-native invasive plant species as a result of construction works has the potential to impact upon terrestrial habitats within and immediately adjacent to the proposed development boundary; potentially affecting plant species composition, diversity and abundance over the long-term. Several Buddleia plants were recorded around the perimeter of the project site.

#### Butterfly bush (Buddleia) Ecology and Distribution

Buddleia (Buddleja davidii) (also known as the Butterfly bush) is a member of the Buddlejaceae family. It is a very fast-growing shrub that can reach 2m in its first year, producing flowers and setting seed prolifically. Buddleia is a native of China and is widely planted as an ornamental in gardens, demesnes or parks. Its long, purple and nectar-rich flowers attract a considerable diversity of butterflies and other pollinating insects. It is distributed widely throughout Ireland and is particularly frequent in waste ground in urban environments. It colonises bare ground very rapidly and can quickly form monotypic stands.

Buddleia can grow almost anywhere on a wide diversity of soil types, on walls, rock outcrops or sub-soils. In Ireland, Buddleia is considered an invasive species because of the damage it can cause to hard standings and structures, and to native biodiversity.

Buddleia produces very large numbers of viable seeds, which are dispersed via wind and water. The seeds are relatively short-lived in the soil, rarely lasting longer than four years. The plant can also readily spread by producing roots, and ultimately new plants, where stem nodes come into contact with the ground. It can also spread by fragmentation of stems or roots. (TII, 2020)

# 7.4.1 Mitigation measures - Habitat degradation due to the spread of the invasive species

### Options for the eradication of Butterfly bush

Outline Invasive species plan:

A preconstruction survey to confirm extent of species is required.

Treatment of invasive species on site will be undertaken by a specialist invasive species contractor, with appropriate licensing with regards to removal of materials and use of herbicides

### **Control of Buddleia**

It is recommended that a suitably qualified ecologist or horticulturalist with sufficient training, experience and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Buddleia. In addition, it is recommended that those involved in the control of Buddleia have access, where appropriate, to the advice of a Registered Pesticide Advisor on the register established by the Minister for Agriculture, Food and the Marine pursuant to Regulation 4 of the Sustainable Use of Pesticides Regulations. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control (TII, 2020).

#### **Chemical control - Application of Herbicide**

It is recommended that plants are cut back to a stump during active growth (late spring to early summer) and then immediately treated with a systemic herbicide (brushed on).Foliar application of herbicide is capable of providing control with young plants and small infestations, but should be followed up at six-monthly intervals as regrowth is common.

#### **Physical control**

Buddleia is a plant that favours disturbed sites; physical removal of plants can therefore provide ideal conditions for the germination of seeds that are present in the soil. Care needs to be taken to ensure that revegetation of treated areas is undertaken quickly. The branches of Buddleia are capable of rooting as cuttings, so care should also be taken to ensure material is disposed of in a manner to avoid this risk.

Physical removal of Buddleia is only suitable for very small infestations of this species. Where removing mature plants is not immediately possible. Removal of the flower heads before seed set (June or even July) is an important control method; it reduces the volume of seeds that are available to spread.

Hand-picking of young plants will provide control but it is very tedious and should be undertaken with care to avoid soil disturbance, which can give rise to a flush of new seedling. The plants should not be removed when in seed. It is essential to plant the ground with native species immediately following removal to prevent new seedlings taking hold.

Mowing of young plants does not provide effective control as they re-sprout with vigour. The physical removal of mature stands is not recommended for the same reason. After uprooting, it is essential to plant the ground in order to prevent a flush of new seedling growth.

When Buddleia plants are cut, regrowth from the stump can be very vigorous.

#### Combined chemical and physical control

Effective control can be achieved by cutting Buddleia plants to a basal stump during active growth (late spring to early summer) and immediately treating the total cut surface with herbicide concentrate. Monitoring will be required and retreatment, as necessary.

Cut stems and branches should not be left on the ground as they will reroot and produce new plants.

Digging out plants is only practical with relatively minor infestations, at the initial stage of invasion, or where a site is to be excavated for development. If time constraints do not allow for the herbicide treatment and there is no space for burial on site, infested soils of Buddleia may be excavated to a depth of at least *c*. *2*m (or to a depth where no root systems are visible); and, disposed of offsite at a licensed landfill as hazardous material, under license by National Parks and Wildlife Service.

A combined chemical and physical is likely the most appropriate method for dealing with Buddleia on the project site.

# Operation

Assuming eradication is successful prior to construction the operational phase of the project will not pose a threat. Monitoring will be required.

#### **Biosecurity – Avoiding the introduction or spreading of non-native invasive plant species**

Planting, dispersing, or allowing/causing the dispersal, spread or growth of certain non-native plant species is controlled under Article 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011; and refers to plant or animal species listed on the Third Schedule of those regulations. When importing materials from outside a site there is always a risk of importing unwanted elements such as seed or spores from invasive plants for example, Japanese knotweed or Rhododendron. Every effort will be made to ensure imported material is clear of contaminants and comes from a known reliable source.

None of the species on the third Schedule have been recorded within the project site

#### 7.4.2 Residual effects regarding invasive species

Following application of the proposed mitigation measures, which have been designed to negate the identified effects, it can be concluded that the proposed project will not result in any significant impacts on Cumeen strand / Drumcliffe Bay SAC, Cumeen Strand SPA, Lough Gill SAC, Drumcliff Bay SPA, Ballysadare Bay SAC and Ballysadare Bay SPA.

#### 7.5 Reduction in Species Density

The possibility of a reduction in species density identified in the AA Screening report (Devlin, 2024) was in relation to the potential hydrological impacts, and habitat degradation due to noise, vibration, lighting, reflection and invasive species in the vicinity of the project. The mitigation measures in sections 7.1 - 7.6 provide adequate mitigation to negate the impacts and the associated effects.

Residual effects in terms of a reduction in species density will not therefore occur.

#### 7.6 Mitigation Measures – consolidated table

The project has been designed in cognisance of the SPAs and SACs adjacent to the site. A number of indesign/avoidance mitigation has also been incorporated into the project. Site Management Plans can be seen in figures 7.1 and 7.2. A Construction and Environmental Management Plan can be seen in Appendix 1. A full suite of site specific mitigation measures are detailed in tables 7.4 and 7.5 **NOTE MITIGATION FOR ALL ECOLOGICAL AND NATURA 2000 aspects have been included in the table to ensure continuity across the project.** 

#### In-design mitigation / avoidance

#### **Construction**

Drainage and services from the site uses existing facilities.

Flood risk measures have been incorporated into the design to include SuDs, sump and pump and raised FFL's.

A construction and environmental management plan has been developed which includes a suite of mitigation measures including: erosion and sediment controls in the form, silt fencing, a settlement tanks, management of hazardous materials; and a site specific management plan.

An Ecological Clerk of Works will be appointed to the project, to oversee the project and to provide staff training.

#### **Operation**

Surface water will be treated by hydrocarbon/grit interceptors before controlled release to the estuary. These are fitted with alarms in case of malfunction.

A SuDs design is proposed.

Wastewater will connect directly to the mains sewerage system.

Glazing and lighting will be designed and managed to reduce reflection and light pollution.

Preconstruction surveys				PRC	
Preconstruction survey	Location	Survey objective	Survey timing/seasonality	Licence required for survey?	Specification for surveyors
Invasive species	Development site.	Determine extent and treatment required.	Survey any time of year. Chemical treatment: After flowering Spring/Summer.	No	Walkover survey. Specialist contractor for treatment.
Otter	Within 200m of the project location.	Determine if holt / couch/ habitat present /in active use. Or whether other species are present.	Any time of year. (Allow time c. 1 month for licensing and receptor site identification).	No	Surveys to adhere to NRA guidance 2009.
Nesting Birds Only necessary if works cannot be avoided March - Aug inclusive	Vegetation and Ivy on gabel walls of buildings adjacent.	Determine if nests present. Set up exclusion zones. Apply for licence for removal of nests if required.	March - August inclusive (where no nests present works must proceed within 72 hours otherwise re-survey required).	Yes, if nests are to be removed.	Ferguson Lees <i>et al.,</i> 2011.

Table 7.4Pre construction surveys

Mitigation measures
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Mitigation measures			RECEIL
Source	Pathway	Receptor	Mitigation Measure
Project / Site Construction site management	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	An Ecological Clerk of Works (ECoW) will be appointed to the project. The ECoW will review the CEMP and the mitigation measures therein, in consultation with the appointed contractor prior to commencement of works. The appointed contractor will be responsible for adherence to and implementation of the mitigation measures. The ECoW will be responsible for the monitoring of adherence and implementation, and keeping records or same. The ECoW will have full stop-works powers. IFI and NPWS require that contact be made prior to commencement of works.	
			It is proposed that the ECoW will monitor water quality and noise/vibration levels at the development site. Water monitoring will take place on a regular basis throughout the construction phase, with daily visual checks, and weekly checks using hand held devices for Hydrocarbon, pH, Turbidity and Dissolved Oxygen. Frequency and parameters to be confirmed by the ECoW in consultation with IFI, NPWS and the appointed contractor. Noise and vibration monitoring shall be carried out during loud construction events and piling operations to ensure that levels are kept within acceptable limits. Limits shall be agreed with the relevant statutory authorities. ECoW to provide training to staff to ensure understanding of mitigation required.
			Good practice guidelines must be followed including those for Pollution Prevention (PPGs).
Flood risk	Construction and Operation	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	As per PUNCH consulting engineers SSFRA, the project is in Flood Zone A - the following mitigation measures are proposed: <i>Minimum FFLs for the proposed development are:</i> <i>4.26mAOD for the residential element and</i> <i>4.06mAOD for the commercial element.</i> <i>These levels are in accordance with best practice and are 500mm and 300mm</i> <i>above the CFRAMS 0.5%AEP MRFS coastal water level respectively.</i> <i>The ground level at the top of the access ramp to the basement car park will be</i> <i>3.76mAOD which is at the same level as the 0.5%AEP MRFS coastal water level. In</i>

Source	Pathway	Receptor	Mitigation Measure
			location to raise the height of flood protection to 4-26mAOD.
			To mitigate against any residual flood risk, flood resilient design should be incorporated into the development design, such as keeping electrical appliances off the ground, locating electrical sockets at a higher level, incorporating wall and floor coverings that can be easily cleaned, etc.
			All ventilation shafts, ducts, and other access/utilities entering the development should do so at a height greater than the surrounding ground level in order to remove potential flowpaths of surface water along Pirn Mill Road and Ballast Quay. Utility opes should be sealed to prevent ingress of floodwaters.
			Emergency access/egress to the proposed development is available onto Pirn Mill Road during a flood event.
			All fuels and oils stored on site will be stored within sealed tanks. In the event of inundation of the site by natural floodwaters, the risk of damage to the environment from hydrocarbons on site will be minimised.
			PUNCH Consulting Engineers recommend that as part of the site maintenance plan, all future proprietors inspect all road gullies in the vicinity and report any blockages to the Local Authority and/or Irish Water. The proprietor should also inspect all surface water drainage within the site, in particular following heavy rain which may cause debris to obstruct the ACO drain and road gullies;
			PUNCH Consulting Engineers recommend that a Flood Emergency Response Plan be prepared for the property. While the details of this plan will be the responsibility of the proprietor of the site, PUNCH recommend that consideration be given to evacuation of guests and the shutting down of services such as gas and electricity.
			Periodic monitoring of national weather warning should be undertaken. National weather warnings are announced via the Irish Meteorological Service Online, Met Éireann, typically 48 hours in advance of a weather event.
			The proposed development will provide stormwater drainage in accordance with the Local Authority Development Plan to alleviate pluvial flooding risk.
Construction near	Acoustic	Garavogue Estuary: Cumeen strand	Monitoring of noise and vibration.
sensitive habitat	Noise and vibration causing disturbance,	/ Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA,	Soft Start / Ramp-Up Procedures for piling will give QI species warning of works, and time to leave the vicinity.
	displacement or	Lough Gill SAC, Ballysadare SAC and	If piling is likely to produce damaging levels of noise and vibration as per table 7.3,

Source	Pathway	Receptor	Mitigation Measure
	injury	Ballysadare SPA. All species	<ul> <li>piling shall commence from a lower energy start-up and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20-40 minutes. This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.</li> <li>If there is a break in pile driving sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down or location change) a subsequent Ramp-up Procedure must be undertaken.</li> </ul>
Construction near	Acoustic	Otter	ECoW to provide training to staff to ensure understanding of mitigation required
sensitive habitat	Noise and vibration causing disturbance,		Preconstruction survey to determine presence or absence of Otter, and if present whether it is a maternal holt or not.
	displacement or		NRA (2009) guidance to be followed:
	injury		"Pre-construction otter surveys should be undertaken prior to the commencement of any works in order to identify any changes in otter activity, holt locations. It is important to ensure that no new holts have been created in the intervening period.
			Where more than 36 months has elapsed between the time of a statutory approval of a development and the initiation of the construction phase, an appropriate level of resurvey will be required - because the baseline data may have altered during the intervening period. This will allow adjustments to be made to the mitigation strategy specified in the CEMP, where appropriate.
			No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place - provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site.
			No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence."
			Monitoring of noise and vibration.
			Soft Start / Ramp-Up Procedures for piling as detailed in section 7.2.4 will give commuting/foraging Otter warning of works, and time to leave the vicinity.
			Night working should be suspended in areas where otters are thought to be active.

Source	Pathway	Receptor	Mitigation Measure
			A derogation licence is required if for any unforeseen reasons the otter holt has to be disturbed or destroyed.
			All construction pits and trenches will be covered outside of construction hours to avoid animals such as Otters becoming trapped within and injured and/or killed.
			Machinery and equipment should be made safe, or correspect off with temporary fencing at the end of the working day.
Construction near sensitive habitat	Acoustic Noise and vibration causing disturbance, displacement or injury.	Salmon and Lamprey	Salmon and Lamprey use the Garavogue Estuary as a migratory route, smolts tend to leave in the spring with adults returning to their native river to spawn in the Autumn months. Ideally piling should take place outside of smolt stage and spawning season. If this is not possible due to operational requirements, piling will only take place during daylight hours, because migratory movement for both species usually occurs in the hours of darkness.
			Monitoring of noise and vibration.
			Soft start/ Ramp up procedures will give Salmon and Lamprey in the area warning of works.
Construction and	Visual	Garavogue Estuary: Waterbirds	Monitoring of noise and vibration.
Operation near	Disturbance from	Drumcliffe Bay SPA, Cumeen Strand	Soft start/ Ramp up procedures will give birds in the area warning of works.
sensitive habitat	construction site. Light pollution and Reflection.	onstruction site. SPA, and Ballysadare SPA. ight pollution and eflection.	A temporary visual screening structure will be erected during the period of construction. This structure should be approximately 2.5 metres in height and will screen the majority of lights and activity within the construction site. The majority of work and machinery will take place in the courtyard area of the site. As the building increases in height it will provide its own barrier to activity within the site. The exterior of the building will be covered in scaffolding which will also screen movement and activity.
			Measures to reduce the effects of lighting during operation can be carried out by building management and will be automatic as much as possible.
			The apartments will be for domestic use and will have blind/curtains to block light.
			Automatic turn off of all lights in unused interior spaces.
			Automatic dim lights from 10pm to 6am in public areas, i.e., lobbies, retail, etc.
			Confine safety and security lighting to areas required by the law/building code.

Source	Pathway	Receptor	Mitigation Measure
			Install motion sensors or an auto shutoff system with a maximum 30-minute vacant period.
			Exterior Lighting
			No lighting on roof of the building.
			Lighting to be primarily in the courtyard of the building screened from the Estuary
			Install only shielded, downward-directed fixtures.
			Limit lighting to areas where required for safety and security.
			Prohibit spots, floods, and advertising lighting.
			Reflection
			The best way to deter birds from reflective surfaces and windows is by placing markers on the exterior surface of the glass, ensuring that the spacing between them is tight enough so that the bird does not think it can fly through the gaps. Research has shown that most birds will not attempt to fly through spaces less than two inches high or four inches wide, though research suggests that reducing this to two by two inches would make it more effective for smaller species.
			It is possible to introduce measures to reduce bird collisions without changing the aesthetics of a building. Unlike humans, birds can see ultraviolet (UV). With this in mind, UV stickers or markers on the exterior of the glass which will be invisible to our eyes but very clear to birds. Commercial UV stickers are available for this purpose (Birdwatch Ireland, 2023). Other alternatives include:
			• Patterned glass: This type of glass has a certain pattern or texture, and it can be used in a variety of applications. As previously mentioned, the patterns must respect specific rules. New technologies such as laser engraved marking are being tested and developed.
			• Coated glass: This type of glass has a patterned coating that disrupts the reflection on the glass, which birds can see as barriers (e.g. magnetron coated).
			• Laminated glass with a PVB with a specific pattern.
			• Fritted glass has a patterned layer of ceramic or enamel baked onto the surface of the glass,

Source		Pathway	Receptor	Mitigation Measure
				• Acid-etched glass is treated with acid to create a full frosted or opaque surface, which reduces the reflectivity of the glass.
Biosecurity		1		.5
Importation Invasive species	of	Importing materials	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	In order to comply with Regulations 49 and 50 of the European Communities (Birds and Natural Habitat) Regulations (2011), the appointed Contractor will ensure biosecurity measures are implemented throughout the construction phase to ensure the introduction and translocation of invasive species is prevented. When importing materials from outside a site there is always a risk of importing unwanted elements such as seed or spores from invasive plants for example, Japanese knotweed or Rhododendron. Every effort will be made to ensure imported material is clear of contaminants and comes from a known reliable source.
Eradication Buddleia	of	Run off through drainage from site, relocation of materials off site	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Outline Invasive species plan: A preconstruction survey to confirm extent of species is required. Treatment of invasive species on site will be undertaken by a specialist invasive species contractor. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control.
				Combined chemical and physical control
				Effective control can be achieved by cutting Buddleia plants to a basal stump during active growth (late spring to early summer) and immediately treating the total cut surface with herbicide concentrate. Monitoring will be required and retreatment, as necessary.
				Cut stems and branches should not be left on the ground as they will reroot and produce new plants.
				Digging out plants is only practical with relatively minor infestations, at the initial stage of invasion, or where a site is to be excavated for development. If time constraints do not allow for the herbicide treatment and there is no space for burial on site, infested soils of Buddleia may be excavated to a depth of at least <i>c</i> . 2m (or to a depth where no root systems are visible); and, disposed of offsite at a licensed landfill as hazardous material, under license by National Parks and Wildlife Service
				Regular monitoring / follow up is required.
Silt fencing		Runoff	Garavogue Estuary: Cumeen strand	Silt fences will be constructed using a permeable filter fabric Hy-Tex Terrastop

Source	Pathway	Receptor	Mitigation Measure	
		/ Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Premium silt fence or similar, and installed as per manufacturers guidelines. Silt fencing to be strictly monitored for tears or breaches especially after periods of wet weather. (Sand to use washed non-calcareous sand (washing to occur off site)).	
Compound	Run off and spills	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	The proposed compound location is a dedicated area of hard standing (see SMP). The compound will be developed for the safe storage of materials, including a bunded refuelling station, drip trays, impermeable sheeting and spill kits. Due to the flood risk in the area the compound will be on a structure at a height above the 1 : 1000 years floor risk level, to ensure hazardous materials are protected from flood waters should they occur.	
Haulage routes,	Run off from	om Garavogue Estuary: Cumeen strand	Designated routes and parking areas are proposed.	
construction traffic	vehicles and construction site / Drumcliffe Ba	Bay SPA. Cumeen Strand SPA.	Speed limit of 15km p/hr.	
		Lough Gill SAC, Ballysadare SAC and	Vehicles carrying loose soil, aggregate and workings will be sheeted at all times.	
		Ballysadare SPA.	Appropriately designed vehicles for materials handling will be used.	
		and not left running when not in use.		
			Regular inspection and cleaning of local roads and site boundaries to check for dust deposits, and removal as required.	
			A self-contained wheel wash will be used.	
			All machines shall be suitably maintained to ensure that emissions of engine- generated pollutants shall be kept to a minimum in accordance with 'Measures Against the Emission of Gaseous and Particulate Pollutants from Internal Combustion Engines to be Installed in Non-Road Mobile Machinery' (2002/88/EC) and 'Emissions of Pollutants from Diesel Engines' (2005/21/EC).	
			Vehicles will not be left running unnecessarily and low emission fuels will be used where possible.	
Site preparation,	Run off from	Garavogue Estuary: Cumeen strand	Prior to construction:	
topsoil removal,	construction site	/ Drumclitte Bay SAC, Drumcliffe Bay SPA Cumeen Strand SPA	IAPS plan to be implemented.	
levelling and		Lough Gill SAC, Ballysadare SAC and	Erosion control is the first line of defence followed by sedimentation controls.	
excavation of		Ballysadare SPA.	The site substrate will be stabilised around the boundary to prevent any surface run off. This will be done by erection of Silt fencing.	
underground car			run on. This will be done by erection of Silt fencing.	

Source	Pathway	Receptor	Mitigation Measure
park. Materials storage, stockpiling.	Run off from construction site.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	During excavation material will be loaded directly into a tipping lorry for removal to a licenced landfill facility. Excavation works will not be carried out during or following heavy rainfall. Dewatering of excavations shall be avoided where possible. If required, this will be achieved by pumping excess water to settlement tanks or filtration systems located at the construction site, where the water will be retained for a sufficient length of time to allow particles to settle. Silt de-watering bags shall be used when water is being discharged. This discharged water will be within prescribed water quality limits (i.e. ≤25mg/L Total Suspended Solids [TSS] in accordance with the Freshwater Fish Directive [2006/44/EC] and Salmonid Waters Regulations [1988]). Disturbed soils will be stabilised as soon as practicable, either temporarily or permanently as required, e.g. sowing, impermeable mats. Stockpiles of materials will be located in a designated area, see SMP. Surface areas of stockpiles will be kept to a minimum to reduce area of surfaces exposed to wind pickup. Where appropriate, windbreak netting/screening will be positioned around material stockpiles and vehicle loading/unloading areas.
			(plastic sheeting). During dry or windy weather, material stockpiles and exposed surfaces will be covered. Silt fencing will be established at the top of stockpiles and around the compound
			area.
Excavation to install drains	Run off from construction site.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Large excavation works to be done in dry weather. Excavated material to be loaded onto lorries/dumper truck for immediate reuse or stockpiling in designated area. Drains to be protected with geotextile bund, fixed with sandbags to prevent surface water runoff into the openings. During utility and drainage works, silt traps will be created using sandbags when
			connecting to the facility infrastructure to ensure no sediment is released down the pipes. Any sediment will be removed manually and relocated on site.
Contaminated water	Run off from construction site.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe	Existing drains will be closed to facilitate construction. Storm water drains will be created and directed to settlement tank and released as required in a controlled

Source	Pathway	Receptor	Mitigation Measure
	Pollution.	Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	manner. Silt de-watering bags shall be used when water is being discharged. This discharged water will be within prescribed water ouality limits (i.e. ≤25mg/L Total Suspended Solids [TSS] in accordance with the Freshwater Fish Directive [2006/44/EC] and Salmonid Waters Regulations [1988]). Settlement tanks will be appropriately sized to cope with a 1 in 10 year storm event of 14hour duration. If dewatering is required the water will be pumped to the settlement tank to allow sediment to settle before water is reused or discharged.
			The vehicle wash proposed (see CEMP) will be connected to the settlement tank where water will be treated prior to release, see SMP.
			All drain inlets that could receive storm water and runoff (outside the site perimeter) from the site will be protected using drain covers, and maintained. During construction the site will be serviced by portaloos. These will be serviced regularly by a licensed contractor.
			The ECoW will monitor the system, to ensure water discharges meet the baseline levels. Ongoing monitoring may indicate the need for additional sediment controls. Location, quantity and method of installation will be agreed in consultation with the ECoW and site manager and statutory agencies as required.
Contamination from hazardous materials -	Run off from construction site,	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe	Refuelling of plant/machinery will be undertaken in designated areas on an impermeable surface within the compound area, see SMP.
oils, fuels, chemicals	spills and leaks. Pollution.	Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and	Refuelling will always be carried out in a controlled manner with absorbent materials available to clean up any spillages.
	Ballysadare SPA.	Ballysadare SPA.	All machinery/equipment will be well serviced and in good working condition. Machinery/equipment will be inspected daily for leaks of hydrocarbons. Any faulty machinery/equipment will be repaired/replaced immediately.
			A bunded storage area will be located in a designated area within the compound and will be provided for the duration of the construction period for the storage of oils, fuels, chemical and other hazardous materials, see SMP. These will be stored in the raised compound area, which will protect hazardous materials in the event of flood.
			If any oil or fuel is stored in the area, it will be kept in a bunded area (providing 110% capacity of the largest stored unit). Chemicals will have individual separate bunds and storage areas.

Source	Pathway	Receptor	Mitigation Measure
			Associated waste materials will be transported by registered carriers, and disposed of to appropriately licensed sites.
			Drip trays will be supplied for static machinery.
			Spill kits will contain 10 terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent contamination of groundwater.
			A 24-hour, seven-day week Emergency Response protocol will be written up and implemented to respond to any emergency incidents which may occur on the Site. Procedures will be set in place to respond to any emergency incidents which may occur on the Site. All appropriate staff will be trained and made aware of the pollution and spill contingency procedures set in place. In the event of an incident the NPWS, IFI and the Environment Protection Agency will be notified immediately.
Concrete	Run off from construction site. Pollution.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Pouring concrete will not be carried out during periods of heavy rainfall. Premix concrete lorries will deliver all concrete to site, which will be pumped directly into the required area. Vehicles will leave immediately after delivery. Strictly no washing of concrete premix lorries will be permitted on site.
Dirty vehicles and equipment	Run off from construction site. Pollution.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	A designated wheel wash is proposed, (see SMP and CEMP) the water from which will be directed to the settlement tank. A designated area will be allocated for the washing of other equipment; the dirty water from same will be contained and redirected to the settlement tanks.
Waste management	Construction site.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Waste will be removed from the site and disposed of by an approved waste contractor in accordance with prevailing waste management regulations. On completion of the works, all apparatus, plant, tools, offices, sheds, surplus materials, rubbish and temporary erections or works of any kind will be removed from the site.
Completions and landscaping	Run off from construction site.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and	Disturbed soils will be stabilised as soon as practicable by sowing. Silt fencing will remain until soils are stabilised.

			Provide the second seco
Source	Pathway	Receptor	Mitigation Measure
		Ballysadare SPA.	The second se
Emergency Event	Run off from construction site, Spills, damage to equipment.	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	All operatives pre, during and post construction will be made fully aware of the environmental sensitivities in the area and the procedures to follow in the event of an emergency or pollution incident. If an emergency event should arise (e.g. an extreme weather event), with the capability of generating additional erosion and sediment laten runoff the necessary equipment required in responding to this event will be stored on site. Staff will be trained in the use and application of these temporary emergency measures which may involve: Impermeable matting, silt fences, mulching and portable settlement tanks. In the event of an incident the NPWS, IFI and the Environment Protection Agency will be notified immediately. See draft emergency plan in CEMP.
Operation	Run off from site	Garavogue Estuary: Cumeen strand / Drumcliffe Bay SAC, Drumcliffe Bay SPA, Cumeen Strand SPA, Lough Gill SAC, Ballysadare SAC and Ballysadare SPA.	Surface water requiring treatment will pass through hydrocarbon /silt interceptors prior to release to Garavogue estuary. Alarmed hydrocarbon/ silt interceptors will be maintained and a service agreement will be in place to provide this service. Water sampling will be carried out to monitor discharge water levels leaving the site. The SuDs design will retain and slow the flow of surface water out to the Estuary.
Table 7.5	Mitigation measures	for ALL ECOLOGICAL AND NATURA 200	00 aspects of the project

### 8.0 Residual Effects

Table 5.2 details the relevant Qualifying Interests and Special Conservation Interests on which this Natura Impact Statement is based. The project has been assessed in terms of the potential for residual effect which may affect reaching specified targets in the Conservation Objectives for the **relevant qualifying interests** see Appendix 2. From the information provided by the project promoter, the assessment of the suitability and effectiveness of proposals suggests that potential risks pertaining to the construction and operational phases of the project have been addressed. Sufficient mitigation is proposed to:

- protect the receiving marine environment and the species that rely on same;
- protect from the effects of noise, disturbance and displacement caused by the project;
- Protect against light pollution and reflection;
- ensure spread of invasive species does not occur and
- ensure species reduction does not occur.

The potential for residual effects on the following designated sites and their relevant qualifying interests has therefore been removed.

# Residual impacts pertaining to the construction and operational phases of development are not anticipated.

# 9.0 In-combination impacts

The potential for in-combination impacts to arise from the project proposal is regulated and controlled by the environmental policies and objectives of the Sligo County Council; there are a number of policies within the county development plan to which the project proposal relates, interalia.

**SP-S-1** Pursue the accelerated and compact development of Sligo Town as a Regional Growth Centre and economic driver for the North-West region.

**P-BD-1** Protect, conserve, enhance and sustainably manage the natural heritage, biodiversity, geological heritage, landscape and environment of County Sligo.

**P-BD-3** Ensure that the ecological impact of all development proposals on habitats and species are appropriately assessed by suitably qualified professionals, in accordance with best practice guidelines, taking full account of the precautionary principle where uncertainty exists.

**P-DSNC-1** Protect and maintain the conservation status of all natural heritage sites designated or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), Ramsar Sites, Statutory Nature Reserves, as identified by the Minister for Culture, Heritage and the Gaeltacht, and any other sites that may be proposed for designation during the lifetime of this Plan.

**P-DSNC-2** Promote the maintenance and, as appropriate, achievement of 'favourable conservation status' of habitats and species in association with the National Parks and Wildlife Service (NPWS).

Any existing/proposed plan or project that could potentially affect Natura 2000 sites in Garavogue Esturay and Sligo bay, in combination with the proposed development, must adhere to the overarching environmental policies of the County Development Plan and Local Area Plans. These policies will ensure the protection of the Natura 2000 sites within the zone of influence of the proposed project and include the requirement for any future plans or projects to undergo Screening for Appropriate Assessment and/or Appropriate Assessment (NIS) to examine and assess their effects on Natura 2000 sites, alone and in combination with other plans and projects.

According to the Sligo County Council Planning portal there were no other planning application pending in the immediate vicinity of the project area at the time of writing,

In the context of the relevant species Harbour Seal, Otter, Salmon, Lamprey and waterbirds, the potential in combination impact could arise from a significant increase of dwellings surrounding the mudflats in the local area. This could result in a high degree of indirect habitat loss/degradation, through increased disturbance during construction and post construction phases. However, there is adequate mitigation to ensure that significant effects will not occur during construction and operation phases. The development is compact with a

small footprint, located within the busy town of Sligo; Waterbirds and Otter are accustomed to a large amount of activity and lighting. Marine based species will not be affected by the project. The project is screened from the estuary by the existing docks and pontoons, which will remain, they provide effective visual screening between activity and birds on the mudflats. The project will blend in with the existing urban environment and does not change the use or increase the activity in the area significantly. Therefore, it can be concluded that there are no predicted in-combination impacts arising from the Project.

With regard to the project proposed is has been determined that there will be no residual effects on the Natura 2000 sites within the zone of influence of the project. As the proposed development itself will not have any effects on the conservation objectives of any Natura 2000 sites, considering the environmental policies outlined above, and considering the mitigation measures described in Section 7.6 there is no potential for any other plan or project to adversely affect the integrity of any Natura 2000 sites in combination with the proposed development.

In- combination impacts are therefore not likely.

#### 10.0 Conclusion

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to those Natura 2000 sites within the zone of influence of the proposed development, the potential impact sources and pathways, how these could impact on the sites' qualifying interests or special conservation interests and whether the predicted effects would adversely affect the integrity of Cumeen strand / Drumcliffe Bay SAC, Cumeen Strand SPA, Lough Gill SAC, Drumcliff Bay SPA, Ballysadare Bay SAC and Ballysadare Bay SPA. There are no other Natura 2000 sites at risk of effects from the proposed development.

It has been objectively concluded from the examination, analysis and evaluation, in light of best scientific knowledge, of all relevant information in respect of the qualifying interests and special conservation interests, and of the proposed development, potential effects from same, and the mitigation measures outlined as presented in section 7 of this report, that the development proposed by Dockside New Properties Ltd. will not adversely affect (either directly or indirectly) the integrity of Cumeen strand / Drumcliffe Bay SAC, Cumeen Strand SPA, Lough Gill SAC, Drumcliff Bay SPA, Ballysadare Bay SAC and Ballysadare Bay SPA or any other Natura 2000 site, either alone or in combination with other plans or projects.

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Appendix 1. Construction and Environmental Management Plan





Appendix 2. Assessment of potential for Residual Effects

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Conservation	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
Objective			
SAC Cumeen strand /	Drumcliffe Bay SAC	<u>``O.</u>	
Objective: To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Target 1: The permanent habitat area is stable or increasing, subject to natural processes. This target refers to activities or operations that propose to permanently remove habitat from a site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site. Early consultation or scoping with the Department in advance of formal application is advisable for such proposals. Target 2: Maintain the extent of the Zostera-dominated community and Mytilidae-dominated community complex, subject to natural processes. Zostera-dominated community complex, subject to natural processes. Zostera-dominated community and Mytilidae-dominated community complex are considered to be keystone communities that are of considerable importance to the overall ecology and biodiversity of a habitat by virtue of its physical complexity, e.g. the former community serves as important nursery grounds for commercial and non-commercial species while the latter provides an important food source for a number of bird species and also a diversity of niches that results in increased numbers of species. Any significant anthropogenic disturbance to the extent of this community should be avoided. The areas given below are based on spatial interpolation and therefore should be considered indicative: - Zostera-dominated community – 11ha - Mytilidae-dominated community complex- 18ha Target 3 Conserve the high quality of the Zostera-dominated community, subject to natural processes. It is important to ensure the quality as well as the extent of Zostera-dominated community, subject to natural processes. It is inducted to easing the pability; all important components in maintaining the structural and functional integrity of the habitat. Target 4 Conserve the high quality of the Mytilidae-dominated community complex, subject to natural processes.	Yes, mitigation measures proposed to protect the receiving marine environment during construction and operation. See section 7 for full details on mitigation measures.	No residual effect

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures.	Residual effect?
	Every effort should be made to avoid any death to living Mytilids.	<u>()</u>	
	Any significant anthropogenic disturbance to the quality (e.g. living individual/m2) of the community should be avoided.	•	27/02
	Target 5 Conserve the following community types in a natural condition: Intertidal fine sand with Peringia ulvae and Pygospio elegans community complex; Estuarine mixed sediment to sandy mud with Hediste diversicolor and oligochaetes community complex; Fine sand with crustaceans and Scolelepis (Scolelepis) squamata community complex; Fine sand with Angulus spp. and Nephtys spp. community complex.		Thop's
	The estimated areas of these community types within the Mudflats and sandflats not covered by seawater at low tide habitat given below are based on spatial interpolation and therefore should be considered indicative:		
	- Intertidal fine sand with Peringia ulvae and Pygospio elegans community complex – 1423ha		
	<ul> <li>Estuarine mixed sediment to sandy mud with Hediste diversicolor and oligochaetes community complex – 102ha</li> </ul>		
	<ul> <li>Fine sand with crustaceans and Scolelepis (Scolelepis) squamata community complex – 90ha</li> </ul>		
	- Fine sand with Angulus spp. and Nephtys spp. community complex – 644ha		
	Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.		
	Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.		
Objective: To	No barriers for migratory life stages of lamprey moving from freshwater to		No residual effect
maintain the	marine habitats and vice versa. This SAC only covers marine/estuarine habitat		
ravourable	and it is not anticipated that it contains suitable spawning or nursery habitat.		

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures.	Residual effect?
conservation condition of River Lamprey in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill. Lough Gill SAC (site code: 1976), which is adjacent to this SAC, encompasses the freshwater elements of river lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants		27/02/2025
<b>Objective:</b> To restore the favourable conservation condition of Sea Lamprey in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	No barriers for migratory life stages of lamprey moving from freshwater to marine habitats and vice versa. This SAC only covers marine/estuarine habitat and it is not anticipated that it contains suitable spawning or nursery habitat. Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill. Lough Gill SAC (site code: 1976), which is adjacent to this SAC, encompasses the freshwater elements of sea lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants		No residual effect
<b>Objective</b> : To maintain the favourable conservation condition of Estuaries in the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Target 1: The permanent habitat area is stable or increasing, subject to natural processes. This habitat also encompasses the Annex I habitat of mudflats and sandflats not covered by seawater at low tide. In such areas, the specific targets for that Annex I habitat will address requirements within the Annex I habitat estuaries. This target refers to activities or operations that propose to permanently remove habitat from a site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site. Target 2. Maintain the extent of the Zostera-dominated community and Mytilidae-dominated community complex, subject to natural processes. A Zostera-dominated community and Mytilidae-dominated community complex are considered to be keystone communities that are of considerable importance to the overall ecology and biodiversity of a habitat by virtue of its physical complexity, e.g. the former community serves as important nursery grounds for commercial and non-commercial species while the latter provides an important food source for a number of bird species and also a diversity of niches the results in increased numbers of species.		No residual effect on T1.

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
	should be avoided.		No residual effect on T2, T3, T4: Risk of
	An interpolation of the likely distribution of these community types are provided . The areas given below are based on spatial interpolation and therefore should be considered indicative:		potytion addressed by mitigation measures.
	- Zostera-dominated community – 11ha		0
	- Mytilidae-dominated community complex- 18ha		
	Target 3. Conserve the high quality of the Zostera-dominated community, subject to natural processes.		
	It is important to ensure the quality as well as the extent of Zostera-dominated communities is conserved. For example, percent coverage can provide an indication of the habitat quality as well as giving information on the habitat complexity and refuge capability; all important components in maintaining the structural and functional integrity of the habitat.		
	Target 4 Conserve the high quality of the Mytilidae-dominated community complex, subject to natural processes.		
	Every effort should be made to avoid any death to living Mytilids.		
	Any significant anthropogenic disturbance to the quality (e.g. living individual/m2) of the community should be avoided.		
	Target 5 Conserve the following community types a natural condition: Intertidal fine sand with Peringia ulvae and Pygospio elegans community complex; Estuarine mixed sediment to sandy mud with Hediste diversicolor and oligochaetes community complex; Fine sand with Angulus spp. and Nephtys spp. community complex and Sand to mixed sediment with amphipods community; Intertidal reef community.		
	The estimated area of these community types within the Estuaries habitat given below is based on spatial interpolation and therefore should be considered indicative:		No residual effect on T5: Sort term risk of water pollution during
	- Intertidal fine sand with Peringia ulvae and Pygospio elegans community		construction has been

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
	<ul> <li>complex - 796ha</li> <li>Estuarine mixed sediment to sandy mud with Hediste diversicolor and oligochaetes community complex - 136ha</li> <li>Fine sand with Angulus spp. and Nephtys spp. community complex - 258ha</li> <li>Sand to mixed sediment with amphipods community - 22ha</li> <li>Intertidal reef community - 13ha</li> <li>Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.</li> <li>Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.</li> </ul>		removed; sufficient mitigation measures are proposed to eliminate/reduce risk of deterioration of key resources Operation: Adequate surfacewater treatment proposed.
<b>Objective:</b> To maintain the favourable conservation condition of harbour seal in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	<ul> <li>Target 1 Species range within the site should not be restricted by artificial barriers to site use.</li> <li>This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.</li> <li>It does not refer to short-term or temporary restriction of access or range.</li> <li>Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.</li> <li>Target 2 Conserve the breeding sites in a natural condition.</li> <li>This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.</li> </ul>	Yes, mitigation measures proposed to protect the receiving marine environment during construction and operation. Mitigation included to minimise short term effects of piling See section 7 for full details on mitigation measures.	No residual effects on T1-T4.

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
	Operations or activities that cause displacement of individuals from a breeding site or alteration of natural breeding behaviour, and that may result in higher mortality or reduced reproductive success, would be regarded as significant and should therefore be avoided.	Š.	2,102
	Target 3 Conserve the moult haul-out sites in a natural condition.		5020
	This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.		101
	Operations or activities that cause displacement of individuals from a moult haul-out site or alteration of natural moulting behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.		
	Target 4 Conserve the resting haul-out sites in a natural condition.		
	This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting.		
	Operations or activities that cause displacement of individuals from a resting haul-out site to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.		
	Target 5 Human activities should occur at levels that do not adversely affect the harbour seal population at the site.		
	Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of harbour seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species annual cycle.		
	This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour seals depend. In the absence of complete knowledge on the species ecological requirements in this site such considerations should be assessed		No residual effects on T5 Mitigation with

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
	where appropriate on a case-by-case basis. Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour seal population at the site.	Š.	regard to loud noise From construction and hypercological impacts.
Drumcliffe Bay SPA			
<b>Objective:</b> To maintain the favourable conservation condition of the non- breeding waterbird Special Conservation Interest species listed for Drumcliff Bay SPA.	<ul> <li>Target 1:</li> <li>To be favourable, the long term <b>population trend</b> for each waterbird Special Conservation Interest species should be stable or increasing. Waterbird populations are deemed to be unfavourable when they have declined by 25% or more, as assessed by the most recent population trend analysis.</li> <li>Target 2: To be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation.</li> <li>Factors that can adversely effect the achievement of Objective 1 include: Habitat modification: activities that modify discrete areas or the overall habitat(s) within the SPA in terms of how one or more of the listed species use the site (e.g. as a feeding resource) could result in the displacement of one or more of the listed waterbird species from areas within the SPA and/or a reduction in their numbers.</li> <li>Disturbance: anthropogenic disturbance that occurs in or near the site and is either singular or cumulative in nature could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers.</li> <li>Ex-situ factors: the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it. The reliance on these habitats will vary from species to species and from site to site. Significant habitat change or increased levels of disturbance within these areas could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers.</li> </ul>	Yes, mitigation measures proposed to protect the receiving freshwater and marine environment during construction and operation. See section 7 for full details on mitigation measures.	No residual effect on T1 or T2 Disturbance effects are short term, Hydrological effects have been addressed and mitigation regarding light and reflection included.
Objective: To	Target 1:		No residual effect on
maintain the			T1: The
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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures.	Residual effect?
favourable conservation condition of the wetland habitat at Drumcliff Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	To be favourable, the permanent <b>area</b> occupied by the wetland habitat should be stable and not significantly less than the area of <b>1,843 ha</b> , other than that occurring from natural patterns of variation.		boundary/extent of the SPA will not be affected by the proposal.
Cumeen Strand SPA			
<b>Objective:</b> To maintain the favourable conservation condition of the non- breeding waterbird Special Conservation Interest species listed for Cummeen Strand SPA.	Target 1: To be favourable, the long term <b>population trend</b> for each waterbird Special Conservation Interest species should be stable or increasing. Waterbird populations are deemed to be unfavourable when they have declined by 25% or more, as assessed by the most recent population trend analysis. Target 2: To be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation. Factors that can adversely affect the achievement of Objective 1 include: Habitat modification: activities that modify discrete areas or the overall habitat(s) within the SPA in terms of how one or more of the listed species use the site (e.g. as a feeding resource) could result in the displacement of these species from areas within the SPA and/or a reduction in their numbers (for further discussion on this topic please refer to Section 5.4). Disturbance: anthropogenic disturbance that occurs in or near the site and is either singular or cumulative in nature could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers Ex-situ factors: several of the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it. The reliance on these habitats will vary from species to species and from site to site. Significant	Yes, mitigation measures proposed to protect the receiving freshwater and marine environment during construction and operation. See section 7 for full details on mitigation measures.	No residual effect on T1 or T2 Disturbance effects are short term, Hydrological effects have been addressed and mitigation regarding light and reflection included.

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
	areas within the SPA, and/or a reduction in their numbers.	<b>S</b> .	
<b>Objective:</b> To maintain the favourable conservation condition of the wetland habitat at Cummeen Strand SPA as a resource for the regularly- occurring migratory waterbirds that utilise it.	Target 1: To be favourable, the permanent <b>area</b> occupied by the wetland habitat should be stable and not significantly less than the area of <b>1,732 ha</b> , other than that occurring from natural patterns of variation.		No residual effect on T1 The boundary/extent of the SPA will not be affected by the proposal.
Lough Gill SAC			
<b>Objective:</b> To restore the favourable conservation condition of Sea Lamprey ( <i>Petromyzon</i> <i>marinus</i> ) in Lough Gill SAC	Greater than 75% of main stem length of rivers accessible from estuary. Annual run size should reflect that expected under near-natural conditions. Larval lamprey present in SAC catchment. No decline in extent and distribution of spawning and nursery beds.	Yes, mitigation measures proposed to protect the receiving freshwater and marine environment during construction and operation. Mitigation included to minimise short term effects of piling should it occur during migration. See section 7 for full details on mitigation measures.	No significant residual effects.
<b>Objective:</b> To restore the favourable conservation condition of River Lamprey ( <i>Lampetra</i> <i>fluviatilis</i> ) in Lough Gill SAC	Access to all water courses down to first order streams. Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey. At least three age/size classes of larval brook/river lamprey present. Mean density of brook/river larval lamprey in sites with suitable habitat at least 5/m <sup>2</sup> .	Yes, mitigation measures proposed to protect the receiving freshwater and marine environment during construction and operation. Mitigation included to minimise short	No significant residual effects.

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures.	Residual effect?
	No decline in extent and distribution of spawning and nursery beds.	term effects of piling should it occur during migration. See section 7 for full details on mitigation measures.	27/02/2015
<b>Objective:</b> To restore the favourable conservation condition of Atlantic Salmon (Salmo salar) in Lough Gill SAC	Distribution: extent of anadromy: 100% of river channels down to second order accessible from estuary. Adult spawning fish: Conservation limit (CL) for each system consistently exceeded. Salmon fry abundance: Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling. Out-migrating smolt abundance: No decline in number and distribution of spawning redds due to anthropogenic causes. Water quality: At least Q4 at all sites sampled by EPA.	Yes, mitigation measures proposed to protect the receiving freshwater and marine environment during construction and operation. Mitigation included to minimise short term effects of piling should it occur during migration. See section 7 for full details on mitigation measures.	No significant residual effects
<b>Objective:</b> To maintain the favourable conservation condition of Otter ( <i>Lutra lutra</i> ) in Lough Gill SAC	<ul> <li>Distribution: No significant decline.</li> <li>Extent of terrestrial habitat: No significant decline. Area mapped and calculated as 193.91ha along river banks/ lake shoreline/around ponds.</li> <li>Extent of freshwater (river) habitat: No significant decline. Length mapped and calculated as 80.38km.</li> <li>Extent of freshwater (lake) habitat: No significant decline. Area mapped and calculated as 353.39ha.</li> <li>Couching sites and holts: No significant decline</li> <li>Fish biomass available: No significant decline</li> <li>Barriers to connectivity: No significant increase.</li> </ul>	Yes, mitigation measures proposed to protect the receiving marine environment during construction and operation. Mitigation included to minimise short term effects of piling should it occur during migration. See section 7 for full details on mitigation measures.	No residual effect.
Ballysadare SAC		L	
Objective: To	Target 1 Species range within the site should not be restricted by artificial	Yes, mitigation measures	No residual effects on

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures.	Residual effect?
maintain the	barriers to site use.	proposed to protect the 🚫	T1-T4.
favourable conservation condition of harbour seal in Ballysadare	This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.	receiving marine environment during construction and operation. Mitigation included to minimise short term effects of piling. See section 7 for full details on mitigation measures.	
Bay SAC	It does not refer to short-term or temporary restriction of access or range.		
	Target 2 Conserve the breeding sites in a natural condition.		
	This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.		
	Operations or activities that cause displacement of individuals from a breeding site or alteration of natural breeding behaviour, and that may result in higher mortality or reduced reproductive success, would be regarded as significant and should therefore be avoided.		
	Target 3 Conserve the moult haul-out sites in a natural condition.		
	This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.		
	Operations or activities that cause displacement of individuals from a moult haul-out site or alteration of natural moulting behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.		
	Target 4 Conserve the resting haul-out sites in a natural condition.		
	This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting		
	Operations or activities that cause displacement of individuals from a resting		

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures.	Residual effect?
	haul-out site to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.	S.	٢,
	Target 5 Human activities should occur at levels that do not adversely affect the harbour seal population at the site.		(D) D
	Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of harbour seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species annual cycle.		· Q.Z.
	This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour seals depend. In the absence of complete knowledge on the species ecological requirements in this site such considerations should be assessed where appropriate on a case-by-case basis.		No residual effects on
	Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour seal population at the site.		T5 Mitigation with regard to loud noise from construction and hyrdrological impacts.
Ballysadare SPA			
<b>Objective:</b> To maintain the favourable conservation condition of the non- breeding waterbird Special Conservation Interest species listed for Ballysadare Bay SPA.	To be favourable, the long term <b>population trend</b> for each waterbird Special Conservation Interest species should be stable or increasing. Waterbird populations are deemed to be unfavourable when they have declined by 25% or more, as assessed by the most recent population trend analysis. To be favourable, there should be no significant decrease in the range, timing		No residual effect on T1 or T2 Disturbance effects are short term, Hydrological effects have been addressed and mitigation regarding light and reflection included.
	or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation.7 Factors that can adversely effect the achievement of Objective 1 include: Habitat modification: activities that modify discrete areas or the overall habitat(s) within the SPA in terms of how one or more of the listed species use the site (e.g. as a feeding resource) could result in the displacement of these species from areas within the SPA and/or a reduction in their numbers.	Yes, mitigation measures proposed to protect the receiving freshwater and marine environment during construction and operation. See section 7 for full details on mitigation	

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Conservation Objective	Target & Interpretation of target (TNo.)	Mitigation Measures	Residual effect?
	Disturbance: anthropogenic disturbance that occurs in or near the site and is either singular or cumulative in nature could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers	measures.	27/02/2
	Ex-situ factors: several of the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas outside of the SPA but ecologically connected to it. The reliance on these habitats will vary from species to species and from site to site. Significant habitat change or increased levels of disturbance within these areas could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers.		NO <sub>2</sub> S
<b>Objective:</b> To maintain the favourable conservation condition of the wetland habitat at Ballysadare Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	To be favourable, the permanent <b>area</b> occupied by the wetland habitat should be stable and not significantly less than the area of <b>2,130 ha</b> , other than that occurring from natural patterns of variation.		No residual effect on T1: The boundary/extent of the SPA will not be affected by the proposal.