Natura Impact Statement and Appropriate Assessment Screening Report

Volume 2 – Onshore

Sceirde Rocks Offshore Wind Farm, Co. Galway

Contents

APPENDICES

1. INTRODUCTION

1.1 Background

MKO has been appointed by Fuinnemah Sceirde Teoranta ('the Applicant') to provide the information necessary to allow the competent authority to conduct an Appropriate Assessment in respect of the Onshore Site element of the proposed Sceirde Rocks Offshore Wind Farm.

An Appropriate Assessment Screening Document for the Onshore Site is included as Appendix 1 to this report. The Appropriate Assessment Screening assessment has identified the European Sites upon which the Onshore Site has the potential to result in likely significant effects and the pathways by which those effects may occur.

This document is a Natura Impact Statement (NIS) pertaining to the Onshore Site of the Project only, but also considers any potential effects that the Offshore Site may have in cumulation with the Offshore Site. Details on the how the various elements of the project are referenced are provided in Section 1.3.

This NIS provides the necessary information for the consenting authority to determine, through an Appropriate Assessment, whether or not the Onshore Site, individually or in combination with other plan or projects, will result in any adverse effects on the integrity any European Site, in light of its conservation objectives.

1.2 Legal Context

European Community (EC) Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna, commonly known as the Habitats Directive, was established by the EC to meet its obligations under the 1979 Convention on the Conservation of European Wildlife and Natural Habitats, commonly known as the Bern Convention, and to complement the provisions of the already established EC Directive 79/409/EEC on the conservation of wild birds (now replaced by EC Directive 2009/147/EC). The main aim of the Habitats Directive is to 'contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora' by way of actions taken to 'maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest'. Habitats and species of Community interest are defined in a number of Annexes of both the Habitats and Birds Directives.

As part of the Habitats and Birds Directives, protection must be afforded to appropriate sites to assist in fulfilling the aims of the Directives. Specifically, SACs must be designated under the Habitats Directive for habitats and species listed on Annex I and Annex II of the Habitats Directive, whilst under the Birds Directive, SPAs must be designated for species listed on Annex I of the Directive. Collectively, these sites are referred to as European sites.

The Habitats Directive and the Birds Directive have been transposed into Irish law *inter alia* by the European Communities (Birds and Natural Habitats) Regulations 2011 as amended.

This NIS has been prepared in accordance with the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*

Habitats and species of European importance are provided legal protection under the EU Habitats Directive 92/43/EEC (the Habitats Directive) and the EU Birds Directive 2009/147/EC (the Birds Directive) this legislation forms the cornerstone of Europe's nature conservation within the EU. It is built around two pillars: the Natura 2000 network of protected sites (hereafter referred to as European sites[1]) and the strict system of species protection. Both the Habitats and Bird Directives have been transposed into Irish law by Part XAB of the Planning and Development Acts 2000 (as amended) (from a land use planning perspective) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011).

Annex I of the Habitats Directive lists habitat types whose conservation requires the designation of Special Areas of Conservation (SAC). Priority habitats, such as Turloughs, which are in danger of disappearing within the EU territory are also listed in Annex I. Annex II of the Directive lists animal and plant species (e.g. marsh fritillary, Atlantic salmon, and Killarney fern) whose conservation also requires the designation of SAC. Annex IV lists animal and plant species in need of strict protection such as lesser horseshoe bat and otter, and Annex V lists animal and plant species whose taking in the wild and exploitation may be subject to management measures. In Ireland, species listed under Annex V include Irish hare, common frog and pine marten. Species can be listed in more than one Annex, as is the case with otter and lesser horseshoe bat which are listed on both Annex II and Annex IV. The disturbance of species under Article 12 of the Habitats Directive (and in particular avoidance of deliberate disturbance of Annex IV species, particularly during the period of breeding, rearing, hibernation and migration and avoidance of deterioration or destruction of breeding sites or resting places) has been specifically assessed in this NIS.

The Birds Directive instructs Member States to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (Article 2). Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3). A subset of bird species has been identified in the Directive and are listed in Annex I as requiring special conservation measures in relation to their habitats. These species have been listed on account of inter alia: their risk of extinction; vulnerability to specific changes in their habitat; and/or due to their relatively small population size or restricted distribution. Special Protection Areas (SPAs) are to be identified and classified for these Annex I listed species and for regularly occurring migratory species, paying particular attention to the protection of wetlands (Article 4).

1.3 References to the Project

This NIS pertains to the onshore element (Onshore Site) of the overall project. It does however assess the potential for adverse effects on the integrity of European Sites to occur in cumulation with the offshore elements (Offshore Site) of the project. The followings paragraphs set out the terms used to describe each element of the project.

For the purposes of this NIS:

Where the 'Project' is referred to, this encompasses both the 'Offshore Site' and 'Onshore Site'.
Where the 'Offshore Site' is referred to, this includes the Offshore Array Area, Offshore Substation, as well as the Offshore Export Cable, the Offshore Export Cable Corridor and the Landfall.
The 'Project' site is delineated in green in Figure 2-1 and where the Onshore Site is referred to, this relates to the onshore element of the Project only, the subject of this NIS. This includes the Onshore

[1] *The term Natura 2000 network was replaced by 'European site' under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.*

Landfall Location, Onshore Grid Connection, and Onshore Compensation Compound. Further details in relation to the Onshore Site elements are set out below:

- The 'Onshore Landfall Location' (OLL) - The location where the Offshore Export Cable will be brought ashore to meet the Transition Joint Bay (TJB);
- The 'Onshore Grid Connection' (OGC) – cabling that transports electricity from the Onshore Landfall Location to the Onshore Compensation Compound, and a second section of cabling connecting the Onshore Compensation Compound to the National Grid at the existing Moneypoint 220kV Substation; and
- The 'Onshore Compensation Compound' (OCC) - Eirgrid 220kV Gas Insulated Switchgear (GIS) building, ESB 220kV Gas Insulated Switchgear (GIS) building and associated buildings and compounds.

Full details of the Project is provided in Appendix A of the accompanying AASR.

1.4 Statement of Authority

Baseline ecological surveys of the Onshore Site in Co. Clare were undertaken throughout 2023 and 2024, by Pádraig Desmond (BSc.) and Stephanie Corkery (BSc., M.Sc.) of MKO. All surveyors have the relevant academic qualifications and experience in undertaking habitat and ecological assessments.

This Natura Impact Statement has been prepared by Stephanie Corkery and Pádraig Desmond. Pádraig is an experienced ecologist with 4 years professional experience in ecological consultancy. This Report has been reviewed by Pat Roberts (BSc, MCIEEM).

Pat Roberts is Principal Ecologist with MKO with over 19 years post graduate experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. Pat holds B.Sc. (Hons) in Environmental Science. Pat has extensive experience of providing ecological consultancy on large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage. He has worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close conjunction with project teams and contractors. He has worked extensively on the identification, control and management of invasive species on numerous construction sites. Prior to taking up his position with MKO in June 2005, Pat worked in Ireland, USA and UK as a Tree Surgeon and as a nature conservation warden with the National Trust (UK) and the US National Park Service. Pats key strengths include his depth of knowledge and experience of a wide range of ecological and biodiversity topics and also in his ability to understand the requirements of the client in a wide range of situations. He is currently responsible for staff development, training and ensuring that the outputs from the ecology team are of a very high standard and meet the requirements of the clients and relevant legislation and guidelines. He is a full member of the Chartered Institute of Ecologists and Environmental Managers (CIEEM)

Pádraig is a Project Ecologist with MKO with 5 years post graduate ecological experience, 4 years of which have been in ecological consultancy. Pádraig holds a BSc (Hons) in Ecology and Environmental Biology from University College Cork. Pádraig took up his position with MKO in December 2021, prior to which he worked as a Junior Ecologist with Envirico. Through these consultancy roles Pádraig has gained excellent experience in producing ecological reports such as Natura Impact Statements, Ecological Impact Assessments, Biodiversity chapters, Invasive Species Management Plans, and Constraints Reports for a wide range of projects including small private developments to housing developments and renewable energy projects such as solar and wind farms. Prior to the above roles, Pádraig worked as a field ecologist for the Department of Conservation in New Zealand, where he developed a strong field-based skill set. Pádraig's key strengths and areas of expertise are in terrestrial ecology, including vegetation surveys, habitat identification, invasive species surveys, mammal surveys,

Biodiversity Chapters of Environmental Impact Assessments, Appropriate Assessment and Ecological Impact Assessment. Pádraig is also skilled in GIS.

Stephanie is an Ecologist with MKO with over 2 years of experience in professional ecological consultancy. Stephanie holds a BSc. in Ecology and Environmental Biology, an MSc. in Marine Biology, and a HDip in Sustainability in Enterprise, all from University College Cork. Since joining MKO as a graduate in March 2022, Stephanie has worked on a wide variety of projects including wind farms, large scale residential developments, and County Council projects. Stephanie's key strengths include organising and carrying out both terrestrial and marine mammal surveys, as well as general ecological walkover surveys and bat surveys. She is also experienced in GIS, acoustic data analysis for bat species, and in preparing Appropriate Assessment Screening Reports (AASR), Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA), Biodiversity Chapters, and Bat Reports. Stephanie is also a JNCC Certified Marine Mammal Observer and has completed the ACCOBAMS Course for Highly Qualified Marine Mammal Observers (MMO) and Passive Acoustic Monitoring operators (PAM).

1.5 Methodology

1.5.1 Appropriate Assessment Screening

The first step of the appropriate assessment process considered which European Sites could have potential connectivity to the Onshore Site due to source-pathway-receptor model, and if there is potential for likely significant effects (LSEs) on any European Sites as a result of the construction, operation and maintenance, and decommissioning of the Onshore Site. This assessment has been carried out and can be found in Appendix 1. Where potential connectivity was identified in the Appropriate Assessment Screening Report in respect of European Sites they have been assessed in this volume of the NIS. All European Sites within the Zone of Influence detailed in the Appropriate Assessment Screening Report were considered in the initial screening stage.

These sites were then examined to establish if potential for LSEs existed on the European Sites as a consequence of the Onshore Site and Offshore Site – i.e. the Project. Where potential for LSEs was identified, based on a source-pathway - receptor model, the site was carried forward to Stage 2 – NIS.

1.5.2 NIS

Article 6(3) of the Habitats Directive 92/43/EEC (EC, 2021) states that any plan or project not directly connected with or necessary to the management of the (European) site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.

The NIS assesses whether there are adverse effects from the Onshore Site in cumulation with the Offshore Site - i.e. the Project - on the integrity of any European Sites where potential for LSE was identified in the Appropriate Assessment Screening Report, either individually or in combination with other plans or projects, in light of the European sites' conservation objectives, and the mitigation applied.

1.5.3 In-cumulation Assessment

Whilst this NIS assesses whether the Onshore Site will have an adverse effect on the integrity of the screened in European Sites, the in-Cumulation assessment considers the potential for adverse effects on the integrity of European Sites as a result of the cumulation of both the Onshore Site and Offshore Site i.e. the Project.

1.5.4 In-combination Assessment

As well as considering effects from the Project alone, the Habitats Directive require a consideration of potential effects on European sites arising from the Project in combination with other plans or projects.

The following development plans have been reviewed and taken into consideration as part of this assessment:

- Regional Spatial and Economic Strategy for the Southern Region (RSES) (2020-2032)
- Clare County Development Plan 2023-2029
- Ireland 4th National Biodiversity Action plan 2023-2030.
- Clare Biodiversity Action Plan 2017 – 2023
- Water Action Plan 2024

The review focused on policies and objectives that relate to European Sites of the Natura 2000 Network and are fully detailed in Appendix 4 of this NIS. The in-combination assessment will consider projects that are 'reasonably foreseeable' such as:

- Existing projects either built or in construction;
- Approved projects, awaiting implementation; and
- Proposals awaiting determination within the planning process with design information in the public domain.

Other onshore activities and industries that have been considered include:

- Private developments
- Commercial
- Agriculture
- Forestry
- Other renewable energy developments/infrastructure

A staged approach was undertaken to identify relevant in-combination projects, plans and activities for consideration within the NIS.

1.6 Structure and Format of this NIS

The points below set out the structure and format of this NIS for the Onshore Site associated with the Project:

- Section 2 provides a description of the Project, full details of which are included in Appendix A of the Onshore AASR.
- In Section 3, the characteristics of the receiving environment are fully described for the Onshore Site.
- Section 4 provides a detailed consideration of the European Sites Screened in for appropriate assessment and identifies the relevant qualifying features and how they may be affected as a result of the Onshore Site, in light of their Conservation Objectives.
- Section 5 provides an assessment of the potential for adverse effects on the integrity of the identified European Sites as a result of the Onshore Site in the absence of mitigation. This section also prescribes, where required, mitigation to prevent potential impacts from arising. A summary assessment of residual effects of the Onshore Site taking into consideration the proposed mitigation is then provided.
- Section 6 provides an assessment of potential in cumulation effects of the Onshore with the Offshore Site. It then assesses the potential for in-combination effects of, first, the Onshore Site and second, the Project (the Onshore Site and Offshore Site in

cumulation) on European Sites, when considered in combination with other plans and projects.
- A concluding statement is provided in Section 7 for the Onshore Site.

1.7 Conclusions of the Appropriate Assessment Screening

As per the conclusion of the AASR provided in Appendix 1, the potential for likely significant effects on the following European Sites, as a result of the Onshore Site, cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of their conservation objectives, individually, in cumulation with the Offshore Site, or in combination with other plans and projects:

- Tullaher Lough and Bog SAC (002343),
- Lower River Shannon SAC (002165),
- Carrowmore Dunes SAC (002250),
- River Shannon and River Fergus Estuaries SPA (004077), and
- Mid-Clare Coast SPA (004182).

As a result, an Appropriate Assessment is required, and this NIS has been prepared.

2. DESCRIPTION OF THE ONSHORE SITE

2.1 Onshore Site Location

The northern most point of the Onshore Site comprises the OLL, located approximately 3.5 km northwest of Doonbeg, Co. Clare (IG Ref. Q 93902 67729). It is proposed that the Onshore Grid Connection (OGC) will run underground, mostly within existing public road network but also through some private lands which include agricultural fields and a golf course.

Once the OGC makes landfall, it will first be lain within agricultural fields before it travels east towards Kilrush within local roads, including the L20301, L2030 (Carrowmore South), and the L2034. North of Kilrush, the OGC will be lain within third party lands including agricultural fields and Kilrush Golf Club.

After Kilrush, the OGC continues east along the Monava local road and the L6150, before continuing to the Moneypoint Power Station in grassy verges adjacent to the N67.

The OGC will connect to an Onshore Compensation Compound (OCC) at Ballymacrinnan near Moneypoint (IG Ref. R 02434 53153). The OGC will continue from the OCC to connect to the national grid at the existing 220kV substation at Moneypoint, Co. Clare (IG Ref. R 03877 51895). The townlands associated with the Onshore Site are listed in Table 2-1 below.

Current land use along the Onshore Site consists of the public road corridor, agricultural land, residential dwellings, recreation (golf course) and areas of public and private forestry.

The site location map of Sceirde Rocks Onshore Site is shown in Figure 2-1.

Table 2-1 Townlands associated with the Onshore Site

Townlands	
Killard	Durha
Doonmore	Ballykett
Carrowmore South	Parknamoney
Tullaher	Kilcarroll
Einagh	Feagarroge
Moanmore North	Dysert
Moanmore Upper	Clooneylissaun
Moanmore South	Ballymacrinan
Moanmore Lower	Carrowdotia North
Carnaun	Carrowdotia South

2.2 Characteristics of the Project

The proposed Sceirde Rocks Offshore Wind Farm comprises both the Offshore Site and Onshore Site, as described below. These are collectively referred to as 'the Project'.

The Project will consist of the provision of the following:

Offshore Development:

i. 30 no. offshore Wind Turbine Generators (WTGs) with gravity based fixed-bottom foundations with the following details:
   - Tip height of 324.9m above Lowest Astronomical Tide (LAT),

- Rotor diameter of 292m;
- Hub height of 178.9m above LAT;

ii. 1 no. 220kV offshore substation (OSS) of 55 m in height above LAT (including crane and communications mast) with a gravity based fixed bottom foundation. The OSS consists of an offshore electrical substation platform with multiple decks accommodating the electrical and communications plant and equipment, ancillary components and welfare facilities;

iii. A network of inter-array electrical and communication cables, of approximately 73 km in length, connecting the 30 WTGs to the OSS;

iv. A 220kV offshore export cable complete with communication lines, of approximately 63.5 km in length, laid in and on the seabed from the OSS to landfall in the townland of Killard, Co. Clare;

v. Seabed preparation for WTG, OSS and cable installation including rock placement, dredging and disposal;

vi. Cable protection including trenching and burial, rock berms, and concrete mattresses.

Onshore Development:

vii. An underground Transition Joint Bay (TJB) at the landfall point in the townland of Killard, Co. Clare connecting the offshore export cable to the onshore grid connection cable. The TJB consists of an underground concrete chamber (20m x 5m wide, with a depth of 2.5m), where the proposed offshore export cable will be connected to the onshore grid connection cable;

viii. 220kV onshore grid connection and communications cables laid underground, primarily in the public road corridor with small sections in third party lands, for approximately 19.3 km between the TJB in the townland of Killard, Co. Clare and the new 220kV Onshore Compensation Compound (OCC) in the townland of Ballymacrinan, Co. Clare;

ix. 220kV onshore grid connection and communication cables laid underground, primarily in the public road corridor with small sections in third party lands, for approximately 3 km between the new 220kV OCC in the townland of Ballymacrinan, Co. Clare and the existing Moneypoint 220kV substation in the townland of Carrowdotia South, Co. Clare;

x. 43 no. joint bays complete with communication chambers and link box chambers along the onshore grid connection route between the TJB in the townland of Killard, Co. Clare to the existing 220kV Moneypoint substation in the townland of Carrowdotia South, Co. Clare;

xi. A 220kV Onshore Compensation Compound located in the townland of Ballymacrinan, Co. Clare. The 220kV onshore compensation compound consists of:
- Eirgrid 220kV GIS Building (49m x 18.5m, with a total height of 16.7m above Finished Floor Level (FFL);
- ESB 220kV GIS Building (49m x 18.5m, with a total height of 16.7m above FFL);
- Customer SCADA and MV power building (18.4m x 8.7m, with a total height of 6.15m above FFL);
- Statcom building (30.5m x 22m, with a total height of 7.59m above FFL);
- Upgrade of existing entrance onto the L-6150 including the removal of a small portion of existing stone wall and hedgerow;
- All associated electrical and communications plant and equipment, welfare facilities, 3 no. foul water holding tanks, 3 no. bored wells, 3 no. attenuation tanks, access roads, car parking, security fencing and gates, rail and post fencing, telecommunications pole, lightning masts, signage, safety bollards, landscaping, drainage infrastructure and all other ancillary works and associated site development works;

xii. 3 no. temporary construction compounds along the onshore grid connection cable route:
- 1 no. temporary construction compound at the landfall point in the townland of Killard Co. Clare;

- 1 no. temporary construction compound at the Kilrush Golf Club in the townland of Parknamoney, Co. Clare;
- 1 no. temporary construction compound at the new 220kV OCC in the townland of Ballymacrinan, Co. Clare;

xiii. Reinstatement of the road or track surface above the proposed onshore grid connection cable trench along existing roads and tracks;
xiv. New and upgraded access tracks above the proposed onshore grid connection cable trench in third party lands;
xv. Temporary entrances from public roads to facilitate construction of the onshore grid connection for construction phase only;
xvi. Provision of 3 no. passing bays and the widening of the L-6150 road in the townland of Ballymacrinan to facilitate the delivery of abnormal loads for the construction of the proposed OCC;
xvii. All works associated with spoil management;
xviii. All associated site works and ancillary development above and below ground including hard and soft landscaping, habitat enhancement and drainage infrastructure.

This application seeks a ten-year development permission and a 38-year operational life from the date of commissioning of the Project.

Note, this NIS pertains only to the Onshore Site, but an overview of the Offshore Site is provided for context of the overall Project. Full details of the Project are included in Appendix A of the accompanying AASR. The layout of the Onshore Site is provided in Figure 2-2.

400000
440000
480000
520000
N
720000
680000
640000
720000
680000
640000
400000
440000
480000
520000

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

EIAR Site Boundary

0 10 20 km
Kilometres

Data Source
© Ordnance Survey Ireland. All rights reserved. Licence number CYAL50267517
© British Crown and OceanWise, 2024. All rights reserved. License No. EMS-EK001-958983. Not to be used for Navigation

PROJECT TITLE
Sceirde Rocks

MAP TITLE
Project and Onshore Site Location

VER	REMARKS	DATE	Drawn	Approved
		12/12/2024	PD	PR

DRAWING NO
Figure 2-1

SCALE	PAPER SIZE	DATUM	PROJECTION
1:480,000	A4	IRENET95	Transverse Mercator

488000

496000

504000

664000

656000

N

Doonbeg
An Dún Beag

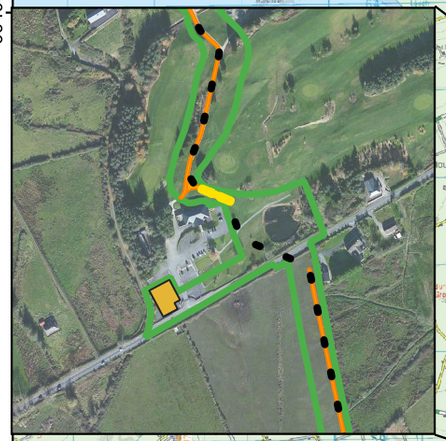
KILRUSH
Cill Rois

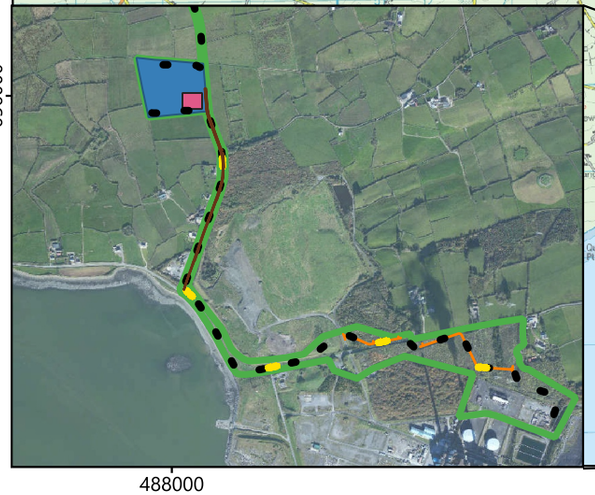
Poulnasherry Bay
Poll na nOisrí

Scattery Island
Inis Cathaigh

Inishbio or Hog Island
Inis Bhig

Scattery Roads
Rod Inis Cathaigh





SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- EIAR Site Boundary
- HDD Offshore Exit Location
- Onshore Grid Connection
- OGC Joint Bays
- Landfall TJB
- OCC Location
- Access Tracks
- Passing Bays & Road Widening

Temporary Construction Compounds

- Temporary Construction Compound 1
- Temporary Construction Compound 2
- Temporary Construction Compound 3

Kilometres
0 1 2 km

PROJECT TITLE
Sceirde Rocks

MAP TITLE
Sceride Rocks Onshore Infrastructure

VER	REMARKS	DATE	Drawn	Approved
V1		2025-01-08	CF	ÓM

DRAWING NO
Figure 2-2

SCALE	PAPER SIZE	DATUM	PROJECTION
1:81,000	A4	IRENET95	Transverse Mercator

3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT OF THE ONSHORE SITE

3.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites;
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports;
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Teagasc, EPA, Water Framework Directive (WFD), Geological Survey of Ireland (GSI), Irish Wetland Bird Survey I-WeBS, and Geohive online Environmental Sensitivity Mapping tool;
- Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the Onshore Site;
- Review of Birds of Conservation Concern (BoCCI) in Ireland 2014-2019 (Colhoun & Cummins, 2013);
- Review of OS maps and aerial photographs of the site of the Onshore Site;
- Review of relevant databases including National Biodiversity Ireland Database and available literature of previous surveys conducted in the area;
- Review of other plans and projects within the area.

NPWS Protected Species Records

National Parks and Wildlife Service (NPWS) online records were searched to see if any rare or protected species of flora or fauna have been recorded from hectads Q95, Q96, and R05, within which the Onshore Site is located. An information request was also sent to the NPWS scientific data unit requesting records from the Rare and Protected Species Database on the 27th of September 2023. A response was received on the 2nd of October 2023. An updated request was sent on the 9th of August 2024, but no response has been received to date. Table 3-1 lists rare and protected species records obtained from NPWS.

Table 3-1 NPWS records for rare and protected species

Common name	Scientific name	Designation	Hectad
Red Threadwort	*Cephaloziella rubella*	VU	Q96
Blunt-fruited Pottia	*Tortula modica*	VU	Q96
Irish Hare	*Lepus timidus subsp. Hibernicus*	Annex V, WA	Q96, Q95
Eurasian Otter	*Lutra lutra*	HD Annex II, IV, WA	Q96, Q95, R05
Harbour Seal	*Phoca vitulina*	HD Annex II, V, WA	Q95
Greenland White-fronted Geese	*Anser albifrons flavirostris*	Annex 1	Q96, Q95, R05
Fiddle dock	*Rumex pulcher*	VU	Q95
Bog Orchid	*Hammarbya paludosa*	NT	Q96
Shepherd's-needle	*Scandix pecten-veneris*	RE	Q95
Pine Marten	*Martes martes*	HD Annex V, WA	Q95, R05
Eurasian Badger	*Meles meles*	WA	Q96, Q95, R05
Freshwater Pearl Mussel	*Margaritifera margaritifera*	HD Annex II, V, WA	Q96
Common frog	*Rana temporaria*	HD Annex V, WA	Q96, Q95, R05
Henbane	*Hyoscyamus niger*	NT	Q95
Smooth Brome	*Bromus racemosus*	NT	Q95
Mountain Pansy	*Viola lutea*	VU	Q96
West European Hedgehog	*Erinaceus europaeus*	WA	Q96, Q95

Common name	Scientific name	Designation	Hectad
Brown Long-eared Bat	*Plecotus auritus*	HD Annex IV, WA	R05
Irish Stoat	*Mustela erminea subsp. hibernica*	WA	Q95
Narrow-mouthed Whorl Snail	*Vertigo angustior*	HD Annex II, WA	Q96
Cladonia ciliata var. tenuis	*Cladonia ciliata var. tenuis*	HD Annex V	Q96
Cladonia portentosa	*Cladonia portentosa*	HD Annex V	Q96

VU = Vulnerable, NT-=Near Threatened, WA = Wildlife Act. Annex II, Annex IV, Annex V – Of EU Habitats Directive.

3.2 Hydrological Context of the Onshore Site

In order to determine whether the onshore site has potential to result in likely significant effects via hydrological pathways, a desk study of available information regarding the hydrological catchments in which it is located was undertaken. This included a review of the EPA online web-mapper at https://gis.epa.ie/EPAMaps/ .

3.2.1 Catchments in which the Onshore Site is Located

3.2.1.1 Surface Water Catchments

3.2.1.1.1 *Onshore Landfall Location*

On a regional scale, the Onshore Landfall Location (OLL) is located within the Mal Bay surface water catchment and Hydrometric Area 28 of the Shannon River Basin District. More locally the OLL site is located in the Doonbeg River WFD sub-catchment (Doonbeg_SC_010) and the Doonbeg_050 WFD river sub-basin

There are no EPA/WFD mapped watercourses in the immediate vicinity of the OLL. The closest SWB to the OLL is a small stream located ~150m to the southeast. This watercourse forms part of the Doonbeg_050 SWB and flows to the northeast for ~680m before entering into the Shannon Plume coastal waterbody.

The Transition Joint Bay (TJB) at the OLL is situated ~100m from the cliffs edge and the Shannon Plume coastal water body.

The OLL is mapped in the Doonbeg_050 WFD river sub-basin. This (surface waterbody) SWB achieved 'Good' status based on the latest WFD cycle (2016-2021). This was an improvement on the 'Moderate' status which achieved in the 2nd cycle (2013-2018). The risk status of the Doonbeg_050 SWB is currently under review. No significant pressures have been identified to be impacting on this SWB.

Further downstream the Shannon Plume coastal waterbody achieved 'High' status in the latest WFD cycle (2016-2021). This SWB is deemed to be 'not at risk' and no significant pressures have been identified.

3.2.1.1.2 *Onshore Grid Connection*

The Onshore Grid Connection (OGC) is located within 2 no. regional surface water catchments. The northern section is located within the May Bay surface water catchment and Hydrometric Area 28 whilst the southern section is located within the Shannon Estuary North surface water catchment and Hydrometric Area 27. Both of these regional surface water catchments are located in the Shannon River Basin District.

Within the Mal Bay surface water catchment, the OGC is predominantly located in the Doonbeg river sub-catchment (Doonbeg_SC_010). The OGC passes through the Doonbeg_050 and Ballard_010 WFD River sub-basins with 4 no. watercourse crossings over the Doonbeg_050 SWB.

Within the Shannon Estuary North surface water catchment, the OGC is predominantly mapped in the Wood River sub-catchment (Wood_SC_010). Meanwhile, ~1.7km in the south is located in the Cloon[Clare] River sub-catchment (Cloon[Clare]_SC_010). The OGC is mapped with a total of 4 no. WFD river sub-basins. There are a total of 2 no. crossings over the Moyasta_010 SWB, 2 no. crossings over the Wood_020 SWB, and 3 no. crossings over the Tonavoher_010 SWB.

The SWBs along the OGC predominantly achieved 'Moderate' status based on the latest WFD cycle (2016-2021). These SWBs include the Ballard_010, Moyasta_010, Wood_020 and Tonavoher_010 SWBs. This represented a deterioration in status for the Moyasta_010 SWB which achieved 'Good' status based on 2013-2018 data. The status of the Ballard_010, Wood_020 and Tonavoher_010 SWBS remains unchanged (based on data from 2013-2018 and data from 2016-2021). The Wood_010 SWB achieved 'Poor' status in all data periods (2010-2015, 2013-2018, and 2016-2021).

The risk status of the SWBs along the OGC are predominantly under review. The Wood_010 and Wood_020 SWBs are deemed to be 'at risk' of failing to meet their respective WFD objectives. Agriculture is listed as a significant pressure on both of these SWBs with forestry, urban runoff and other unknown pressures also impacting the Wood_020 SWB.

In terms of transitional and coastal waterbodies downstream of the OGC, the Lower Shannon Estuary SWB, Doonbeg Bay SWB and the Mouth of the Shannon SWB are of 'Good' status. The Shannon Estuary Plume is of 'High' status. These SWBs are deemed to be 'not at risk' and no significant pressures have been identified.

3.2.1.1.3 Onshore Compensation Compound

On a regional scale, the Onshore Compensation Compound (OCC) is located in the Shannon Estuary North surface water catchment and the Cloon[Clare]_SC_010 river sub-catchment.

On a more local scale, the OCC is located within the Tonahover_010 WFD river sub-basin. The closest mapped watercourse to the OCC is the Ballynote East stream, which runs along the northern border of the OCC. This stream forms part of the Tonavoher_010 SWB. This stream flows to the west before veering to the south for 1.8km and discharging into the Lower Shannon Estuary transitional water body.

The OCC is located within the Tonavoher_010 WFD river sub-basin. The status of this SWB and the downstream Lower Shannon Estuary transitional SWB are described above.

3.2.1.1.4 Surface Water Body Classification

A summary of the WFD status and risk result for SWBs downstream of the onshore components of the Project are shown in Table 3-2 below.

Table 3-2 EPA Water Quality Monitoring Q-Rating Values

Waterbody	Overall Status (2010-2015)	Overall Status (2013-2018)	Overall Status (2016-2021)	WFD Risk	Pressures
Doonbeg_050	Good	Moderate	Good	Under review	None
Ballard_010	Unassigned	Moderate	Moderate	Under review	None
Moyasta_010	Unassigned	Good	Moderate	Under Review	None
Wood_010	Poor	Poor	Poor	At risk	Agriculture
Wood_020	Poor	Moderate	Moderate	At risk	Agriculture, forestry, other & urban runoff
Tonavoher_010	Unassigned	Moderate	Moderate	Under Review	None
Doonbeg Estuary	Unassigned	Moderate	Moderate	Under Review	None

Lower Shannon Estuary	Moderate	Good	Good	Not at risk	None
Doonbeg Bay	Unassigned	High	Good	Not at risk	None
Mouth of the Shannon (HAs 23;27)	Moderate	Good	Good	Not at risk	None
Shannon Plume (HAs 27;28)	Unassigned	High	High	Not at risk	None

3.2.1.2 Ground Water Catchments

There are two groundwater bodies below the footprint of the Onshore Site. The area of these two GWBs define the extents of the GWB ZOI (zone of influence) for the Onshore Site.

The Miltown Malbay GWB underlies the north of the Onshore Site, including the OLL and the northern section of the OGC. According to GSI mapping (www.gsi.ie) this area of the Onshore Site is underlain by Namurian Sandstones which are classified as being a Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones.

The Kilrush GWB underlies the south of the Onshore Site, including the central and southern section of the OGC and the OCC. According to GSI mapping (www.gsi.ie) the area is underlain by Namurian Undifferentiated rocks which are classified as being a Locally Important Aquifer (LI) - Bedrock which is Moderately Productive only in Local Zones.

The Miltown Malbay GWB (IE_SH_G_167) and Kilrush GWB (IE_SH_G_123) which underlie the Onshore Site achieved 'Good' status in all 3 no. WFD cycles. This applies to both quantitative status and chemical status of the GWBs. Both GWBs have been deemed to be "not at risk" and no significant pressures have been identified.

3.2.1.3 Surface Ground Water Body Classification

A summary of the WFD status and risk result for GWBs beneath the Onshore Site are shown in Table 3-3 below.

Table 3-3 EPA Water Quality Monitoring Q-Rating Values

Waterbody	Overall Status (2010-2015)	Overall Status (2013-2018)	Overall Status (2016-2021)	WFD Risk	Pressures
Miltown Malbay	Good	Good	Good	Not at risk	None
Kilrush	Good	Good	Good	Not at risk	None

3.3 Ecological Survey Methodologies

Comprehensive surveys of the biodiversity of the Onshore Site were undertaken on the following dates outlined in Table 3-4 below. In addition to these surveys, dedicated bat surveys were undertaken but no European Sites designated for the protection of any bat species were recorded within the Zone of Influence of the site. Within Ireland, the lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs). The site is situated outside the current known range for this species and there are no SACs designated for its protection within 25km of the Onshore Site and thus, there are pathways for effects on bats.

Table 3-4 Ecology surveys informing the AASR.

Survey Type	Dates
Multi-disciplinary walkover, which included: • Habitat surveys • Bird surveys • Terrestrial fauna surveys • Aquatic habitats and species	› 27th of July 2023; › 28th of July 2023; › 28th of March 2024 › 11th of April 2024 › 20th of June 2024
Intertidal bird surveys	› Surveys covered the period of May 2023 – March 2024, consisting of one breeding season (May – September) and one non-breeding season (October – March).

The following sections describe the ecological surveys that have been undertaken and provide details of the methodologies, survey dates, and guidance followed.

3.3.1 Ecological Multidisciplinary Walkover Survey

3.3.1.1 Multi-disciplinary Walkover Surveys (as per NRA Guidelines, 2009)

Multidisciplinary walkover surveys were undertaken within the Onshore Site. Surveys were undertaken within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011). A comprehensive walkover of the entire Project site was completed with incidental records also incorporated from other dedicated species/habitat specific surveys. During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No 374 of 2024) was conducted.

The walkover surveys were also designed to detect the presence, or likely presence, of a range of protected species. The survey included a search for mammal signs (bats, badger, red squirrel etc.) and areas of suitable habitat to support these species, potential features likely to be of significance to bats and additional habitat features for the full range of other protected species that are likely to occur in the vicinity of the Onshore Site (e.g. otter, marsh fritillary etc.). Bird species observed during the multi-disciplinary surveys were also recorded.

The multi-disciplinary walkover surveys comprehensively covered the entire Onshore Site and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. Other targeted surveys undertaken within the Onshore Site are described in the following subsections.

3.3.1.1.1 Habitat Surveys

Habitats within the site were classified according to the guidelines set out in *'A Guide to Habitats in Ireland'* (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The extent of each habitat on site was mapped on site using aerial photography, handheld GPS and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site. Plant nomenclature for vascular plants follows *'New Flora of the British Isles'* (Stace, 2019).

Habitats considered to be of ecological significance and in particular having the potential to correspond to those listed in Annex I of the EU Habitats Directive, where present, were also identified.

3.3.1.1.2 Bird surveys

During the multidisciplinary walkover surveys, all birds, including Annex I species of the EU Birds Directive, identified to be within or adjacent to the Onshore Site were recorded. Additionally, habitat assessments were undertaken to identify any significant supporting habitat within or adjacent to the Onshore Site for Annex I species of the EU Birds Directive, or any other protected birds, was undertaken.

In addition, intertidal bird surveys were undertaken within the OLL site of the Onshore Site and covered the period of May 2023 – March 2024, consisting of one breeding season (May – September) and one non-breeding season (October – March). The survey methodology followed that of Lewis and Tierney (2014). Waterbirds were counted within two hours on either side of low/high tide (max. period four hours total) on the 'look-see' basis (Bibby et al., 2000) and the positions of major flocks were also recorded on field maps.

3.3.1.1.3 Watercourse assessments

As the Onshore Site crosses 11 EPA mapped watercourses, assessments of each watercourse was undertaken, as part of the Multidisciplinary walkover surveys, to identify if they had potential to support protected species such as fisheries, otter, freshwater pearl mussel, and other aquatic receptors.

Otter surveys were conducted on watercourses which the Onshore Site crosses, adhering to best practice guidance (NRA, 2009b) and CIEEM best practice competencies for species surveys[2]. All watercourses within the Onshore Site were identified as providing potential habitat for otter and were subject to targeted surveys for this species. This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts) within 150m of each survey site. Where otter signs were observed these were mapped.

Whilst the Onshore Site is not within a catchment of SAC populations, assessments of the watercourses along the Onshore Site for suitability to support freshwater pearl mussel (*Margaritifera margaritifera*) were undertaken. These assessments were undertaken to determine whether there was any suitable habitat or potential for populations to be present in close proximity downstream of the Onshore Site.

3.3.1.1.4 Terrestrial Fauna Surveys

As part of the Multidisciplinary walkover surveys undertaken, surveys for terrestrial fauna were also undertaken within the Onshore Site, adhering to best practice guidance (NRA, 2009b). The results of the desk study, scoping replies, incidental records of protected species during ecological survey work and multidisciplinary walkover surveys were used to inform the scope of targeted ecological surveys required. Dedicated surveys for terrestrial fauna were undertaken on the dates set out in Table 3-4

[2] *CIEEM, 2013, Technical Guidance Series – Competencies for Species Survey: Otter, Online, Available at: https://cieem.net/wp-content/uploads/2019/02/CSS-EURASIAN-OTTER-April-2013.pdf*

above. During the multidisciplinary walkover surveys, where observed, incidental records of birds and invertebrates including butterflies, dragonflies, etc. were recorded.

3.4 Ecological Survey Results

3.4.1 Results of Baseline Ecological Surveys

A total of 19 habitats were recorded within or adjacent the Onshore Site (Table 3-5).

Table 3-5: Habitats recorded within and adjacent to the Onshore Site.

Habitat Name	Fossitt Code
Exposed Rocky Shores	LR1
Improved agricultural grassland	GA1
Wet grassland	GS4
Dry meadows and grassy verges	GS2
Amenity Grassland	GA2
Cutover bog	PB4
Active raised bog	PB1
Spoil and bare ground	ED2
Recolonising bare ground	ED3
Hedgerows	WL1
Treelines	WL2
Scrub	WS1
Conifer plantation	WD4
Mixed broad-leaved woodland	WD1
Buildings and artificial surfaces	BL3
Shingle and gravelly shores	LS1
Upland Eroding Rivers/Lowland depositing rivers	FW1/FW2
Drainage ditches	FW4

Habitats within the Onshore Site have been considered below and a full description of the habitats are being considered under the following headings;

- Habitats within and adjacent to the OCG
- Habitats within and adjacent to the OCC
- Habitats within and adjacent to OLL and Temporary Compound
- Habitats within and adjacent to proposed passing bays between the OCC and the N67

3.4.1.1 Habitats within and adjacent to the OCG

The OGC, which forms the main element of the Onshore Site, primarily consisted of existing road infrastructure for much of its length, but also enters green field habitats which are used for agriculture and often include scrub or woodland habitats. The sections below describe all habitats within which the OGC will be laid and those adjacent that could potentially be affected.

No habitats listed under Annex I of the EU Habitats Directive were recorded within or adjacent to the OGC and no significant supporting habitat for species listed under Annex II of the EU Habitats Directive was identified during the surveys. Shingle and gravelly shores, as discussed below, was identified as potentially providing foraging habitat for waterbirds and waders, including bird species that are among those listed as SCIs of any SPA.

Exposed Rocky Shores (LR1)

Where the Offshore Export Cable (OEC) of the Project makes landfall at the northern extent of the Onshore Site, small sections within the Onshore Site are comprised of exposed boulder beaches/shores

(Plate 3-1), which are best classified as Exposed Rocky Shores (LR1). These are shores which are highly exposed to ocean swells and are influenced by sea sprays and dynamic topographies and are located approximately 120m from the works area. The upper reaches of this habitat were characterized by large boulders and exposed bedrock, with some recordings of sea thrift (*Armeria maritima*) and sea campion (*Silene uniflorae*). This habitat was identified as providing potential foraging habitat for protected bird species and several bird species designated as SCIs of nearby SPAs were identified during surveys within this habitat. Further details on bird survey results are provided in Section 3.1.2.

This habitat was identified over 120m from any works associated with the Onshore Site.

Plate 3-1 Exposed rocky shores recorded at the OLL of the Onshore Site, recorded adjacent to Improved agricultural grassland.

Improved agricultural grassland (GA1)

Outside of the existing road infrastructure, the dominant land use within the Onshore Site is agriculture, generally best classified as Improved agricultural grassland (GA1). This habitat type is present in lands where the Project makes landfall, in the northern extent of the Onshore Site (Plate 3-2), and again where the OGC goes off road north and east of Kilrush (Plate 3-3). It was also recorded extensively adjacent to the Doonbeg (L2030) local road, within the Onshore Site. This habitat was typically dominated by perennial ryegrass, with rare to frequent occurrences of broadleaved species such as clovers (*Trifolium* spp.), sorrel and doc (*Rumex* spp.), chickweed (*Stellaria media*), Fumitory (*Fumaria sp.*), sheep's bit (*Jasione montana*), and creeping buttercup (*Ranunculus repens*).

Plate 3-2 GA1 habitat recorded in the northern extent of the Onshore Site.

Plate 3-3 GA1 habitat recorded in lands, north of Kilrush, which had been recently spread with slurry.

Active raised bog (PB1) and Cutover bog (PB4)

In lands adjacent to the northern section of the OGC, areas of peatland were identified and included areas of Active raised bog (PB1) and Cutover bog (PB4) (Plate 3-4 and Plate 3-5). Varying degrees of turbary were recorded and these peatlands often presented as bare beat. In areas less worked, categorised as Active raised bog, albeit degraded due to drainage, species identified were dominated by purple moor grass (*Molinia caerulea*), with frequent recordings of long heather (*Calluna vulgaris*), deer grass (*Trichophorum cespitosum*), common cottongrass (*Eriophorum angustifolium*), as well as frequent to occasional Yorkshire fog (*Holcus lanatus*) and soft rush (*Juncus effusus*) in the more degraded areas. These peatland habitats were buffered from the OGC and Onshore Site by other habitats, as indicated in Plate 3-5, such as grassy verges, bramble scrub, dense bracken, or hedgerows. No works will be undertaken within, or directly adjacent to, any peatland habitat.

Plate 3-4 Degraded blanket bog recorded in close proximity to the Onshore Site.

Plate 3-5 Grassy verge and scrub buffer between the Onshore Site and peatland habitats.

Wet grassland (GS4)

Areas of marginal or semi-improved wet agricultural grassland were recorded in lands adjacent to the Doonbeg (L2030) local road (Plate 3-6), within the Onshore Site, and were classified as Wet grassland (GS4). These were recorded sporadically along the length of the OGC, from the OLL to Moneypoint. These were generally dominated by a combination of wet ground species such as Yorkshire fog (*Holcus lanatus*) and soft rush (*Juncus effusus*).

Plate 3-6 Example of juncus dominated wet grassland recorded in lands adjacent to the Doonbeg (L2030) local road.

Dry meadows and grassy verges (GS2)

Often delineating sections of the Doonbeg (L2030) local road, along which much of the OGC will be laid, this habitat was recorded as small narrow strips between road infrastructure and other habitats such as treelines, hedgerows, stone walls, and woodlands. This habitat typically contained a mix of species which included false oat-grass (*Arthenatherum elatius*), Bent grasses (*Agrostis spp.*) sheep's bit (*Jasione montana*), creeping buttercup (*Ranunculus repens*), Yorkshire fog (*Holcus lanatus*), daisy (*Bellis perennis*), tormentil (*Potentilla erecta*) and rosebay willow herb (*Chamaenerion angustifolium*).

Amenity grassland (GA2)

This habitat was predominantly recorded in lands within Kilrush Golf Club (Plate 3-7), where the OGC travels north of Kilrush town. These are highly maintained grassland habitats and are typically species poor, usually dominated by one grass species. This habitat was also recorded delineating road infrastructure from private dwellings or farmyards.

Plate 3-7 Example of Amenity grassland within Kilrush gold course, also showing an example of Treeline habitat.

Hedgerow (WL1)

This habitat was recorded extensively along the OGC route as it delineated much of the existing public road infrastructure (Plate 3-8) and agricultural fields (Plate 3-9). These were often managed through hedge cutting, particularly along roads. The structure of these habitats was typically dominated by European gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.), with occasional to frequent occurrences of hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*). Species recorded in the understory of this habitat were diverse, including ivy (*Hedera helix*), false oat grass (*Arrhenatherum elatius*), rosebay willow herb (*Chamaenerion angustifolium*), cleaver (*Galium aparine*), tufted vetch (*Vicia cracca*), cocksfoot (*Dactylis glomerata*), hedge woundwort (*Stachys sylvatica*) and ragwort (*Jacobaea vulgaris*).

Plate 3-8 Example of managed hedgerow habitat recorded along existing road infrastructure.

Plate 3-9 Example of hedgerow forming field boundaries along the OGC route.

Treeline (WL2)

Treeline habitat was recorded along the OGC route, typically delineating road infrastructure (Plate 3-10) and also forming boundaries to areas of woodland such as conifer plantations (Plate 3-11). This habitat was also recorded in Kilrush golf club, adjacent to the route of the OGC (Plate 3-7). Treelines comprised a mix of native and non-native trees, including hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*), silver birch (*Betula pendula*), beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*), as well as conifer species such as Scots pine (*Pinus sylvestris*) and Douglas fir (*Pseudotsuga menziesii*).

Plate 3-10 Example of native treeline delineating road infrastructure.

Plate 3-11 Birch treeline delineating conifer plantation habitat, also showing bramble scrub in the foreground.

Scrub (WS1)

Sections of scrub habitat were recorded along the length of the OGC route, particularly in unmanaged agricultural lands adjacent to the road corridor (Plate 3-12). It also formed boundaries to other habitat such as woodland, as shown in Plate 3-9 above. Scrub habitat recorded was typically dominated by bramble (*Rubus frutiocosus* agg.), European gorse (*Ulex europeaus*), hawthorn (*Crataegus monogyna*), and blackthorn (*Prunus spinosa*). Other species recorded included field bindweed (*Convolvulus arvensis*), Yorkshire fog (*Holcus lanatus*), and rosebay willowherb (*Chamaenerion angustifolium*).

Where the OGC turns south into Moneypoint Power Station grounds, additional areas of scrub habitat were recorded (Plate 3-13). These were extremely dense sections of scrub, which was dominated by bramble with semi-matures recordings of willow (*Salix* spp.), European gorse (*Ulex europeaus*), hawthorn (*Crataegus monogyna*), birch (Betula pendula), and Douglas fir (*Pseudotsuga menziesii*), forming scrub woodland.

Plate 3-12 Example of scrub habitat which was allowed to establish in unmanaged agricultural lands.

Plate 3-13 Example of scrub habitat which was allowed to establish Moneypoint Power Station lands

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Conifer plantation (WD4)

Areas of forestry were recorded adjacent to the road infrastructure along the OGC route and were categorized as Conifer plantation (WD4). These were typically comprised of Sitka spruce (*Picea sitchensis*) and due to shading of the canopy, there was little biodiversity in the understories of these woodlands.

Mixed broad-leaved woodland (WD1)

The OGC will be lain in areas of existing road infrastructure and farm tracks which are delineated by Mixed broadleaved woodland. A section of the route along the Doonbeg (L2030) local road was delineated by mature broadleaved trees (Plate 3-14). Species here included a mix of native and non-native species including hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), and sycamore (*Acer pseudoplatanus*).

The OGC route also passes along an access track within Kilrush Golf Club (Plate 3-15) which is delineated by ash and alder (*Alnus glutinosa*). There is significant evidence of ash die back in this woodland, with multiple dead trees and many more of ill health. The understory of this woodland was dominated by bramble scrub.

Along the southern extreme of the OGC route, just north of Moneypoint, the OGC will pass through an area of woodland dominated by ash and Douglas fir (*Salix* spp.), with a very dense understory of gorse and bramble scrub (Plate 3-16). Additionally, in these lands, scrub habitat has matured into scrub woodland (Plate 3-17) which was dominated by large bramble thickets with semi-mature hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), birch (*Betula pendula*), and Douglas fir (*Pseudotsuga menziesii*) scattered throughout.

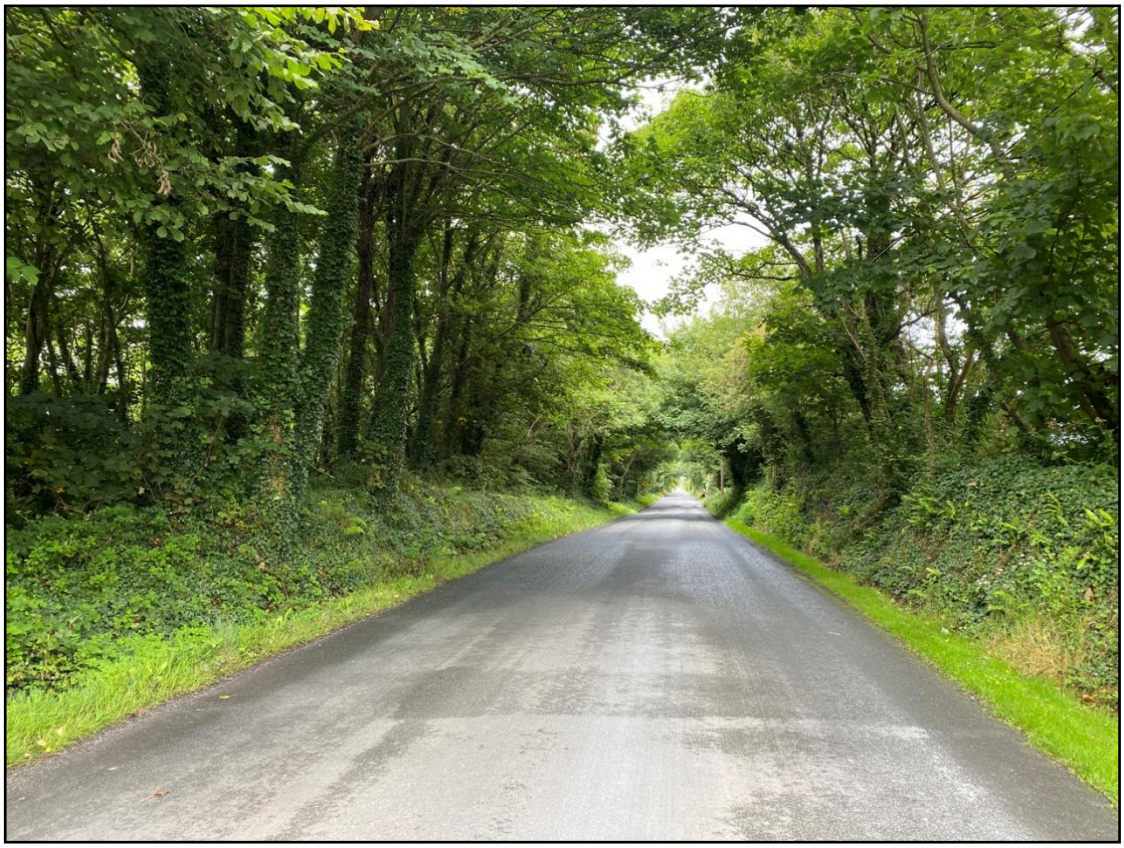


Plate 3-14 Mature mixed broadleaved woodland recorded along the OGC route.

Plate 3-15 Mixed broadleaved woodland recorded in Kilrush golf course, where ash die back is prevalent.

Plate 3-16 Mixed broadleaved woodland recorded in the southern extent of the OGC route, within Moneypoint Power Station.

Plate 3-17 Scrub woodland recorded within the grounds of Moneypoint Power Station.

Buildings and Artificial Surfaces (BL3)

The existing road infrastructure, as well as the buildings bordering the OGC route (Plate 3-18), were classified as Buildings and artificial surfaces (BL3). The route is primarily located along the Doonbeg (L2030) local road. Existing driveways, the Kilrush Golf Club, and hard surfaces within Moneypoint, as well as houses, farm shed/yards (Plate 3-19), and other buildings along the route are also classified BL3.

Plate 3-18 Existing road infrastructure classified as Buildings and Artificial Surfaces (BL3).

Plate 3-19 Dwellings classified as Buildings and artificial surfaces along the OGC cable route.

Eroding Upland Rivers (FW1)/Depositing lowland Rivers (FW2)

The OGC will cross 11 no. mapped EPA watercourses along its route. These are described in further detail in the Aquatic assessment in Section 3.1.3. Each watercourse was either categorized as Upland eroding rivers or Depositing lowland rivers, ranging from small highly vegetated streams (Plate 3-20), highly modified rivers (Plate 3-21) to more open rivers with typical pool riffle glide sequences (Plate 3-22). There are no proposed instream works as part of Onshore Site.

Plate 3-20 Highley vegetated mapped watercourses along the northern section of the OGC.

Plate 3-21 Heavily modified stream within Kilrush golf course, which the OGC will cross.

Plate 3-22 Section of an unmapped upland eroding stream within Moneypoint Power Station lands.

Shingle and gravelly shores (LS1)

At the southern extent of the Onshore Site, the OGC is located within grassy verges in close proximity to a Shingle and gravelly shore (LS1) (Plate 3-23). The OGC runs parallel to this habitat for approximately 370m, on the opposite site of the N67. The N67 itself provides a buffer between the works area and this habitat. This habitat was characterised by sediment that was larger than sands and smaller than that of boulder beaches. A narrow strip of grassy verge was identified between this coastal habitat and the N67.

This habitat was identified as potentially providing foraging habitat for waterbirds and waders, including bird species that are among those listed as SCIs of any SPA.

Plate 3-23 Shingle and gravelly shores habitat recorded adjacent to the southern section of the Onshore Site.

3.4.1.2 Habitats within and adjacent to the OCC

The OCC, which forms part of the Onshore Site, is located in an agricultural field best classified as Improved agricultural grassland (GA1) (Plate 3-24). This site was characterized by dominant perennial ryegrass and frequent Yorkshire fog (*Holcus lanatus*), as well as frequent to abundant recordings of common broadleaved species such as white clover (*Trifolium repens*), meadow thistle (*Cirsium arvense*), common fumitory (*Fumaria officinalis*), shepherd's purse (*Capsella bursa-pastoris*), common sorrel (*Rumex acetosa*), creeping buttercup (*Ranunculus repens*), and dandelion (*Taraxacum* spp.).

Hedgerow habitat formed the boundary of OCC site, and was also recorded throughout the site, forming smaller holdings (Plate 3-25). This habitat was characterised by dominant hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*), with an understory of bramble and gorse.

No habitats listed under Annex I of the EU Habitats Directive were recorded within or adjacent to the OCC and no significant supporting habitat for species listed under Annex II of the EU Habitats Directive, or bird species that are among those listed as SCIs of any SPA, was identified during the surveys.

Plate 3-24 Improved agricultural grassland recorded at the OCC stie.

Plate 3-25 Hedgerow habitat delineating the OGC site.

3.4.1.3 Habitats within and adjacent to Onshore Landfall Location

The infrastructure associated with that of the Onshore Site at the OLL is located within agricultural lands (Plate 3-2) of Improved agricultural grasslands (GA1). These fields are delineated by low hedgerows and drainage ditches which were highly vegetated.

No habitats listed under Annex I of the EU Habitats Directive were recorded within or adjacent to the OLL and no significant supporting habitat for species listed under Annex II of the EU Habitats Directive was identified during the surveys. However, as discussed in Section 3.1.1.1, Exposed rocky shore habitat north of the OLL was identified as providing potential supporting habitat for SCIs of nearby SPAs.

3.4.1.4 Habitats within and adjacent to Passing Bays between OCC and N67

The proposed passing bays between the OCC and the N67, in the southern extent of the Onshore Site, are located adjacent to existing road infrastructure categorised as Buildings and artificial surfaces (BL3) and within road margins of Dry meadows and Grassy verges (GS2) and Hedgerows (WL1) (Plate 3-26).

No habitats listed under Annex I of the EU Habitats Directive were recorded within or adjacent to the passing bays and no significant supporting habitat for species listed under Annex II of the EU Habitats Directive, or bird species that are among those listed as SCIs of any SPA, was identified during the surveys.

Plate 3-26 Existing road, grassy verge, and hedgerow habitats recorded at the proposed passing bays.

3.4.2 Bird surveys

Bird species recorded during the multidisciplinary walkover surveys were typically an assemblage of common species typical of agricultural and rural environments. No Special Conservation Interest (SCI) species for any European Site were recorded during these surveys.

Whilst habitats within the Onshore Site, which typically comprised existing public roads and agricultural fields, did not provide significant supporting habitat for protected birds, intertidal habitats adjacent to the Onshore Site were identified as providing potential suitable foraging habitat for waterbirds and waders. These were identified north of the OLL site at the northern extreme of the Onshore Site and adjacent to the N67, west of Moneypoint Power Station. No works associated with the Onshore Site are proposed within any intertidal habitat.

Bird species recorded during the intertidal surveys included the following species listed under the annexes of the EU Birds Directive:

- Chough (*Pyrrhocorax pyrrhocorax*) [A346]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Great Northern Diver (Gavia immer) [A003]
- Hen Harrier (*Circus cyaneus*) [A082]
- Kingfisher (*Alcedo atthis*) [A229]
- Little Egret (*Egretta garzetta*)[A026]
- Peregrine (*Falco peregrinus*) [A103]
- Cormorant (*Phalacrocorax carbo*) [A017]
- Dunlin (*Calidris alpina*) [A149]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Sandwich Tern (*Sterna sandvicensis*) [A191]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Curlew (*Numenius arquata*) [A160]
- Oystercatcher (*Haematopus ostralegus)* [A130]
- Kittiwake (*Rissa tridactyla*) [A188]
- Razorbill (*Alca torda*) [A200]
- Shelduck (*Tadorna tadorna*) [A048]
- Ringed Plover (*Charadrius hiaticula*) [A137]

3.4.3 Watercourse assessment

All watercourses which the Onshore Site crosses were assessed as part of multidisciplinary walkover surveys. In total, 11 EPA mapped watercourses were assessed. Figure 3-1 indicates all mapped watercourses which cross the Offshore Site. Most of them were categorized as small Lowland Depositing Streams (FW2) and were highly vegetated, presented little flow, had fine silt substrates, and were heavily modified, offering low fisheries and ecological value. Examples of this type of watercourse are provided in Plates 3-27, 3-28, and 3-29. These were typically found in the northern and southern extents of the Onshore Site, either forming field boundaries or culverted under existing public roads.

Additional lowland depositing streams, such as those indicated in Plates 3-30 and 3-31, were also recorded crossing the Onshore Site. Whilst these watercourses were larger than the above, and were less vegetated, the substrates of these comprised fine silt and sand and presented high turbidity and slow flows. Surrounding land uses of these watercourses comprised agriculture (direct cattle access), turbary, and forestry.

Of the 11 mapped watercourses, three were categorized as Upland Eroding streams (FW1) and displayed typically riffle-pool-glide features up and down stream of the Onshore Site (Plates 2-32 and 3-33). Land uses adjacent to these watercourses included agriculture (direct cattle access) and forestry. Whilst these watercourses presented gravel beds, water flow was slow and there was varying degrees of siltation recorded. Whilst the watercourses presented in Plate 3-34 was categorized as an upland eroding stream, this was a highly vegetated first order watercourse and presented low fisheries and ecological value.

There will be no instream works associated with the Onshore Site.

Plate 3-27 Example of heavily vegetated lowland depositing stream, in the northern extent of the Onshore site.

Plate 3-28 Example of heavily vegetated lowland depositing stream, in the southern extent of the Onshore site

Plate 3-29 Second example of heavily vegetated lowland depositing stream, adjacent to the OCC.

Plate 3-30 Larger lowland depositing stream with high degree of siltation and very slow flow.

Plate 3-31 Highly modified lowland depositing stream within Kilrush Golf Club

Plate 3-32 Example of upland eroding stream, east of Kilrush

Plate 3-33 Example of upland eroding stream with high shading and adjacent to agricultural fields.

Plate 3-34 highly vegetated first order upland eroding stream

No evidence of otter, including otter resting or breeding sites were recorded up or downstream of any water crossing associated with the Onshore Site. Additionally, no evidence of otter was recorded along the coastal shore in the northern extent of the Onshore Site. For that reason, it is anticipated that a Regulation 54 (European Communities (Birds and Natural Habitats) Regulations 2011) derogation licence (to injure/disturb Annex IV species) will not be required. However, watercourses and coastal shores provide potential foraging, commuting and breeding habitat for this species and are likely to be used on occasion by otter. Therefore, should the position change such that a derogation licence is required in the future, one will be sought and obtained.

No significant potential supporting habitat for freshwater pearl water was recorded within or adjacent to the Onshore Site. Watercourses associated with the Onshore Site were assessed as providing low suitability for supporting FWPM as they were typically small first order streams, highly vegetated, heavily shaded, or comprised fine sediment substrates.

3.4.4 Terrestrial Faunal Species Surveys

No indication of any protected terrestrial faunal species was recorded within or adjacent to the Onshore Site, nor was any significant supporting habitat for any protected species recorded. However, woodlands, hedgerows, and treelines provide potential foraging, commuting, and breeding habitat for a range of the protected fauna.

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- EIAR Site Boundary
- WFD Waterbodies
- WFD Catchments
- WFD Sub-Catchments

1 0 1 2 3 4 5
Kilometres

PROJECT TITLE

Sceirde Rocks

MAP TITLE

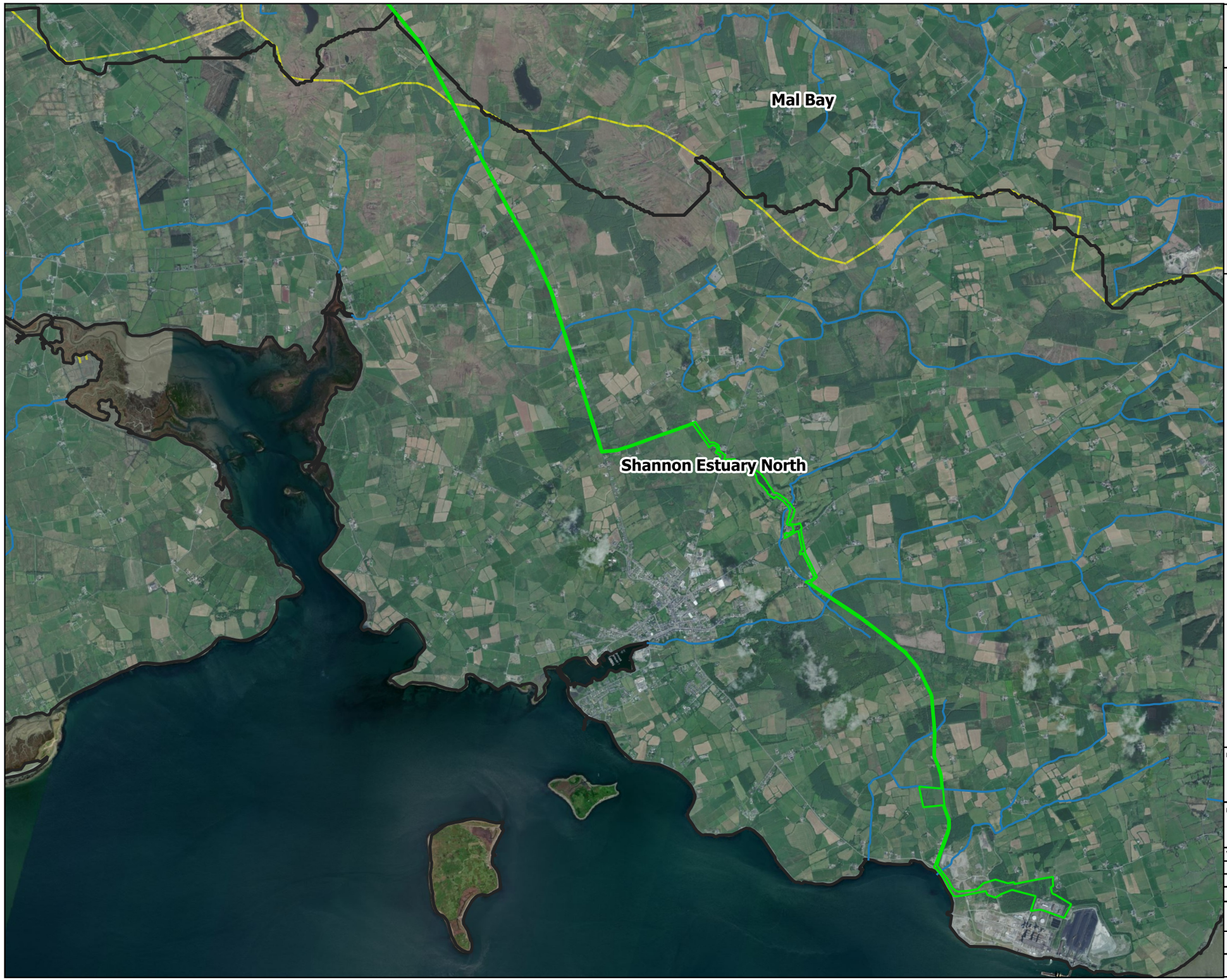
EPA Mapped Watercourses in Relation to the Onshore Site (Mal Bay WFD Catchment)

VER	REMARKS	DATE	Drawn	Approved
		12/12/2024	PD	PR

DRAWING NO

Figure 3-1a

SCALE	PAPER SIZE	DATUM	PROJECTION
1:50,000	A4	IRENET95	Transverse Mercator



SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- EIAR Site Boundary
- WFD Waterbodies
- WFD Catchments
- WFD Sub-Catchments

1 0 1 2 3 4 5

Kilometres

PROJECT TITLE

Sceirde Rocks

MAP TITLE

EPA Mapped Watercourses in Relation to the Onshore Site (Shannon Estuary North WFD Catchment)

VER	REMARKS	DATE	Drawn	Approved
		12/12/2024	PD	PR

DRAWING NO

Figure 3-1b

SCALE	PAPER SIZE	DATUM	PROJECTION
1:50,000	A4	IRENET95	Transverse Mercator

3.4.5 Invasive species

Japanese knotweed (*Fallopia japonica*) was recorded along the OGC route in several locations (Plates 3-35 to 3-37). Additionally, rhododendron was recorded within Kilrush Golf Club, adjacent to the OGC route (Plate 3-38). These species are listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) and the First Schedule of the European Union (Invasive Alien Species) Regulations 2024 (S.I. No 374 of 2024). Locations where Japanese Knotweed and Rhododendron were recorded are provide in Figures 3-2a, 3-3b, 3-4c and 3-5d.

Plate 3-35 Japanese knotweed recorded along the northern section of the OGC route.

Plate 3-36 Japanese knotweed recorded along the OGC route within Kilrush Golf Club.

Plate 3-37 Japanese knotweed recorded along the southern section of the OGC route.

Plate 3-38 Stand on rhododendron recorded within Kilrush Golf Club.

494400
495000
495600
664800
664200
N

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

EIAR Site Boundary

Japanese Knotweed

0 100 200 m

PROJECT TITLE

Sceirde Rocks

MAP TITLE

Invasive Species Map 1

VER	REMARKS	DATE	Drawn	Approved
V1		05/12/2024	PD	PR

DRAWING NO

Figure 3-2a

SCALE	PAPER SIZE	DATUM	PROJECTION
1:6,000	A4	IRENET95	Transverse Mercator

499600
500000
500400
657200
656800
N

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- EIAR Site Boundary
- Japanese Knotweed
- Rhododendron

0 100 200 m

PROJECT TITLE

Sceirde Rocks

MAP TITLE

Invasive Species Map 2

VER	REMARKS	DATE	Drawn	Approved
V1		05/12/2024	PD	XX

DRAWING NO

Figure 3-3b

SCALE	PAPER SIZE	DATUM	PROJECTION
1:4,000	A4	IRENET95	Transverse Mercator

500000 500400 500800

656400

656000

N

500000 500400 500800

SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- EIAR Site Boundary
- Japanese Knotweed
- Rhododendron

0 100 200 m

PROJECT TITLE

Sceirde Rocks

MAP TITLE

Invasive Species Map 3

VER	REMARKS	DATE	Drawn	Approved
V1		05/12/24	PD	PR

DRAWING NO

Figure 3-4c

SCALE	PAPER SIZE	DATUM	PROJECTION
1:4,000	A4	IRENET95	Transverse Mercator

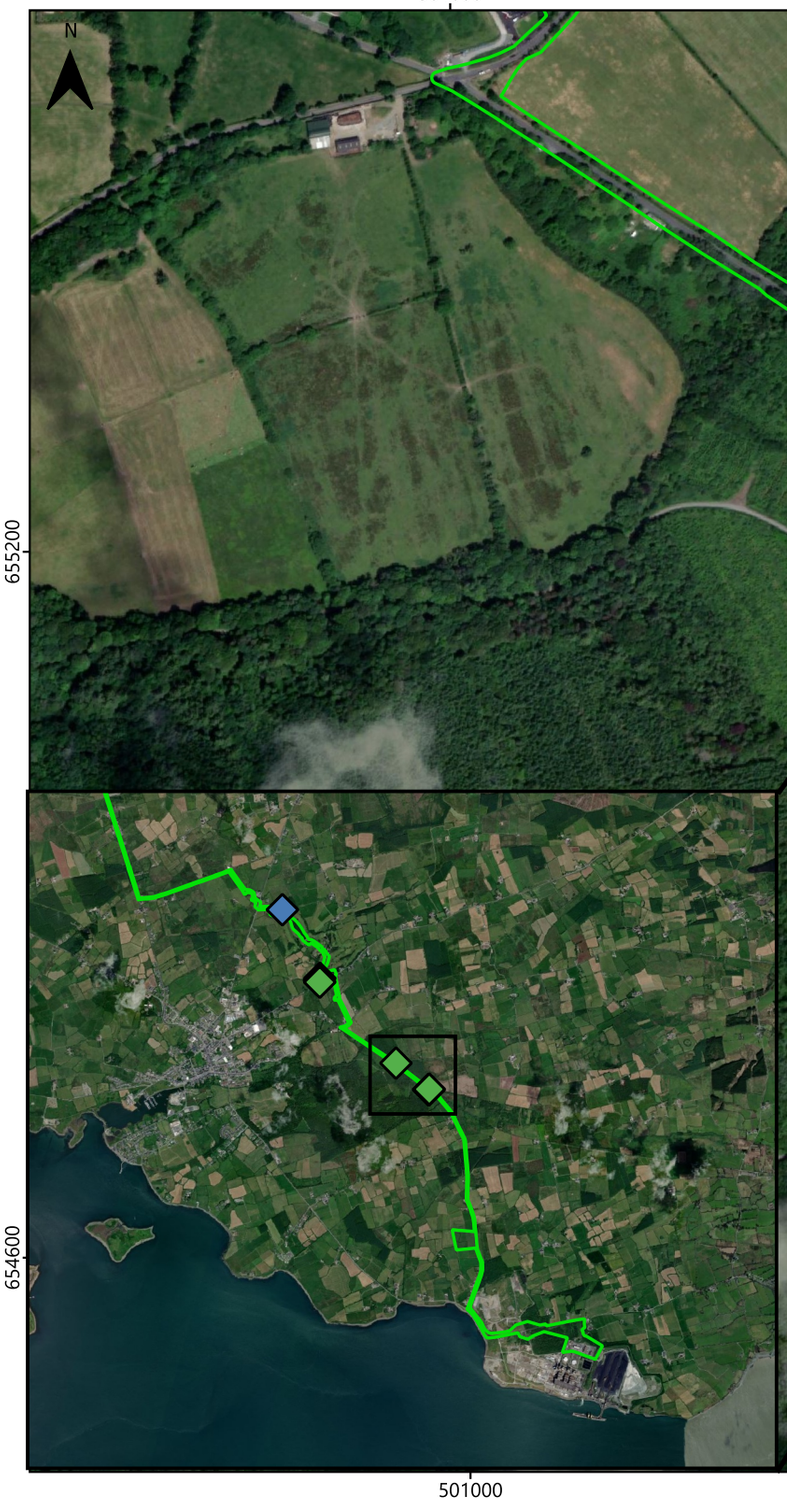
501000

501600

N

655200

654600



SCEIRDE ROCKS WINDFARM
Feirm Ghaoithe Charraigeacha Sceirde

LEGEND

- EIAR Site Boundary
- Japanese Knotweed
- Rhododendron

0 100 200 m

PROJECT TITLE

Sceirde Rocks

MAP TITLE

Invasive Species Map 4

VER	REMARKS	DATE	Drawn	Approved
V1		05/12/24	PD	PR

DRAWING NO

Figure 3-5d

SCALE	PAPER SIZE	DATUM	PROJECTION
1:6,000	A4	IRENET95	Transverse Mercator

4. CONSIDERATION OF RELEVANT EUROPEAN SITES

The potential for likely significant effects on the following European Sites in the absence of any mitigation, individually or in combination with other plans or projects, was identified in the AASR:

- Tullaher Lough and Bog SAC (002343)
- Lower River Shannon SAC (002165)
- Carrowmore Dunes SAC (0022500)
- River Shannon and River Fergus Estuaries SPA (004077)
- Mid-Clare Coast SPA (004182)

The following sections consider each European Site individually to:

- Determine which individual qualifying features have the potential to be adversely affected by the Onshore Site.
- Provide information with regard to the Conservation Objectives and site-specific pressures and threats for those qualifying features that have the potential to be adversely affected.

The Conservation Objectives, Site synopsis, and Natura 2000 Data Forms for each of the above European Sites can be found at the following links:

Tullaher Lough and Bog SAC (002343)

- Site Specific Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf
- Natura 2000 Data Form: https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0002343
- Site synopsis: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002343.pdf

Lower River Shannon SAC (002165)

- Site Specific Conservation Objectives: https://www.npws.ie/sites/default/files/protectedsites/conservation_objectives/CO002165.pdf
- Natura 2000 Data Form: https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0002165
- Site synopsis: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002165.pdf

Carrowmore Dunes SAC (0022500)

- Site Specific Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002250.pdf
- Natura 2000 Data Form: https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0002250
- Site synopsis: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002250.pdf

River Shannon and River Fergus Estuaries SPA 004077

- Site Specific Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf
- Natura 2000 Data Form: https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0004077
- Site synopsis: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004077.pdf

Mid-Clare Coast SPA (004182):

- Site Specific Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf
- Natura 2000 Data Form: https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=IE0004182
- Site synopsis: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004182.pdf

4.1 Identification of relevant Qualifying Features and Desk Study

4.1.1 Tullaher Lough and Bog SAC [002343]

The potential for likely significant effects on this SAC was identified in the AASR for the Onshore Site in Appendix 1. The identified pathway for effect includes the following:

- Potential indirect habitat deterioration due to the spillage of pollutants during the construction phase of the Onshore Site.

The Conservation Objectives document and Natura 2000 Data Form for this designated site, links for which are provided at the beginning of this section, were reviewed during this assessment.

Table 4-1 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any source-pathway-receptor chain, by which adverse effects may occur.

4.1.1.1 Identification of Individual Qualifying Features with the Potential to be Affected.

Table 4-1 Assessment of Qualifying features potentially affected of Tullaher Lough and Bog SAC.

Qualifying feature	Conservation Objective (NPWS, Version 1, December 2016[3])	Rationale	Potential for Adverse Effects Y/N
[7110] Active raised bogs	To restore the favourable conservation condition of Active raised bogs in Tullaher Lough and Bog SAC.	According to Map 2 in the SSCO for this SAC, the extent of this QI habitat is located approximately 150m from the Onshore Site. Whilst the Onshore Site is adjacent to the SAC, the known extent of this QI is located at a sufficient distance from the works and no potential for adverse effects are anticipated. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore works was identified. No further assessment is required.**	No
[7120] Degraded raised bogs still capable of natural regeneration	The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Tullaher Lough and Bog SAC.	This habitat was not recorded within or adjacent to the Onshore site, and there is a buffer of hedgerow, grassy verges, and scrub between the works area and any peatland habitats. However, its extent within the SAC, as per the SSCO's for this SAC, is not fully mapped. Whilst the SSCOs state that this QI has similar Conservation Objectives as [7110] Active raised bogs above, the fact that these are not mapped and taking a precautionary approach, the potential for adverse effects on this QI as a result of spillage of pollutants will be considered further in this NIS. **A source-pathway-receptor chain for adverse effects on this QI habitat was identified as a result of habitat deterioration and it is assessed further in this NIS.**	Yes
[7140] Transition mires and quaking bogs	To maintain the favourable conservation condition of Transition mires and quaking bogs in Tullaher Lough and Bog SAC.	This habitat was not recorded within or adjacent to the Onshore site, and there is a buffer of hedgerow, grassy verges, and scrub between the works area and any peatland habitats. However, its extent within the SAC, as per the SSCO's for this SAC, is not fully mapped and therefore, taking a highly precautionary approach and proximity of the SAC to the Onshore	Yes

[3] *NPWS (2016) Conservation Objectives: Tullaher Lough and Bog SAC [002343]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs*

Qualifying feature	Conservation Objective (NPWS, Version 1, December 2016[3])	Rationale	Potential for Adverse Effects Y/N
		Site, the potential for adverse effects on this QI as a result of spillage of pollutants will be considered further in this NIS. **A source-pathway-receptor chain for adverse effects on this QI habitat was identified as a result of habitat deterioration and it is assessed further in this NIS.**	
[7150] Depressions on peat substrates of the Rhynchosporion	Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Tullaher Lough and Bog SAC.	This habitat was not recorded within or adjacent to the Onshore site, and there is a buffer of hedgerow, grassy verges, and scrub between the works area and any peatland habitats. However, its extent within the SAC, as per the SSCO's for this SAC, is not fully mapped and therefore, taking a highly precautionary approach and proximity of the SAC to the Onshore Site, the potential for adverse effects on this QI as a result of spillage of pollutants will be considered further in this NIS. **A source-pathway-receptor chain for adverse effects on this QI habitat was identified as a result of habitat deterioration and it is assessed further in this NIS.**	Yes

4.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the European Site were reviewed and considered in relation to the Onshore Site. These are provided in Table 4-2.

Table 4-2 Site-specific threats, pressures, *and activities with potential to have effects on Tullaher Lough and Bog SAC.*

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
L	A04	Grazing	Outside
M	C01.03.01	Hand cutting of peat	Inside
M	A08	Fertilisation	Inside
L	J01	Fire and fire suppression	Inside
L	A04	Grazing	Inside
M	A08	Fertilisation	Outside
L	A03	Mowing/ cutting of grassland	Outside
L	D01.02	Roads, motorways	Inside
L	D01.02	Roads, motorways	Outside
M	C01.03	Peat extraction	Outside
M	A03	Mowing/ cutting of grassland	Inside

4.1.1.3 Habitat Specific Information

The sections below provide a desk study on the QIs of the SAC upon which a pathway for adverse effect has been identified.

4.1.1.3.1 *[7120] Degraded raised bogs still capable of natural regeneration*

The conservation objective for this QI habitat within Tullaher Lough and Bog SAC is:

'*The long-term aim for Degraded raised bogs still capable of natural regeneration is that its peat-forming capability is re-established; therefore, the conservation objective for this habitat is inherently linked to that of Active raised bogs (7110) and a separate conservation objective has not been set in Tullaher Lough and Bog SAC'.*

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Taking a precautionary approach and in the absence of mitigation, there is potential for Degraded raised bogs of Tullaher Lough and Bog SAC to be subject to potential indirect habitat deterioration due to the spillage of pollutants during the construction phase of the Onshore Site as a result of its proximity to the Onshore Site, and due to this habitat not being mapped in full.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

Whilst no targets and attributes have been set for this QI within the SSCOs, it does state that these would be similar to those of Active Raised Bogs (Table 4-3), and therefore these are provided below for Degraded raised bogs still capable of natural regeneration.

Targets and Attributes

Table 4-3 Targets and Attributes for [7110] Active raised bogs of Tullaher Lough and Bog SAC.

Attribute	Target
Habitat area	Restore area of active raised bog to 13.2ha, subject to natural processes
Habitat distribution	Restore the distribution and variability of active raised bog across the SAC. See map 3 for distribution in 1999
High bog area	No decline in extent of high bog necessary to support the development and maintenance of active raised bog. See map 2
Hydrological regime: water levels	Restore appropriate water levels throughout the site
Hydrological regime: flow patterns	Restore, where possible, appropriate high bog topography, flow directions and slopes. See map 4 for current situation
Transitional areas between high bog and adjacent mineral soils (including cutover areas)	Restore adequate transitional areas to support/protect active raised bog and the services it provides
Vegetation quality: central ecotope, active flush, soaks, bog woodland	Restore 6.6ha of central ecotope/active flush/soaks/bog woodland as appropriate
Vegetation quality: microtopographical features	Restore adequate cover of high quality microtopographical features
Vegetation quality: bog moss (*Sphagnum*) species	Restore adequate cover of bog moss (*Sphagnum*) species to ensure peat-forming capacity
Typical ARB species: flora	Restore, where appropriate, typical active raised bog flora
Typical ARB species: fauna	Restore, where appropriate, typical active raised bog fauna
Elements of local distinctiveness	Maintain features of local distinctiveness, subject to natural processes
Negative physical indicators	Negative physical features absent or insignificant
Vegetation composition: native negative indicator species	Native negative indicator species at insignificant levels
Vegetation composition: nonnative invasive species	Non-native invasive species at insignificant levels and not more than 1% cover
Air quality: nitrogen deposition	Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr
Water quality	Water quality on the high bog and transitional areas close to natural reference conditions

4.1.1.3.2 [7140] Transition mires and quaking bogs

According to the SSCO (NPWS, 2016), transition mires and quaking bogs for this SAC has not been mapped in detail and thus total area of the qualifying habitat is not known.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Stable'.

Taking a precautionary approach and in the absence of mitigation, there is potential for transition mires and quaking bogs of Tullaher Lough and Bog SAC to be subject to potential indirect habitat deterioration due to the spillage of pollutants during the construction phase of the Onshore Site as a result of its proximity to the Onshore Site, and due to this habitat not being mapped in full.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-4.

Targets and Attributes

Table 4-4 Targets and Attributes for [7140] Transition mires and quaking bogs of Tullaher Lough and Bog SAC.

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	Maintain the habitat within the shallow topographic basin in the south of the SAC
Hydrological regime: water levels	Restore appropriate water levels throughout the site
Hydrological regime: flow patterns	Maintain appropriate topography and water movement regime
Vegetation quality: plant community diversity	Maintain variety of vegetation communities, subject to natural processes
Vegetation quality: microtopographical features	Maintain high quality microtopographical features
Vegetation quality: bog moss and other moss species	Maintain adequate cover of bog moss (*Sphagnum*) and other moss species
Vegetation composition: typical species	Maintain typical flora
Elements of local distinctiveness	Maintain features of local distinctiveness, subject to natural processes
Negative physical indicators	Negative physical features absent or insignificant
Vegetation composition: native negative indicator species	Native negative indicator species at insignificant levels
Vegetation composition: nonnative invasive species	Non-native invasive species at insignificant levels and not more than 1% cover
Air quality: nitrogen deposition	Air quality surrounding transition mire habitat close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr

Water quality	Water quality in the basin close to natural reference conditions

4.1.1.3.3 [7150] Depressions on peat substrates of the Rhynchosporion

The conservation objective for this QI habitat within Tullaher Lough and Bog SAC is:

'Depressions on peat substrates of the Rhynchosporion is an integral part of good quality Active raised bogs (7110) and thus a separate conservation objective has not been set for the habitat in Tullaher Lough and Bog SAC'

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Bad' and the overall Conservation Trend is 'Deteriorating'.

Taking a precautionary approach and in the absence of mitigation, there is potential for Depressions on peat substrates of the Rhynchosporion of Tullaher Lough and Bog SAC to be subject to potential indirect habitat deterioration due to the spillage of pollutants during the construction phase of the Onshore Site as a result of its proximity to the Onshore Site, and due to this habitat not being mapped in full.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

Whilst no targets and attributes have been set for this QI within the SSCOs, it does state that these would be similar to those of Active Raised Bogs (Table 4-5), and therefore these are provided below for Degraded raised bogs still capable of natural regeneration.

Targets and Attributes

Table 4-5 Targets and Attributes for [7110] Active raised bogs of Tullaher Lough and Bog SAC.

Attribute	Target
Habitat area	Restore area of active raised bog to 13.2ha, subject to natural processes
Habitat distribution	Restore the distribution and variability of active raised bog across the SAC. See map 3 for distribution in 1999
High bog area	No decline in extent of high bog necessary to support the development and maintenance of active raised bog. See map 2
Hydrological regime: water levels	Restore appropriate water levels throughout the site
Hydrological regime: flow patterns	Restore, where possible, appropriate high bog topography, flow directions and slopes. See map 4 for current situation
Transitional areas between high bog and adjacent mineral soils (including cutover areas)	Restore adequate transitional areas to support/protect active raised bog and the services it provides
Vegetation quality: central ecotope, active flush, soaks, bog woodland	Restore 6.6ha of central ecotope/active flush/soaks/bog woodland as appropriate
Vegetation quality: microtopographical features	Restore adequate cover of high quality microtopographical features
Vegetation quality: bog moss (*Sphagnum*) species	Restore adequate cover of bog moss (*Sphagnum*) species to ensure peat-forming capacity
Typical ARB species: flora	Restore, where appropriate, typical active raised bog flora
Typical ARB species: fauna	Restore, where appropriate, typical active raised bog fauna
Elements of local distinctiveness	Maintain features of local distinctiveness, subject to natural processes
Negative physical indicators	Negative physical features absent or insignificant
Vegetation composition: native negative indicator species	Native negative indicator species at insignificant levels
Vegetation composition: nonnative invasive species	Non-native invasive species at insignificant levels and not more than 1% cover
Air quality: nitrogen deposition	Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr
Water quality	Water quality on the high bog and transitional areas close to natural reference conditions

4.1.2 Lower River Shannon SAC [002165]

The potential for likely significant effects on this SAC were identified in the AASR for the Onshore Site in Appendix 1. The identified pathways for effect include the following:

- Deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SAC, and that it crosses seven mapped watercourses which discharge downstream into this SAC.
- Disturbance to QI species which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction phase.

The Conservation Objectives document and Natura 2000 Data Form for this designated site, links for which are provided at the beginning of this section, were reviewed during this assessment.

Table 4-6 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any source-pathway-receptor chain, by which adverse effects may occur.

4.1.2.1 Identification of Individual Qualifying Features with the Potential to be Affected.

Table 4-6 Assessment of Qualifying features potentially affected of Lower River Shannon SAC.

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
[1110] Sandbanks which are slightly covered by sea water all the time	To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time in the Lower River Shannon SAC	According to Map 3 in the SSCO for this SAC, the extent of this QI habitat is located approximately 25km from the Onshore Site. Therefore, no potential pathway for indirect adverse effects was identified due to the intervening distance between the QIs extent and the Onshore Site. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore works was identified. No further assessment is required.**	No
[1130] Estuaries	To maintain the favourable conservation condition of Estuaries in the Lower River Shannon SAC	According to Map 4 in the SSCO for this SAC, this QI habitat is located adjacent to the southern extent of the Onshore Site and has direct downstream connectivity to this SAC. Therefore, a potential pathway for adverse effects on this QI was identified via the deterioration of water quality within the SAC arising from the potential runoff of pollutants during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	Yes
[1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the Lower River Shannon SAC	According to Map 5 in the SSCO for this SAC, this QI habitat is located downstream of the Onshore Site via two mapped watercourses. Therefore, a potential pathway for adverse effects on this QI was identified via the deterioration of water quality within the SAC arising from the potential runoff of pollutants during the construction phase of the Onshore Site.	Yes

[4] *NPWS (2012) Conservation Objectives: Lower River Shannon SAC [002165]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.*

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
		A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.	
[1150] *Coastal lagoons	To restore the favourable conservation condition of Coastal lagoons in the Lower River Shannon SAC	According to Map 6 in the SSCO for this SAC, the closest example of this QI habitat to the site is located approximately 5.5km from the Onshore Site and no direct hydrological connectivity with its extent was identified. Due to the absence of direct hydrological connectivity and associated distance between the Onshore Site and the known distribution of this QI habitat, no pathway for adverse effects was identified. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore works was identified. No further assessment is required.**	No
[1160] Large shallow inlets and bays	To maintain the favourable conservation condition of Large shallow inlets and bays in the Lower River Shannon SAC	According to Map 7 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site is located approximately 600m away. There is direct hydrological connectivity to the known extent of this QI habitat via seven mapped watercourses which cross the Onshore Site. Therefore, following the precautionary principle, a potential pathway for adverse effects on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	Yes
[1170] Reefs	To maintain the favourable conservation condition of Reefs in the Lower River Shannon SAC	According to Map 8 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies approximately 2.5km away within the Shannon Estuary. There is direct hydrological connectivity to the known extent of this QI habitat via seven mapped watercourses which cross the Onshore Site. Therefore, following the precautionary principle, a	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
		potential pathway for adverse effects on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	
[1220] Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial vegetation of stony banks in the Lower River Shannon SAC	According to Map 10 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies approximately 18km away. Due to the nature and scale of the Onshore Site works, in addition to the associated distance between this QI and the Onshore Site, there is no potential for adverse effects. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required**	No
[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	To maintain the favourable conservation condition of Vegetated sea cliffs in the Lower River Shannon SAC	According to Map 11 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies approximately 13km away. Due to the terrestrial nature of this QI and the associated distance between this QI and the site of the Onshore Site, there is no potential for adverse effects. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required**	No
[1310] Salicornia and other annuals colonizing mud and sand	To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the Lower River Shannon SAC	The SSCOs for this SAC state that further areas of this habitat that have not been surveyed maybe present within the SAC in addition to those outlined in Map 12. There is direct hydrological connectivity between this SAC and the Onshore Site via seven mapped watercourses which cross the OGC route. Therefore, following the precautionary principle, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
		A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.	
[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in the Lower River Shannon SAC	According to Map 12 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies approximately 5km away. The SSCOs also state that further areas of this habitat that have not been surveyed maybe present within the SAC. There is direct hydrological connectivity between this SAC and the Onshore Site via seven mapped watercourses which cross the OGC route. Therefore, following the precautionary principle, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	Yes
[1410] Mediterranean salt meadows (*Juncetalia maritimi*)	To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in the Lower River Shannon SAC	According to Map 12 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies approximately 6km away. The SSCOs also state that further areas of this habitat that have not been surveyed maybe present within the SAC. There is direct hydrological connectivity between this SAC and the Onshore Site via seven mapped watercourses which cross the OGC route. Therefore, following the precautionary principle, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	Yes
[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and	To maintain the favourable conservation condition of Water courses of plain to montane levels	According to Map 13 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies in excess of 40km upstream of the Onshore Site. However, as per the 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion*	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
Callitricho-Batrachion vegetation	with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in the Lower River Shannon SAC	vegetation' supporting document, this QI habitat may not be fully mapped within the SAC. Taking a precautionary approach and considering the proximity of the SAC to the proposed works and the direct hydrological via mapped watercourses, a potential pathway for significant effect on this QI was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this habitat was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	
[6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*) in the Lower River Shannon SAC	This QI habitat is not mapped in the SSCO for this SAC. That said, no potential pathway for significant effect was identified due to the terrestrial nature of the habitat, and its absence from within the Onshore Site. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required.**	No
[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)	To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae*, *Salicion albae*) in the Lower River Shannon SAC.	According to Map 14 in the SSCO for this SAC, the closest example of this QI habitat to the Onshore Site lies in excess of 50km away and located upstream within the Shannon River. Therefore, due to the associated distance between this QI and the Onshore Site, the scale of the proposed works, and the terrestrial nature of this QI habitat and absence of hydrological connectivity, there is no potential for indirect effects on this QI habitat. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required.**	No
[1029] Freshwater pearl Mussel (*Margaritifera margaritifera*)	To restore the favourable conservation condition of Freshwater Pearl Mussel in the Lower River Shannon SAC.	According to Map 15 in the SSCO for this SAC, populations of FWPM for which this SAC is designated are confined to the Cloon River, which is located in a separate hydrological sub-basin to the Onshore Site, and there is no hydrological connectivity to their known extent within the SAC.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
		There is no potential for adverse effects on the populations of FWPM for which this SAC has been designated as there is no hydrological connectivity between the Onshore Site and the sub basin in which the SAC FWPM population are located. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required.**	
[1095] Sea Lamprey (*Petromyzon marinus*)	To restore the favourable conservation condition of Sea Lamprey in the Lower River Shannon SAC.	There is direct hydrological connectivity between this SAC and the Onshore Site via seven mapped watercourses which cross the OGC route. Therefore, following the precautionary principle, a potential pathway for adverse effect on these QI species was identified via the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on these species was identified as a result of deterioration of water quality, which is assessed further in this NIS.**	Yes
[1096] Brook Lamprey (*Lampetra planeri*)	To maintain the favourable conservation condition of Brook Lamprey in the Lower River Shannon SAC		Yes
[1099] River Lamprey (*Lampetra fluviatilis*)	To maintain the favourable conservation condition of River Lamprey in the Lower River Shannon SAC		Yes
[1106] Atlantic Salmon (*Salmo salar*)	To restore the favourable conservation condition of Salmon in the Lower River Shannon SAC		Yes
[1349] Bottlenose Dolphin (*Tursiops truncatus*)	To maintain the favourable conservation condition of Bottlenose	Whilst the Lower River Shannon SAC is located directly adjacent to a small section of the southern extent of the Onshore Site, with SSCOs for the SAC also indicating 'Critical Habitat' for bottlenose dolphin to be adjacent to the proposed works area, the works along this section	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, August 2012[4]),	Rationale	Potential for Adverse Effects
	Dolphin in the Lower River Shannon SAC	will be short term in nature and there is an existing buffer of shingle beach on the opposite side of the N67 National Road and a grassy verge to the tidal habitats of the Shannon Estuary. Considering the nature and scale of the Onshore Site, the existing buffer between the works area and suitable bottlenose dolphin habitat, and the highly mobile and entirely marine nature of this QI, no potential for adverse effects as a result of disturbance or displacement are anticipated. No mitigation required. **No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required.**	
[1355] Otter (*Lutra lutra*)	To restore the favourable conservation condition of Otter in the Lower River Shannon SAC	The southern extent of the Onshore Site is located adjacent to this SAC, and according to Map 17 in the SSCO for this SAC, the habitat of this QI species is mapped throughout the SAC. Taking a precautionary approach and considering the proximity of the SAC to the proposed works and the direct hydrological connectivity via mapped watercourses, a potential pathway for adverse effects on this QI species was identified via disturbance and the deterioration of water quality within the SAC arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. Given the nature of the Onshore Site, which will require limited maintenance during operation only, no potential for adverse effects as a result of disturbance exists during the operation and maintenance phase of the Onshore Site. **A source-pathway-receptor chain for adverse effects on this species was identified as a result of deterioration of water quality and disturbance, which are assessed further in this NIS.**	Yes

4.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the European Site were reviewed and considered in relation to the Onshore Site. These are provided in Table 4-7.

Table 4-7 Site-specific threats, pressures, *and activities with potential to have effects on the Lower River Shannon SAC.*

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
M	E01	Urbanised areas, human habitation	Outside
M	K02.03	Eutrophication (natural)	Outside
M	J02.01.02	Reclamation of land from sea, estuary or marsh	Outside
L	C01.01.02	Removal of beach materials	Inside
L	F01	Marine and Freshwater Aquaculture	Inside
M	E03	Discharges	Outside
M	E03	Discharges	Inside
L	J02.10	Management of aquatic and bank vegetation for drainage purposes	Inside
M	A08	Fertilization	Outside
M	H04	Air pollution, air-borne pollutants	Outside
M	A08	Fertilization	Inside
L	F03.01	Hunting	Inside
M	A04	Grazing	Inside
L	B	Sylviculture, forestry	Inside
L	J02.12.01	Sea defence or coast protection works, tidal barrages	Inside
L	G01.01	Nautical sports	Inside
M	J02.01.01	Polderisation	Inside
L	D01.01	Paths, tracks, cycling tracks	Inside
L	C01.03.01	Hand cutting of peat	Inside
L	I01	Invasive non-native species	Inside

4.1.2.3 Habitat Specific Information

The sections below provide a desk study on the QIs of the SAC upon which a pathway for adverse effect has been identified.

4.1.2.3.1 *[1130] Estuaries*

According to the SSCO (NPWS, 2012), estuaries for this SAC have been mapped in detail and thus total area of the qualifying habitat is 24273.3ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

Taking a precautionary approach and in the absence of mitigation, there is potential for estuaries downstream of the Onshore Site to be subject to a deterioration in water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being directly adjacent to this SAC.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-8.

Targets and Attributes

Table 4-8 Targets and Attributes for [1130] Estuaries of the Lower River Shannon SAC.

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes. The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community

4.1.2.3.2 *[1140] Mudflats and sandflats not covered by seawater at low tide*

According to the SSCO (NPWS, 2012), mudflats and sandflats not covered by seawater at low tide for this SAC has been mapped in detail and thus total area of the qualifying habitat is 8808.3ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with a deteriorating trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for mudflats and sandflats downstream of the Onshore Site to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being directly adjacent to this SAC.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-9.

Targets and Attributes

Table 4-9 Targets and Attributes for [1140] Mudflats and sandflats not covered by seawater at low tide of the Lower River Shannon SAC.

Attribute	Target
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; and Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex

4.1.2.3.3 *[1160] Large shallow inlets and bays*

According to the SSCO (NPWS, 2012), Large shallow inlets and bays for this SAC have been mapped in detail and thus total area of the qualifying habitat is 35288.2ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Bad' and deteriorating, a significant decline since the 2013 assessment of Inadequate and improving.

Taking a precautionary approach and in the absence of mitigation, there is potential for large shallow inlets and bays downstream of the Onshore Site to be subject to a deterioration in water quality as a result of the Onshore Site.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-10.

Targets and Attributes

Table 4-10 Targets and Attributes for [1160] Large shallow inlets and bays of the Lower River Shannon SAC.

Attribute	Target
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with Nucula nucleus community complex; Subtidal sand to mixed sediment with Nephtys spp. community complex; Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex.

4.1.2.3.4 *[1170] Reefs*

According to the SSCO (NPWS, 2012), reefs for this SAC have been mapped in detail and thus total area of the qualifying habitat is 21421.3ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with a stable trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for reefs downstream of the Onshore Site to be subject to a deterioration in water quality as a result of the Onshore Site.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-11.

Targets and Attributes

Table 4-11 Targets and Attributes for [1170] Reefs of the Lower River Shannon SAC.

Attribute	Target
Habitat distribution	The distribution of Reefs is stable, subject to natural processes.
Habitat area	The permanent habitat area is stable, subject to natural processes.
Community distribution	Conserve the following reef community types in a natural condition: Fucoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria- dominated community complex.

4.1.2.3.5 *[1310] Salicornia and other annuals colonizing mud and sand*

According to the SSCO (NPWS, 2012), *Salicornia* and other annuals colonizing mud and sand for this SAC have been mapped in detail and thus total area of the qualifying habitat is 0.2214ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Favourable' with a stable trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for *Salicornia* and other annuals colonizing mud and sand downstream of the Onshore Site to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being directly adjacent and upstream to this SAC.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-12.

Targets and Attributes

Table 4-12 Targets and Attributes for [1310] Salicornia *and other annuals colonizing mud and sand of the Lower River Shannon SAC.*

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle - 0.005ha; Inishdea, Owenshere - 0.003ha; Knock - 0.029ha; Querin - 0.185ha; Rinevilla Bay - 0.001ha.
Habitat distribution	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Maintain natural tidal regime
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Maintain structural variation within sward
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and sub-communities	Maintain the presence of species-poor communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species- *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%

4.1.2.3.6 *[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)*

According to the SSCO (NPWS, 2012), Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* for this SAC have been mapped in detail and thus total area of the qualifying habitat is 495.434ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with an overall deteriorating trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* downstream of the Onshore Site to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being directly adjacent and upstream of this SAC.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-13.

Targets and Attributes

Table 4-13 Targets and Attributes for [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) of the Lower River Shannon SAC.

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle- 6.774ha; Barrigone, Aughinish- 10.288ha; Beagh- 0.517ha; Bunratty- 26.939ha; Shepperton, Fergus Estuary- 37.925ha; Inishdea, Owenshere- 18.127ha; Killadysert, Inishcorker- 2.604ha; Knock- 0.576ha; Querin- 3.726ha; Rinevilla Bay- 11.883ha
Habitat distribution	No decline or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Maintain natural tidal regime
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Maintain structural variation within sward
Vegetation structure: vegetation cover	Maintain more than 90% of the saltmarsh area vegetated
Vegetation composition: typical species and sub-communities	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species- *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%

4.1.2.3.7 *[1410] Mediterranean salt meadows (Juncetalia maritimi)*

According to the SSCO (NPWS, 2012), Mediterranean salt meadows (*Juncetalia maritimi*) for this SAC have been mapped in detail and thus total area of the qualifying habitat is 24.6711ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with an overall deteriorating trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for Mediterranean salt meadows (*Juncetalia maritimi*) downstream of the Onshore Site to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent and upstream of this SAC.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-14.

Targets and Attributes

Table 4-14 Targets and Attributes for [1410] Mediterranean salt meadows (Juncetalia maritimi) of the Lower River Shannon SAC.

Attribute	Target
Habitat area	Area increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Carrigafoyle- 4.193ha; Barrigone, Aughinish- 2.407ha; Bunratty- 0.865ha; Inishdea, Owenshere- 11.609ha; Killadysert, Inishcorker- 0.705ha; Knock- 0.143ha, Querin- 0.008ha; Rinevilla Bay- 2.449ha.
Habitat distribution	No decline or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Maintain natural tidal regime
Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Maintain structural variation within sward
Vegetation structure: vegetation cover	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species	Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - *Spartina anglica*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%

4.1.2.3.8 *[3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation*

According to the SSCO (NPWS, 2012), Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation for this SAC have been mapped in detail and thus total area of the qualifying habitat is 683.3ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with an overall deteriorating trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for water courses of plain to montane levels with *Ranunculion fluitantis* and *Calltricho-Batrachion* vegetation downstream of the Onshore Site to be subject to a deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being directly adjacent and upstream of this SAC.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-15.

Targets and Attributes

Table 4-15 Targets and Attributes associated with nominated site-specific conservation objectives for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation in the Lower River Shannon SAC.

Attribute	Target
Habitat area	Area stable or increasing, subject to natural processes
Habitat distribution	No decline, subject to natural processes
Hydrological regime: river flow	Maintain appropriate hydrological regimes
Hydrological regime: tidal influence	Maintain natural tidal regime
Hydrological regime: freshwater	Maintain appropriate freshwater seepage regimes
Substratum composition: particle size range	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles)
Water quality: nutrients	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition
Floodplain connectivity	The area of active floodplain at and upstream of the habitat should be maintained
Riparian habitat	The area of riparian woodland at and upstream of the bryophyte-rich sub-type should be maintained

4.1.2.4 Species Specific Information

4.1.2.4.1 *[1095] Sea Lamprey (Petromyzon marinus)*

According to the SSCO (NPWS, 2012), Artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. The upper extent of the SAC in the R. Fergus is delineated by a barrier to migration. Barriers are also present in the Mulkear and Feale.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Bad' with a stable trend. The sea lamprey is listed in the most recent Irish Red Data Book as Near Threatened. Barriers to upstream migration (e.g. weirs) are considered the major impediment to good conservation status for sea lamprey as these limit access to spawning beds and juvenile habitat.

Taking a precautionary approach and in the absence of mitigation, there is potential for sea lamprey to occur downstream of the Onshore Site and therefore, the potential for adverse effects on this species as a result of deterioration of water quality as a result of the construction phase of the Project exists.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-16.

Targets and Attributes

Table 4-16 Targets and Attributes [1095] Sea Lamprey of the Lower River Shannon SAC.

Attribute	Target
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary
Population structure of juveniles	At least three age/size groups present
Juvenile density in fine sediment	At least three age/size groups present
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	More than 50% of sample sites positive

4.1.2.4.2 *[1096] Brook Lamprey (Lampetra planeri)*

According to the SSCO (NPWS, 2012), Artificial barriers can block or cause difficulties to brook lampreys' migration, both up- and downstream, thereby possibly limiting the species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007).

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Favourable'.

Taking a precautionary approach and in the absence of mitigation, there is potential for brook lamprey to occur downstream of the Onshore Site and therefore, the potential for adverse effects on this species as a result of deterioration of water quality as a result of the construction phase of the Project exists.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-17.

Targets and Attributes

Table 4-17 Targets and Attributes [1096] Brook Lamprey of the Lower River Shannon SAC.

Attribute	Target
Distribution	Access to all water courses down to first order streams
Population structure of juveniles	At least three age/size groups of river/brook lamprey present
Juvenile density in fine sediment	Mean catchment juvenile density of river/brook lamprey at least 2/m²

Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	More than 50% of sample sites positive

4.1.2.4.3 *[1099] River Lamprey (Lampetra fluviatilis)*

According to the SSCO (NPWS, 2012), Artificial barriers can block or cause difficulties to river lampreys' migration, both up- and downstream, thereby possibly limiting species to specific stretches and creating genetically isolated populations (Espanhol et al., 2007).

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is unknown. This is largely due to the inability to distinguish between river lamprey and brook lamprey larvae, and the challenges associated with sampling for adult river lamprey, means that an evaluation of their actual range and population size cannot be undertaken.

Taking a precautionary approach and in the absence of mitigation, there is potential for river lamprey to occur downstream of the Onshore Site and therefore, the potential for adverse effects on this species as a result of deterioration of water quality as a result of the construction phase of the Project exists.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-18.

Targets and Attributes

Table 4-18 Targets and Attributes [1099] River Lamprey of the Lower River Shannon SAC.

Attribute	Target
Distribution: extent of anadromy	Access to all water courses down to first order streams
Population structure of juveniles	At least three age/size groups of river/brook lamprey present
Juvenile density in fine sediment	Mean catchment juvenile density of river/brook lamprey at least 2/m²
Out-migrating smolt abundance	No significant decline
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds
Availability of juvenile habitat	More than 50%

4.1.2.4.4 *[1106] Salmon (Salmo salar)*

According to the SSCO (NPWS, 2012), Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. The large hyrdo-electric station at Ardnacrusha and the Parteen regulating weir present considerable obstructions to upstream passage of salmon on the Shannon main channel. While both have fish passes installed, upstream

migration of salmon is still problematic. Further weirs upstream on the Shannon also restrict access to spawning habitat. No such obstacles, causing significant fish passage issues for salmon are present on the Feale and Mulkear rivers.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Inadequate' and the overall Conservation Trend is 'Stable'.

Taking a precautionary approach and in the absence of mitigation, there is potential for Salmon to occur downstream of the Onshore Site and therefore, the potential for adverse effects on this species as a result of deterioration of water quality as a result of the construction phase of the Project exists.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-19.

Targets and Attributes

Table 4-19 Targets and Attributes [1106] Salmon (Salmo salar) of the Lower River Shannon SAC.

Attribute	Target
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 significant decline
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes
Water quality	At least Q4 at all sites sampled by EPA

4.1.2.4.5 *[1349] Bottlenose dolphin (Tursiops truncatus)*

According to the Marine Supporting Document for the Lower River Shannon SAC (NPWS, 2012), following initial investigations of a bottlenose dolphin community occurring in the Shannon Estuary (Berrow et al., 1996), surveys of the size, structure and distribution of the population inhabiting the Lower River Shannon SAC have been conducted over several years since the mid-1990s. Therefore, size, community structure, distribution and habitat use of bottlenose dolphin inhabiting the Lower River Shannon SAC are quite well understood with the population being described as resident within the SAC.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Favourable'. Their seasonal and summer abundance in western European waters has improved significantly in recent years.

Taking a precautionary approach and in the absence of mitigation, there is potential for bottlenose dolphin to occur downstream of the Onshore Site and therefore, the potential for adverse effects on this species as a result of deterioration of water quality as a result of the construction phase of the Project exists.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-20.

Targets and Attributes

Table 4-20 Targets and Attributes [1349] Bottlenose Dolphin (Tursiops truncatus) of the Lower River Shannon SAC.

Attribute	Target
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use
Habitat use: critical areas	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.
Disturbance	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site

4.1.2.4.6 *[1355] Otter (Lutra lutra)*

According to the SSCO (NPWS, 2012), the area of terrestrial habitat is mapped and calculated as 596.8ha. The length of freshwater (river) habitat was mapped and calculated as 500.1km, which was calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982). The area of freshwater (lake) habitat was mapped and calculated as 125.6ha, based on evidence that otters tend to forage within 80 metres of the shoreline (NPWS, 2007).

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI species is 'Inadequate' and the overall Conservation Trend is 'Stable'.

Taking a precautionary approach and in the absence of mitigation, there is potential for otter to occur downstream and adjacent to the Onshore Site and therefore, the potential for adverse effects on this species as a result of deterioration of water quality as a result of the runoff of pollutants and disturbance associated with the construction phase of the Project exists.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-21.

Targets and Attributes

Table 4-21 Targets and Attributes [1355] Otter (Lutra lutra) of the Lower River Shannon SAC.

Targets and Attributes Attribute	Target
Distribution	No significant decline
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 568.8ha along river banks/lake shoreline/ around pools
Extent of marine habitat	No significant decline. Area mapped and calculated as 4,461.6ha
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 500.1km

Extent of freshwater (lake/lagoon) habitat	No significant decline. Area mapped and calculated as 125.6ha
Couching sites and holts	No significant decline
Fish biomass available	No significant decline
Barriers to connectivity	No significant increase

4.1.3 Carrowmore Dunes SAC [002250]

The potential for likely significant effects on this SAC were identified in the AASR for the Onshore Site in Appendix 1. The identified pathways for effect include the following:

- Deterioration of water quality due to five mapped watercourses traversing the Onshore Site which have downstream connectivity to Carrowmore Dunes SAC.

The Conservation Objectives document and Natura 2000 Data Form for this designated site, links for which are provided at the beginning of this section, were reviewed during this assessment.

Table 4-22 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

4.1.3.1 Identification of Individual Qualifying Features with the Potential to be Affected.

Table 4-22 Assessment of Qualifying features potentially affected for Carrowmore Dunes SAC.

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2014)	Rationale	Potential for Adverse Effects
[1170] Reefs	To maintain the favourable conservation condition of Reefs in Carrowmore Dunes SAC	According to Map 3 in the SSCO for this SAC, this QI habitat is located approximately 2.5km from the Onshore Site. Five mapped watercourses traversing the Onshore Site have downstream connectivity to Carrowmore Dunes SAC and this associated habitat. **A source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	Yes
[2110] Embryonic shifting dunes	To restore the favourable conservation condition of Embryonic shifting dunes in Carrowmore Dunes SAC	According to Map 5 in the SSCO for this SAC, these QI habitats are located approximately 5km from the Onshore Site. However, due to the intervening distance and the terrestrial nature of these QI habitats, they will not be considered further in this NIS. **No source- pathway- receptor chain for any effect on these habitats as a result of the Onshore Site was identified. No further assessment is required.**	No
[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Carrowmore Dunes SAC		No
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Carrowmore Dunes SAC		No
[1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)	To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Carrowmore Dunes SAC,	According to Map 6 in the SSCO for this SAC, the distribution of this QI species is located approximately 5km from the Onshore Site. However, due to the intervening distance and the terrestrial nature of this QI species, it will not be considered further in this NIS.	No

Qualifying feature	Conservation Objective (NPWS, Version 1, March 2014)	Rationale	Potential for Adverse Effects
		No source- pathway- receptor chain for any effect on this habitat as a result of the Onshore Site was identified. No further assessment is required.	

4.1.3.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the European Site were reviewed and considered in relation to the Onshore Site. These are provided in Table 4-23.

Table 4-23 Site-specific threats, pressures, *and activities with potential to have effects on Carrowmore Dunes SAC.*

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
L	A05.02	Stock feeding	Inside
L	F06	Hunting, fishing or collecting activities not referred to above	Inside
M	C01.01	Sand and gravel extraction	Outside
M	A04	Grazing	Inside
H	K01.01	Erosion	Inside
L	F06	Hunting, fishing or collecting activities not referred to above	Inside
H	A04	Grazing	Outside
M	A08	Fertilisation	Outside
H	A05.02	Stock feeding	Outside
M	G01.01	Nautical sports	Inside

4.1.3.3 Habitat Specific Information

The sections below provide a desk study on the QIs of the SAC upon which a pathway for adverse effect has been identified.

4.1.3.3.1 *[1170] Reefs*

According to the SSCO (NPWS, 2014), reefs for this SAC has been mapped in detail and thus total area of the qualifying habitat is 211.367ha as per the Natura 2000 Data Form.

According to the Article 17 Report (NPWS 2019), the overall Conservation Status for this QI habitat is 'Inadequate' with a stable trend.

Taking a precautionary approach and in the absence of mitigation, there is potential for reefs downstream of the Onshore Site to be subject to a deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Project.

The Conservation Objectives (COs) for this QI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002034.pdf.

The targets and attributes for this QI, as per the SSCOs of the SAC, are provided in Table 4-24.

Targets and Attributes

Table 4-24 Targets and Attributes for [1170] Reefs of Carrowmore Dunes SAC.

Attribute	Target
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes
Habitat distribution	The distribution of Reefs is stable or increasing, subject to natural processes.
Community distribution	Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex.

4.1.4 River Shannon and River Fergus Estuaries SPA [004077]

The potential for likely significant effects on this SPA were identified in the AASR for the Onshore Site in Appendix 1. The identified pathways for effect include the following:

- Deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SPA, and that it crosses seven mapped watercourses which discharge downstream into this SPA.
- Disturbance to SCI species which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives document and Natura 2000 Data Form for this designated site, links for which are provided at the beginning of this section, were reviewed during this assessment.

Table 4-25 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any source-pathway-receptor chain, by which adverse effects may occur.

4.1.4.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 4-25 Assessment of Qualifying features potentially affected for River Shannon and River Fergus Estuaries SPA.

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012[5]),	Rationale	Potential for Adverse Effects
[A017] Cormorant (*Phalacrocorax carbo*)	To maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA	The southern extent of the Onshore Site is located adjacent to this SPA and a tidal area which provides potential foraging habitat for the SCIs of the SPA. Additionally, there is direct hydrological connectivity between this SPA and the Onshore Site via seven mapped watercourses which cross the OGC route. Whilst the area where the Onshore Site is adjacent to the SPA is comprised of a busy road and grassy verge and there is no potential for habitat loss, taking a precautionary approach, there is potential for adverse effects on these SCIs of the SPA as a result of disturbance and deterioration of water quality during the construction phase of the Project. **Therefore, a source-pathway-receptor chain for adverse effects on these SCIs of the SPA, as a result of disturbance and deterioration of water quality, was identified and it is assessed further in this NIS.**	Yes
[A038] Whooper Swan (*Cygnus cygnus*)	To maintain the favourable conservation condition of Whooper Swan in the River Shannon and River Fergus Estuaries SPA		Yes
[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)	To maintain the favourable conservation condition of Light-bellied Brent Goose in the River Shannon and River Fergus Estuaries SPA		Yes
[A048] Shelduck (*Tadorna tadorna*)	To maintain the favourable conservation condition of Shelduck in the River Shannon and River Fergus Estuaries SPA		Yes
[A050] Widgeon (*Anas Penelope*)	To maintain the favourable conservation condition of Wigeon in		Yes

[5] *NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA [004077] Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.*

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012[5]),	Rationale	Potential for Adverse Effects
	the River Shannon and River Fergus Estuaries SPA		
[A052] Teal (*Anas crecca*)	To maintain the favourable conservation condition of Teal in the River Shannon and River Fergus Estuaries SPA		Yes
[A054] Pintail (*Anas acuta*)	To maintain the favourable conservation condition of Pintail in the River Shannon and River Fergus Estuaries SPA		Yes
[A056] Shoveler (*Anas clypeata*)	To maintain the favourable conservation condition of Shoveler in the River Shannon and River Fergus Estuaries SPA		Yes
[A062] Scaup (*Aythya marila*)	To maintain the favourable conservation condition of Scaup in the River Shannon and River Fergus Estuaries SPA		Yes
[A137] Ringed Plover (*Charadrius hiaticula*)	To maintain the favourable conservation condition of Ringed Plover in the River Shannon and River Fergus Estuaries SPA		Yes
[A140] Golden Plover (*Pluvialis apricaria*)	To maintain the favourable conservation condition of Golden		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012[5]),	Rationale	Potential for Adverse Effects
	Plover in the River Shannon and River Fergus Estuaries SPA		
[A141] Grey Plover (*Pluvialis squatarola*)	To maintain the favourable conservation condition of Grey Plover in the River Shannon and River Fergus Estuaries SPA		Yes
[A142] Lapwing (*Vanellus vanellus*)	To maintain the favourable conservation condition of Lapwing in the River Shannon and River Fergus Estuaries SPA		Yes
[A143] Knot (*Calidris canutus*)	To maintain the favourable conservation condition of Knot in the River Shannon and River Fergus Estuaries SPA		Yes
[A149] Dunlin (*Calidris alpina*)	To maintain the favourable conservation condition of Dunlin in the River Shannon and River Fergus Estuaries SPA		Yes
[A156] black-tailed Godwit (*Limosa limosa*)	To maintain the favourable conservation condition of Black-tailed Godwit in the River Shannon and River Fergus Estuaries SPA		Yes
[A157] Bar-tailed Godwit (*Limosa lapponica*)	To maintain the favourable conservation condition of Bar-tailed		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012[5]),	Rationale	Potential for Adverse Effects
	Godwit in the River Shannon and River Fergus Estuaries SPA		
[A160] Curlew (*Numenius arquata*)	To maintain the favourable conservation condition of Curlew in the River Shannon and River Fergus Estuaries SPA		Yes
[A162] Redshank (*Tringa tetanus*)	To maintain the favourable conservation condition of Redshank in the River Shannon and River Fergus Estuaries SPA		Yes
[A164] Greenshank (*Tringa nebularia*)	To maintain the favourable conservation condition of Greenshank in the River Shannon and River Fergus Estuaries SPA		Yes
[A179] Black-headed Gull (*Chroicocephalus ridibundus*)	To maintain the favourable conservation condition of Black-headed Gull in the River Shannon and River Fergus Estuaries SPA		Yes
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in the River Shannon and River Fergus Estuaries SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	The southern extent of the Onshore Site is located adjacent to this SPA Furthermore, there is direct hydrological connectivity between this SPA and the Onshore Site via seven mapped watercourses which cross the OGC route. Therefore, following the precautionary principle, a potential pathway for adverse effect on supporting wetland habitat of the SCIs of the SPA was identified via the deterioration of water	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2012[5]),	Rationale	Potential for Adverse Effects
		quality within the SPA arising from the runoff of pollutants into surface water systems during the construction phases of the Onshore Site. **Therefore, a source-pathway-receptor chain for adverse effects on supporting wetland habitat for the SCIs of the SPA was identified, as a result of deterioration of water quality, and it is assessed further in this NIS.**	

4.1.4.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the European Site were reviewed and considered in relation to the Onshore Site. These are provided in Table 4-26.

Table 4-26 Site-specific threats, pressures, *and activities with potential to have effects on the River Shannon and River Fergus Estuaries SPA*

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
M	G01.01	Nautical sports	Inside
M	D03.02	Shipping lanes	Inside
H	E03	Discharges	Inside
H	E01	Urbanised areas, human habitation	Outside
H	A08	Fertilisation	Outside
H	E02	Industrial or commercial areas	Outside
M	F01	Marine and Freshwater Aquaculture	Inside

4.1.4.3 Special Conservation Interests' Specific Information

The sections below provide a desk study on the SCIs of the SPA upon which a pathway for adverse effect has been identified.

4.1.4.3.1 *Cormorant Phalacrocorax carbo [A017]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Stable' short term trend (2002-2012) and an 'Increase' in long term trend (1978-2012).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction. There is also potential for adverse effects via the deterioration of water quality.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-27 below:

Targets and Attributes

Table 4-27 Targets and attributes associated with nominated site-specific conservation objectives for Cormorant in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by cormorant other than that occurring from natural patterns of variation

4.1.4.3.2 *Whooper Swan Cygnus cygnus [A038]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Whooper Swan in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Increase' in short term trend (2000-2010) and an 'Increase' in long term trend (1986-2010).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-28 below:

Targets and Attributes

Table 4-28 Targets and attributes associated with nominated site-specific conservation objectives for Whooper Swan in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by whooper swan other than that occurring from natural patterns of variation

4.1.4.3.3 *Light-bellied Brent Goose Branta bernicla hrota [A046]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Light-bellied Brent Goose in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Increase' in short term trend (1999-2011) and an 'Increase' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-29 below:

Targets and Attributes

Table 4-29 Targets and attributes associated with nominated site-specific conservation objectives for Light-bellied Brent Goose in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose other than that occurring from natural patterns of variation

4.1.4.3.4 *Shelduck Tadorna tadorna [A048]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Shelduck in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Increase' in short term trend (1991-2011) and an 'Unknown in long term trend (1980-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-30 below:

Targets and Attributes

Table 4-30 Targets and attributes associated with nominated site-specific conservation objectives for Shelduck in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by shelduck other than that occurring from natural patterns of variation

4.1.4.3.5 *Wigeon Anas penelope [A050]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

'To maintain the favourable conservation condition of Wigeon in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Decrease in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-31 below:

Targets and Attributes

Table 4-31 Targets and attributes associated with nominated site-specific conservation objectives for Wigeon in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by wigeon other than that occurring from natural patterns of variation

4.1.4.3.6 *Teal Anas crecca [A052]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

'To maintain the favourable conservation condition of Teal in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Stable' short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-32 below:

Targets and Attributes

Table 4-32 Targets and attributes associated with nominated site-specific conservation objectives for Teal in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing

Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by teal other than that occurring from natural patterns of variation

4.1.4.3.7 *Pintail Anas acuta [A054]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Pintail in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Fluctuating' short term trend (1999-2011) and an 'Unknown in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-33 below:

Targets and Attributes

Table 4-33 Targets and attributes associated with nominated site-specific conservation objectives for Pintail in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by pintail other than that occurring from natural patterns of variation

4.1.4.3.8 *Shoveler Anas clypeata [A056]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Shoveler in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Fluctuating' short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-34 below:

Targets and Attributes

Table 4-34 Targets and attributes associated with nominated site-specific conservation objectives for Shoveler in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by shoveler other than that occurring from natural patterns of variation

4.1.4.3.9 *Scaup Aythya marila [A062]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Scaup in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-35 below:

Targets and Attributes

Table 4-35 Targets and attributes associated with nominated site-specific conservation objectives for Scaup in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by scaup other than that occurring from natural patterns of variation

4.1.4.3.10 *Ringed Plover Charadrius hiaticula [A137]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Ringed Plover in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Stable' short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-36 below:

Targets and Attributes

Table 4-36 Targets and attributes associated with nominated site-specific conservation objectives for Ringed Plover in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by ringed plover other than that occurring from natural patterns of variation

4.1.4.3.11 *Golden Plover Pluvialis apricaria [A140]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Golden Plover in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-37 below:

Targets and Attributes

Table 4-37 Targets and attributes associated with nominated site-specific conservation objectives for Golden Plover in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by golden plover other than that occurring from natural patterns of variation

4.1.4.3.12 *Grey Plover Pluvialis squatarola [A141]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Grey Plover in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-38 below:

Targets and Attributes

Table 4-38 Targets and attributes associated with nominated site-specific conservation objectives for Grey Plover in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by grey plover other than that occurring from natural patterns of variation

4.1.4.3.13 *Lapwing Vanellus vanellus [A142]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Lapwing in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Decrease' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-39 below:

Targets and Attributes

Table 4-39 Targets and attributes associated with nominated site-specific conservation objectives for Lapwing in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by lapwing other than that occurring from natural patterns of variation

4.1.4.3.14 *Knot Calidris canutus [A143]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Knot in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Increase' in short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-40 below:

Targets and Attributes

Table 4-40 Targets and attributes associated with nominated site-specific conservation objectives for Knot in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by knot other than that occurring from natural patterns of variation

4.1.4.3.15 *Dunlin Calidris alpina [A149]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Dunlin in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Decrease' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-41 below:

Targets and Attributes

Table 4-41 Targets and attributes associated with nominated site-specific conservation objectives for Dunlin in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by dunlin other than that occurring from natural patterns of variation

4.1.4.3.16 *Black-tailed Godwit Limosa limosa [A156]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Black-tailed Godwit in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has an 'Increase' in short term trend (1999-2011) and an 'Increase' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-42 below:

Targets and Attributes

Table 4-42 Targets and attributes associated with nominated site-specific conservation objectives for Black-tailed Godwit in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by black-tailed godwit other than that occurring from natural patterns of variation

4.1.4.3.17 *Bar-tailed Godwit Limosa lapponica [A157]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Bar-tailed Godwit in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has an 'Increase' in short term trend (1999-2011) and a 'Decrease' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-43 below:

Targets and Attributes

Table 4-43 Targets and attributes associated with nominated site-specific conservation objectives for Bar-tailed Godwit in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit other than that occurring from natural patterns of variation

4.1.4.3.18 *Curlew Numenius arquata [A160]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Curlew in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and a 'Decrease' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-44 below:

Targets and Attributes

Table 4-44 Targets and attributes associated with nominated site-specific conservation objectives for Curlew in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by curlew other than that occurring from natural patterns of variation

4.1.4.3.19 *Redshank Tringa totanus [A162]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Redshank in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' short term trend (1991-2008) and a 'Decrease' in long term trend (1972-2008).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-45 below:

Targets and Attributes

Table 4-45 Targets and attributes associated with nominated site-specific conservation objectives for Redshank in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by redshank other than that occurring from natural patterns of variation

4.1.4.3.20 *Greenshank Tringa nebularia [A164]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Greenshank in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Stable' short term trend (1999-2011) and an 'Increase' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-46 below:

Targets and Attributes

Table 4-46 Targets and attributes associated with nominated site-specific conservation objectives for Greenshank in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by greenshank other than that occurring from natural patterns of variation

4.1.4.3.21 *Black-headed Gull Chroicocephalus ridibundus [A179]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

> 'To maintain the favourable conservation condition of Black-headed Gull in the River Shannon and River Fergus Estuaries SPA'

According to the Article 12 Report (NPWS 2019), this SCI has an 'Unknown' in short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for disturbance to this SCI species of the SPA which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-47 below:

Targets and Attributes

Table 4-47 Targets and attributes associated with nominated site-specific conservation objectives for Black-headed Gull in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation

4.1.4.3.22 Wetlands [A999)

As per the SSCOs for this SPA, the extent of wetland habitat within the SPA was estimated as 32,261ha, using OSi data and relevant orthophotographs (NPWS, 2012). The following relevant extracts have been gleaned from the NPWS site synopsis and Natura 2000 Data From for the SPA:

'*The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry. The site has vast expanses of intertidal flats which contain a diverse macroinvertebrate community, e.g. Macoma-Scrobicularia-Nereis, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds. Elsewhere in the site the shoreline comprises stony or shingle beaches.'*

Taking a precautionary approach and in the absence of mitigation, there is potential for deterioration of this supporting habitat for the SCIs of the SPA a result of reduced water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SPA, and that it crosses seven mapped watercourses which discharge downstream into this SPA.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf.

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-48.

Targets and Attributes

Table 4-48 Targets and attributes associated with nominated site-specific conservation objectives for Wetlands in River Shannon and River Fergus Estuaries SPA

Attribute	Target
Wetland habitat area	*The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 32,261ha, other than that occurring from natural patterns of variation*

4.1.5 Mid-Clare Coast SPA [004182]

The potential for likely significant effects on this SPA were identified in the AASR for the Onshore Site in **Appendix 1**. The identified pathways for effect include the following:

- There is potential for the deterioration of water quality within the SPA, arising from the runoff of pollutants into surface water systems from the construction phases of the Onshore Site.

The Conservation Objectives document and Natura 2000 Data Form for this designated site, links for which are provided at the beginning of this section, were reviewed during this assessment.

Table 4-49 below lists the qualifying features of this European Site and determines, in the light of their Conservation Objectives, whether there is any source-pathway-receptor chain, by which adverse effects may occur.

4.1.5.1 Identification of Individual Qualifying Features with the Potential to be Affected

Table 4-49 Assessment of Qualifying features potentially affected for Mid-Clare Coast SPA.

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2014),	Rationale	Potential for Adverse Effects
[A017] Cormorant (*Phalacrocorax carbo*)	To maintain the favourable conservation condition of Cormorant in Mid-Clare Coast SPA.	No significant supporting habitat for any SCI of this SPA was recorded along or adjacent to the Onshore Site. Considering the nature and scale of the Onshore Site and the intervening distance between the proposed works and the SPA, there is no potential for adverse effects on these SCI species as a result of habitat loss, disturbance, or displacement. However, OGC associated with the Onshore Site crosses five mapped watercourses which discharge into this SPA approx. 900m downstream. Therefore, following the precautionary principle, a potential pathway for adverse effect on the SCI waterbirds of the SPA was identified via the deterioration of water quality within the SPA arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **Therefore, a source-pathway-receptor chain for adverse effects on SCIs of the SPA was identified, as a result of deterioration of water quality, and it is assessed further in this NIS.**	Yes
[A045] Barnacle Goose (*Branta leucopsis*)	To maintain the favourable conservation condition of Barnacle Goose in Mid-Clare Coast SPA.		Yes
[A137] Ringed Plover (*Charadrius hiaticula*)	To maintain the favourable conservation condition of Ringed Plover in Mid-Clare Coast SPA.		Yes
[A144] Sanderling (*Calidris alba*)	To maintain the favourable conservation condition of Sanderling in Mid-Clare Coast SPA.		Yes
[A148] Purple Sandpiper (*Calidris maritima*)	To maintain the favourable conservation condition of Purple Sandpiper in Mid-Clare Coast SPA.		Yes
[A149] Dunlin (*Calidris alpina alpina*)	To maintain the favourable conservation condition of Dunlin in Mid-Clare Coast SPA.		Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, September 2014),	Rationale	Potential for Adverse Effects
[A169] Turnstone (*Arenaria interpres*)	To maintain the favourable conservation condition of Turnstone in Mid-Clare Coast SPA.		Yes
[A999] Wetlands	To maintain the favourable conservation condition of the wetland habitat in Mid-Clare Coast SPA as a resource for the regularly occurring migratory waterbirds that utilise it.	The OGC associated with the Onshore Site crosses five mapped watercourses which discharge into this SPA approx. 900m downstream. Therefore, following the precautionary principle, a potential pathway for adverse effect on supporting wetland habitat of the SCIs of the SPA was identified via the deterioration of water quality within the SPA arising from the runoff of pollutants into surface water systems during the construction phase of the Onshore Site. **Therefore, a source-pathway-receptor chain for adverse effects on supporting wetland habitat for the SCIs of the SPA was identified, as a result of deterioration of water quality, and it is assessed further in this NIS.**	Yes

4.1.5.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures, and activities with potential to impact on the European Site were reviewed and considered in relation to the Onshore Site. These are provided in Table 4-50.

Table 4-50 Site-specific threats, pressures, and activities with potential to have effects on the Mid-Clare Coast SPA

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
M	G01.01	Nautical sports	Inside
M	D03.02	Shipping lanes	Inside
H	E03	Discharges	Inside
H	E01	Urbanised areas, human habitation	Outside
H	A08	Fertilisation	Outside
H	E02	Industrial or commercial areas	Outside
M	F01	Marine and Freshwater Aquaculture	Inside

4.1.5.3 Special Conservation Interests' Specific Information

The sections below provide a desk study on the SCIs of the SPA upon which a pathway for adverse effect has been identified.

4.1.5.3.1 *Cormorant Phalacrocorax carbo [A017]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

'To maintain the favourable conservation condition of Cormorant in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Stable' short term trend (2002-2012) and an 'Increase' in long term trend (1978-2012).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-51 below:

Targets and Attributes

Table 4-51 Targets and Attributes associated with nominated site-specific conservation objectives for Cormorant in Mid-Clare Coast SPA

Attribute	Target
Breeding population abundance: apparently occupied nests (AONs)	No significant decline
Productivity rate	No significant decline
Distribution: breeding colonies	No significant decline
Prey biomass available	No significant decline
Barriers to connectivity	No significant decline
Disturbance at the breeding site	Human activities should occur at levels that do not adversely affect the breeding cormorant population

4.1.5.3.2 *Barnacle Goose Branta leucopsis [A045]*

As per the SSCOs for this SPA, the conservation objective for this SCI is:

'To maintain the favourable conservation condition of Barnacle Goose in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has an 'Increase' in short term trend (1999-2008) and an 'Increase' in long term trend (1983-2008).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-52 below:

Targets and Attributes

Table 4-52 Targets and Attributes associated with nominated site-specific conservation objectives for Barnacle Goose in Mid-Clare Coast SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation

4.1.5.3.3 *Ringed Plover Charadrius hiaticula [A137]*

The conservation objective for this SCI is:

'To maintain the favourable conservation condition of Ringed Plover in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Stable' short term trend (1999-2011) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-53 below:

Targets and Attributes

Table 4-53 Targets and Attributes associated with nominated site-specific conservation objectives for Ringed Plover in Mid-Clare Coast SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation

4.1.5.3.4 *Sanderling Calidris alba [A144]*

The conservation objective for this SCI is:

'To maintain the favourable conservation condition of Sanderling in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has an 'Increase' in short term trend (1999-2011) and an 'Increase' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-54 below:

Targets and Attributes

Table 4-54 Targets and Attributes associated with nominated site-specific conservation objectives for Sanderling in Mid-Clare Coast SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation

4.1.5.3.5 *Purple Sandpiper Calidris maritima [A148]*

The conservation objective for this SCI is:

'To maintain the favourable conservation condition of Purple Sandpiper in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has an 'Increase' in short term trend (1999-2011) and a 'Decrease' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-55 below:

Targets and Attributes

Table 4-55 Targets and Attributes associated with nominated site-specific conservation objectives for Purple Sandpiper in Mid-Clare Coast SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation

4.1.5.3.6 *Dunlin Calidris alpina alpina [A149]*

The conservation objective for this SCI is:

'To maintain the favourable conservation condition of Dunlin in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Decrease' in short term trend (1999-2011) and an 'Decrease' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-56 below:

Targets and Attributes

Table 4-56 Targets and Attributes associated with nominated site-specific conservation objectives for Dunlin in Mid-Clare Coast SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation

4.1.5.3.7 *Turnstone Arenaria interpres [A169]*

The conservation objective for this SCI is:

'To maintain the favourable conservation condition of Turnstone in Mid-Clare Coast SPA, which is defined by the following list of attributes and targets:'

According to the Article 12 Report (NPWS 2019), this SCI has a 'Flucuating' in short term trend (1999-2012) and an 'Unknown' in long term trend (1987-2011).

Taking a precautionary approach and in the absence of mitigation, there is potential for adverse effects on this SCI via deterioration in water quality as a result of the runoff of pollutants associated with the construction phase of the Onshore Site.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this SCI, as per the SSCOs of the SPA, are provided in Table 4-57 below:

Targets and Attributes

Table 4-57 Targets and Attributes associated with nominated site-specific conservation objectives for Turnstone in Mid-Clare Coast SPA

Attribute	Target
Population trend	Long term population trend stable or increasing
Distribution	No significant decrease in the range, timing or intensity of use of areas by barnacle goose other than that occurring from natural patterns of variation

4.1.5.3.8 Wetlands

As per the SSCOs for this SPA, the extent of wetland habitat within the SPA was estimated as 4,641ha, using OSi data and relevant orthophotographs (NPWS, 2014). The following relevant extracts have been gleaned from the NPWS site synopsis and Natura 2000 Data From for the SPA:

'*The Mid-Clare Coast SPA site extends along the Co. Clare coastline in a south-southwesterly direction from Spanish Point (3 km west of Milltown Malbay) to just west of Doonbeg Bay, a distance of some 14 km. It comprises the mainland shoreline, Mutton Island and Mattle Island, a series of rocky reefs and the open marine water of Mal Bay between the islands and the mainland.*

The Mid-Clare Coast SPA is of high ornithological importance and supports an internationally important population of Purple Sandpiper, and nationally important populations of wintering Barnacle Goose and four wader species.'

Taking a precautionary approach and in the absence of mitigation, there is potential for deterioration of this supporting habitat for the SCIs of the SPA a result of reduced water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SPA, and that it crosses seven mapped watercourses which discharge downstream into this SPA.

The Conservation Objectives (COs) for this SCI were fully considered and can be viewed here https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

The targets and attributes for this QI, as per the SSCOs of the SPA, are provided in Table 4-58.

Table 4-58 Targets and Attributes associated with nominated site-specific conservation objectives for Wetlands in Mid-Clare Coast SPA

Attribute	Target
Habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 4,641 hectares, other than that occurring from natural patterns of variation

5. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS presents the data and information on the Onshore Site and assesses the potential effects of the Onshore Site on the identified relevant Qualifying Interests or Special Conservation Interests based on a scientific analysis of the Project and its implication for the European Sites identified below. This assessment is undertaken in the absence of any mitigation and in light of the conservation objectives of the European Site. The Conservation Objectives each of the European Site assessed were reviewed on the 29th of October 2024. The Conservation Objectives for these sites are available at the following locations and have also been included in Appendix A of the AASR:

- Tullaher Lough and Bog SAC (002343): https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002343.pdf
- Lower River Shannon SAC (002165): https://www.npws.ie/sites/default/files/protectedsites/conservation_objectives/CO002165.pdf
- Carrowmore Dunes SAC (0022500): https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002250.pdf
- River Shannon and River Fergus Estuaries SPA 004077: https://www.npws.ie/sites/default/files/protectedsites/conservation_objectives/CO004077.pdf
- Mid-Clare Coast SPA (004182): https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the relevant European Sites, in light of the Site Conservation Objectives of the relevant QIs/SCIs. This is presented in a schedule of mitigation that is also listed underneath the effect that it mitigates. The NIS assesses whether the Onshore Site, in light of best available scientific information, , would adversely affect the integrity of a European Site.

The assessment of cumulative effects of the Onshore Site with the Offshore Site, as well as in combination effects of the Onshore Site and the Project with other plans and projects, on all European Sites is provided in Section 6.

5.1 Potential for Adverse Effects on the European Sites

5.1.1 Tullaher Lough and Bog SAC (002343)

This Section assesses whether the Onshore Site, in light of best available scientific information, would adversely affect the integrity of Tullaher Lough and Bog SAC in light of its Conservation Objectives. Assessment for adverse effects as a result of the Onshore Site in combination with other plans or projects is provided in Section 6.

As per Table 4-1 above, a source-pathway-receptor chain for adverse effects on the QI habitats of this SAC have been identified, as a result of habitat loss/deterioration during construction, which is assessed in the following sections.

5.1.1.1 Construction phase

Habitat loss/deterioration

Table 5-1 below assess the potential for indirect adverse effects on QI habitats of the SAC due to the spillage of pollutants during the construction phase of the Onshore Site.

Table 5-1 Assessment of adverse effects on Tullaher Lough and Bog SAC as result of habitat loss

Pathway for adverse effect	Habitat deterioration due to the spillage of pollutants during the construction phase of the Onshore Site.
QIs on which potential for adverse effects have been identified	› [7120] Degraded raised bogs still capable of natural regeneration › [7140] Transition mires and quaking bogs › [7150] Depressions on peat substrates of the Rhynchosporion
Potential impact	Reduced quality and/or extent of the above QI habitats within the Tullaher Lough and Bog SAC, which directly contradicts the conservation objectives of this SAC.
Mitigation	The following measures will be undertaken prior to the construction of the Onshore Site to ensure that there are no adverse effects on QI habitats of Tullaher Lough and Bog SAC; › Where there are gaps in existing buffers between the Onshore Site and peatland habitats i.e. track entrances into the bogs, fencing and signage will be erected to ensure no machinery enters any peatland during construction. › Section 3.2.5 of the Onshore Construction and Environmental Management Plan (CEMP), which is included as Appendix 3 of this NIS, provides mitigations to ensure no spillages of fuels are allowed enter the wider environment. › An ecological clerk of works will be appointed to supervise works which are adjacent to the Tullaher Lough and Bog SAC. › All machinery operators will be made aware of the sensitive nature of peatland habitats of Tullaher Lough and Bog SAC by the ecological clerk of works who will present a toolbox talk to all relevant contractors.
Residual effects	With above mitigations in place, the potential for adverse effects on the integrity of the above QI habitats associated with Tullaher Lough and Bog SAC as a result of habitat deterioration from the construction phase of the Onshore Site is avoided. The measures ensure that the proposed works do not prevent or obstruct any of the QIs of the SAC from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.1.1.2 Operation and Maintenance Phase

No potential for adverse effects on the integrity of Tullaher Lough and Bog SAC in light of its Conservation Objectives of was identified in Table 4-1 during the operation and maintenance phase of the Onshore Site. No further assessment required.

5.1.1.3 Conclusion on assessment of adverse effect on integrity of the Tullaher Lough and Bog SAC

Following the detailed assessment provided in the preceding sections, in relation to Tullaher Lough and Bog SAC, it is concluded that the Onshore Site will not result in any residual adverse effects on the integrity of the SAC, in light of its Conservation Objectives and in light of best available scientific information.

5.1.2 Lower River Shannon SAC (002165)

This Section assesses whether the Onshore Site, in light of best available scientific information, would adversely affect the integrity of the Lower River Shannon SAC in light of Conservation Objectives. Assessment for adverse effects as a result of the Onshore Site in combination with other plans or projects is provided in Section 6.

As per Table 4-6 above, source-pathway-receptor chains for adverse effects on the QI habitats and species of this SAC have been identified, as a result of disturbance and deterioration of water quality during the construction phase of the Onshore Site, which are assessed in the following sections.

5.1.2.1 Construction phase

Disturbance

The construction of the Onshore Site will involve a small section of works directly adjacent to the Lower River Shannon SAC. As suitable habitat for QI species of the SAC, as per the SSCOs, is known to be present adjacent to the proposed works, and taking a precautionary approach, potential for adverse effects on the QIs of the SAC as a result of disturbance during the construction phase of the Onshore Site has been identified.

Table 5-2 below assesses the potential for adverse effects on the SAC as a result of disturbance.

Table 5-2 Assessment of adverse effects on Lower River Shannon SAC as a result of disturbance.

Pathway for adverse effect	Disturbance to QI species which may be foraging, commuting or breeding in suitable habitat adjacent to the Onshore Site during construction phase.
QIs on which potential for adverse effects have been identified	› [1355] Otter (*Lutra lutra*)
Potential impact	Reduced foraging, commuting, or breeding ranges for the above QI species of the Lower River Shannon SAC, which directly contradicts the conservation objectives of this SAC.
Mitigation	No resting or breeding sites for otter were recorded during the multidisciplinary surveys. However, the shores along the Shannon Estuary which form part of the Lower River Shannon SAC, provide suitable foraging, resting, and breeding habitat for otter. There is, therefore, potential for disturbance to otter during the construction phase of the Onshore Site. Otter are predominantly crepuscular in nature and are unlikely to be adversely impacted by the proposed works. Works will be mostly confined to daytime hours, thus minimizing potential disturbance related impacts to the species. The NPWS Threat Response Plan for Otter NPWS (2009) acknowledges that "Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure." It also identifies that Otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas. Channin P (2003) provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993), (Green & Green 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.

	Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, "the lowest percentage occurrence was found at the sites with the lowest recorded disturbance" Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey & Rochford, 2006). Best practice disturbance limitation measures will be followed and are detailed below. › All construction plant and equipment to be used on-site will be modern equipment and will comply with the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1998, and any subsequent amendments. › Plant machinery will be turned off when not in use. Machines, which are used intermittently, will be shut down during those periods when they are not in use. › Operating machinery will be restricted to the Onshore Site boundary. › Light spills during construction works will be minimised where possible thus reducing the effect on areas outside the Onshore Site, and consequently on fauna of conservation value including otter.
Residual effects	Based on the above review of scientific literature and on the best practice disturbance limitation measures included above the potential for adverse effects on the integrity of the Otter population associated with the Lower River Shannon SAC in light of SSCOs and best scientific information can be ruled out beyond reasonable scientific doubt, as a result of disturbance/displacement from the construction phase of the Onshore Site. The measures ensure that the proposed works do not prevent or obstruct any of the QIs of the SAC from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

Deterioration of water quality

The construction of the Onshore Site will involve trenching works and excavations. This will involve earth moving which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the operation and refuelling of excavation machinery. There is a risk that pollutants will percolate down into groundwater or runoff into surface water. As the Onshore Site is adjacent to this SAC and will cross seven watercourses which discharge into this SAC, taking a precautionary approach and in the absence of mitigation, the works have potential to impact on water quality within the Lower River Shannon SAC, potentially having an adverse effect on its aquatic QIs.

Table 5-3 below assesses the potential for deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SAC, and that it crosses seven mapped watercourses which discharge downstream into this SAC.

Table 5-3 Assessment of adverse effects Lower River Shannon SAC as result of Deterioration of water quality

Pathway for adverse effect	Deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SAC, and that it crosses seven mapped watercourses which discharge downstream into this SAC.

QIs on which potential for adverse effects have been identified	› [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1160] Large shallow inlets and bays › [1170] Reefs › [1310] Salicornia and other annuals colonizing mud and sand › [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) › [1410] Mediterranean salt meadows (*Juncetalia maritimi*) › [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › [1095] Sea Lamprey (*Petromyzon marinus*) › [1096] Brook Lamprey (*Lampetra planeri*) › [1099] River Lamprey (*Lampetra fluviatilis*) › [1106] Atlantic Salmon (*Salmo salar*) › [1349] Bottlenose Dolphin (*Tursiops truncatus*) › [1355] Otter (*Lutra lutra*)
Potential impact	Reduced water quality for above aquatic QI habitats and species of the Lower River Shannon SAC, which directly contradicts the conservation objectives of this SAC.
Mitigation	Detailed mitigation measures in relation to the protection of surface water during construction are detailed in Section 23.5.2 of Appendix 2: Chapter 23 (Water). In summary the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by utilizing water crossing methods which do not require in stream works, such as Horizontal Directional Drilling (HDD), as set out Section 5.6.2.2.3 of the Project description in Appendix A of the accompanying Onshore AASR. Detailed control measures in relation to the protection of surface waters during construction are detailed in Section 23.5.2 of Chapter 23 (Water) in Appendix 2 of this NIS. As per Section 23.5.2.4 of Appendix 2, due to hydrogeological setting of the Onshore Site and the nature of the works no significant impacts to groundwater are predicted from the Onshore Site. Standard best practice environmental control measures have been incorporated in the design of the development and are detailed in the Onshore Construction and Environmental Management Plan (CEMP) which has been submitted as part of this planning application and included in **Appendix 3** of this NIS. These measures will ensure there are no impacts to surface or ground waters as a result of the construction phase of the Onshore Site.
Residual effects	After implementation of best practice and preventive measures as referred to above, together with measures already incorporated in the project design, the potential for adverse effects on the integrity of the Lower River Shannon SAC, in light of its SSCOs and best scientific information, can be ruled out beyond reasonable scientific doubt, as a result of deterioration of water quality from the construction phase of the Onshore Site. The measures ensure that the proposed works do not prevent or obstruct any of the QIs of the SAC from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.1.2.2 Operational and Maintenance Phase

No potential for adverse effects on the integrity of Lower River Shannon SAC in light of its Conservation Objectives of was identified in Table 4-6 during the operation and maintenance phase of the Onshore Site. No further assessment required.

5.1.2.3 Conclusion on assessment of adverse effects on the integrity of the Lower River Shannon SAC

Following the detailed assessment provided in the preceding sections, in relation to Lower River Shannon SAC, it is concluded that the Onshore Site will not result in any residual adverse effects on the integrity of the SAC, in light of its Conservation Objectives and in light of best available scientific information.

5.1.3 Carrowmore Dunes SAC (0022500)

This Section assesses whether the Onshore Site, in light of best available scientific information, would adversely affect the integrity of Carrowmore Dunes SAC in light of its Conservation Objectives. Assessment for adverse effects as a result of the Onshore Site in combination with other plans or projects is provided in Section 6.

As per Table 4-22 above, a source-pathway-receptor chains for adverse effects on one QI habitat of this SAC has been identified, as a result of deterioration of water quality during the construction phase of the Onshore Site, which are assessed in the following sections.

5.1.3.1 Construction Phase

Deterioration of water quality

Table 5-4 below assesses the potential for deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site crossing five mapped watercourses which discharge downstream into this SAC.

Table 5-4 Assessment of adverse effects on Carrowmore Dunes SAC as a result of Deterioration of water quality

Pathway for adverse effect	Deterioration of water quality via the indirect runoff or spillage of pollutants during construction due to the Onshore Site crossing four EPA mapped watercourses which discharge downstream into this SAC.
QIs on which potential for adverse effects have been identified	› 1170] Reefs
Potential impact	Reduced water quality for the above aquatic QI habitat of Carrowmore Dunes SAC, which directly contradicts the conservation objectives of this SAC.
Mitigation	Detailed mitigation measures in relation to the protection of surface water during construction are detailed in Section 23.5.2 of Appendix 2: Chapter 23 (Water). In summary the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by utilizing water crossing methods which do not require in stream works, such as Horizontal Directional Drilling (HDD), as set out Section 5.6.2.2.3 of the Project description in Appendix A of the accompanying Onshore AASR. Detailed control measures in relation to the protection of surface waters during construction are detailed in Section 24.5.2.2 of Chapter 23 (Water) in Appendix 2. As per Section 23.5.2.4 of Appendix 2, due to hydrogeological setting of the Onshore Site and the nature of the works no significant impacts to groundwater are predicted from the Onshore Site. Standard best practice environmental control measures have been incorporated in the design of the development and are detailed in the Onshore Construction and Environmental Management Plan (CEMP) which has been submitted as part of this planning application and included in **Appendix 3** of this NIS. These measures will ensure there are no impacts to surface or ground waters as a result of the construction phase of the Onshore Site.
Residual effects	After implementation of best practice and preventive measures as referred to above, together with measures already incorporated in the project design, the potential for adverse effects on the integrity of the Carrowmore Dunes SAC, in light of its SSCOs and best scientific information, can be ruled out beyond reasonable scientific doubt,

	as a result of deterioration of water quality from the construction phase of the Onshore Site. The measures ensure that the proposed works do not prevent or obstruct any of the QIs of the SAC from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.1.3.2 Operation and Maintenance Phase

No potential for adverse effects on the integrity of Carrowmore Dunes SAC in light of its Conservation Objectives of was identified in Table 4-22 during the operation and maintenance phase of the Onshore Site. No further assessment required.

5.1.3.3 Conclusion on assessment of adverse effects on the integrity of Carrowmore Dunes SAC

Following the detailed assessment provided in the preceding sections, in relation to Carrowmore Dunes SAC, it is concluded that the Onshore Site will not result in any residual adverse effects on the integrity of the SAC, in light of its Conservation Objectives and in light of best available scientific information.

5.1.4 River Shannon and River Fergus Estuaries SPA 004077

This Section assesses whether the Onshore Site, in light of best available scientific information, would adversely affect the integrity of River Shannon and River Fergus Estuaries SPA in light of its Conservation Objectives. Assessment for adverse effects as a result of the Onshore Site in combination with other plans or projects is provided in Section 6.

As per Table 4-25 above, a source-pathway-receptor chains for adverse effects on the SCIs species and supporting wetland habitat of this SPA has been identified, as a result of disturbance and deterioration of water quality during the construction phase of the Onshore Site, which are assessed in the following sections.

5.1.4.1 Construction Phase

Disturbance

A short section of the Onshore Grid Connection (420m) near Moneypoint is adjacent to the River Shannon and River Fergus Estuaries SPA. Whilst no protected bird species was recorded here during the surveys undertaken, potential foraging habitat for the SCIs of this SPA was identified within a tidal bay in close proximity to the works area. Therefore, taking a precautionary approach, potential for adverse effects on the SCIs of this SPA, as a result of disturbance during the construction phase of the Onshore Site, has been identified.

Table 5-5 below assesses the potential for adverse effects on the SPA as a result of disturbance.

Table 5-5 Assessment of adverse effects River Shannon and River Fergus Estuaries SPA as a result of disturbance

Pathway for adverse effect	Disturbance to SCI species which may be foraging or commuting in potential suitable habitat adjacent to the Onshore Site during construction phase.
SCIs on which potential for adverse effects have been identified	› Cormorant (*Phalacrocorax carbo*) [A017] › Whooper Swan (*Cygnus cygnus*) [A038] › Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Wigeon (*Anas penelope*) [A050] › Teal (*Anas crecca*) [A052] › Pintail (*Anas acuta*) [A054] › Shoveler (*Anas clypeata*) [A056] › Scaup (*Aythya marila*) [A062] › Ringed Plover (*Charadrius hiaticula*) [A137] › Golden Plover (*Pluvialis apricaria*) [A140] › Grey Plover (*Pluvialis squatarola*) [A141] › Lapwing (*Vanellus vanellus*) [A142] › Knot (*Calidris canutus*) [A143] › Dunlin (*Calidris alpina*) [A149] › Black-tailed Godwit (*Limosa limosa*) [A156] › Bar-tailed Godwit (*Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160] › Redshank (*Tringa totanus*) [A162] › Greenshank (*Tringa nebularia*) [A164] › Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
Potential impact	Reduced foraging ranges for the above SCIs species of the River Shannon and River Fergus Estuaries SPA, which directly contradicts the conservation objectives of this SPA.

Mitigation	To mitigate any potential impacts on foraging SCIs within this estuarine habitat adjacent to the Onshore Site, temporal restrictions on construction activity will be employed to avoid adverse effects on the SPA. Between October and March, no construction works will be undertaken within 500m of the River Shannon and River Fergus Estuaries SPA adjacent to Moneypoint, to ensure no disturbance impacts on any wintering SCI of the SPA.
Residual effects	After implementation of best practice and preventive measures as referred to above, there is no potential for adverse effects on River Shannon and River Fergus Estuaries SPA in light of SSCOs and best scientific information can be ruled out beyond reasonable scientific doubt, as a result of disturbance/displacement from the construction phase of the Onshore Site. The measures ensure that the proposed works do not prevent or obstruct any of the SCIs of the SPA from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

Deterioration of water quality

The construction of the Onshore Site will involve trenching works and excavations. This will involve earth moving which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the operation and refuelling of excavation machinery. There is a risk that pollutants will percolate down into groundwater or runoff into surface water. As the Onshore Site is adjacent to this SPA and will cross seven watercourses which discharge into this SPA, taking a precautionary approach and in the absence of mitigation, the works have potential to impact on water quality within the River Shannon and River Fergus Estuaries SPA, potentially having an adverse effect on its supporting wetland habitat of the SCIs.

Table 5-6 below assesses the potential for deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SPA, and that it crosses seven mapped watercourses which discharge downstream into this SPA.

Table 5-6 Assessment of adverse effects on River Shannon and River Fergus Estuaries SPA as a result of Deterioration of water quality

Pathway for adverse effect	Deterioration of water quality via the direct or indirect runoff or spillage of pollutants during construction due to the Onshore Site being adjacent to this SPA, and that it crosses seven mapped watercourses which discharge downstream into this SPA.
QIs on which potential for adverse effects have been identified	› Cormorant (*Phalacrocorax carbo*) [A017] › Whooper Swan (*Cygnus cygnus*) [A038] › Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Wigeon (*Anas penelope*) [A050] › Teal (*Anas crecca*) [A052] › Pintail (*Anas acuta*) [A054] › Shoveler (*Anas clypeata*) [A056] › Scaup (*Aythya marila*) [A062] › Ringed Plover (*Charadrius hiaticula*) [A137] › Golden Plover (*Pluvialis apricaria*) [A140] › Grey Plover (*Pluvialis squatarola*) [A141] › Lapwing (*Vanellus vanellus*) [A142] › Knot (*Calidris canutus*) [A143] › Dunlin (*Calidris alpina*) [A149] › Black-tailed Godwit (*Limosa limosa*) [A156] › Bar-tailed Godwit (*Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160] › Redshank (*Tringa totanus*) [A162]

	› Greenshank (*Tringa nebularia*) [A164] › Black-headed Gull (*Chroicocephalus ridibundus*) [A179] › Wetlands and waterbirds [A999]
Potential impact	Reduced water quality of supporting wetland habitat for the SCIs of the River Shannon and River Fergus Estuaries SPA, which directly contradicts the conservation objectives of this SPA.
Mitigation	Detailed mitigation measures in relation to the protection of surface water during construction are detailed in Section 23.5.2 of Appendix 2: Chapter 23 (Water). In summary the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by utilizing water crossing methods which do not require in stream works, such as Horizontal Directional Drilling (HDD), as set out Section 5.6.2.2.3 of the Project description in Appendix A of the accompanying Onshore AASR. Detailed control measures in relation to the protection of surface waters during construction are detailed in Section 23.5.2 of Chapter 23 (Water) in Appendix 2 of this NIS. As per Section 23.5.2.4 of Appendix 2, due to hydrogeological setting of the Onshore Site and the nature of the works no significant impacts to groundwater are predicted from the Onshore Site. Standard best practice environmental control measures have been incorporated in the design of the development and are detailed in the Onshore Construction and Environmental Management Plan (CEMP) which has been submitted as part of this planning application and included in **Appendix 3** of this NIS. These measures will ensure there are no impacts to surface or ground waters as a result of the construction phase of the Onshore Site.
Residual effects	After implementation of best practice and preventive measures as referred to above, together with measures already incorporated in the project design, the potential for adverse effects on the integrity of the River Shannon and River Fergus Estuaries SPA, in light of its SSCOs and best scientific information, can be ruled out beyond reasonable scientific doubt, as a result of deterioration of water quality from the construction phase of the Onshore Site. The measures ensure that the proposed works do not prevent or obstruct any of the SCI of the SPA from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.1.4.2 Operation and Maintenance Phase

No potential for adverse effects on the integrity of River Shannon and River Fergus Estuaries SPA in light of its Conservation Objectives of was identified in Table 4-25 during the operation and maintenance phase of the Onshore Site. No further assessment required.

5.1.4.3 Conclusion on assessment of adverse effects on the integrity of the River Shannon and River Fergus Estuaries SPA

Following the detailed assessment provided in the preceding sections, in relation to River Shannon and River Fergus Estuaries SPA, it is concluded that the Onshore Site will not result in any residual adverse effects on the integrity of the SPA, in light of its Conservation Objectives and in light of best available scientific information.

5.1.5 Mid-Clare Coast SPA (004182)

This section assesses whether the Onshore Site, in light of best available scientific information, would adversely affect the integrity of Conservation Objectives of Mid-Clare Coast SPA. Assessment for adverse effects as a result of the Onshore Site in combination with other plans or projects is provided in Section 6.

As per Table 4-49 above, a source-pathway-receptor chains for adverse effects on supporting wetland habitat for the SCIs of this SPA has been identified, as a result of deterioration of water quality during the construction phase of the Onshore Site, which is assessed in the following sections.

5.1.5.1 Construction Phase

Deterioration of water quality

The construction of the Onshore Site will involve trenching works and excavations. This will involve earth moving which create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the operation and refuelling of excavation machinery. There is a risk that pollutants will percolate down into groundwater or runoff into surface water. As the Onshore Site will cross seven watercourses which discharge into this SPA, taking a precautionary approach and in the absence of mitigation, the works have potential to impact on water quality within the Mid-Clare Coast SPA, potentially having an adverse effect on its supporting wetland habitat of the SCIs.

Table 5-7 below assesses the potential for deterioration of water quality via the indirect runoff or spillage of pollutants during construction due to the Onshore Site crossing five mapped watercourses which discharge downstream into this SPA.

Table 5-7 Assessment of adverse effects Mid-Clare Coast SPA as result of Deterioration of water quality

Pathway for adverse effect	Deterioration of water quality via the indirect runoff or spillage of pollutants during construction due to the due to the Onshore Site crossing five mapped watercourses which discharge downstream into this SAC SPA.
QIs on which potential for adverse effects have been identified	› Cormorant (*Phalacrocorax carbo*) [A017] › Barnacle Goose (*Branta leucopsis*) [A045] › Ringed Plover (*Charadrius hiaticula*) [A137] › Sanderling (*Calidris alba*) [A144] › Purple Sandpiper (*Calidris maritima*) [A148] › Dunlin (*Calidris alpina alpina*) [A149] › Turnstone (*Arenaria interpres*) [A169] › Wetlands and waterbirds [A999]
Potential impact	Reduced water quality of supporting wetland habitat for the SCIs of the Mid-Clare Coast SPA, which directly contradicts the conservation objectives of this SPA.
Mitigation	Detailed mitigation measures in relation to the protection of surface water during construction are detailed in Section 23.5.2 of Appendix 2: Chapter 23 (Water). In summary the key mitigation measure during the construction phase is the avoidance of sensitive hydrological features, by utilizing water crossing methods which do not require in stream works, such as Horizontal Directional Drilling (HDD), as set out Section 5.6.2.2.3 of the Project description in Appendix A of the accompanying Onshore AASR. Detailed control measures in relation to the protection of surface waters during construction are detailed in Section 23.5.2 of Chapter 23 (Water) in Appendix 2 of this NIS.

	As per Section 23.5.2.4 of Appendix 2, due to hydrogeological setting of the Onshore Site and the nature of the works no significant impacts to groundwater are predicted from the Onshore Site. Standard best practice environmental control measures have been incorporated in the design of the development and are detailed in the Onshore Construction and Environmental Management Plan (CEMP) which has been submitted as part of this planning application and included in Appendix 3 of this NIS. These measures will ensure there are no impacts to surface or ground waters as a result of the construction phase of the Onshore Site.
Residual effects	After implementation of best practice and preventive measures as referred to above, together with measures already incorporated in the project design, the potential for adverse effects on the integrity of the Mid-Clare Coast SPA, in light of its SSCOs and best scientific information, can be ruled out beyond reasonable scientific doubt, as a result of deterioration of water quality from the construction phase of the Onshore Site. The measures ensure that the proposed works do not prevent or obstruct any of the SCI of the SPA from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.1.5.2 Operation and Maintenance Phase

No potential for adverse effects on the integrity of Mid-Clare Coast SPA in light of its Conservation Objectives of was identified in Table 4-49 during the operation and maintenance phase of the Onshore Site. No further assessment required.

5.1.5.3 Conclusion on assessment of adverse effects on the Integrity of Mid-Clare Coast SPA

Following the detailed assessment provided in the preceding sections, in relation to Mid-Clare Coast SPA, it is concluded that the Onshore Site will not result in any residual adverse effects on the integrity of the SPA, in light of its conservation and in light of best available scientific information.

5.2 Decommissioning Phase

Decommissioning and rehabilitation of the Onshore Site is fully described in Appendix 5 of this NIS.

There will be no additional habitat loss associated with the decommissioning of the Onshore Site and therefore, there will be no adverse effect in this regard.

The OGC connecting from the OLL to the OCC will be removed from the underground cable ducting at the end of the useful life of the renewable energy development. The cabling will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at each of the joint bays/pull pits along the underground cabling route. The original pulling pits will be excavated using a mechanical excavator and will be fully re-instated once the cables are removed. The cable ducting and joint bays will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible and could be used for alternative purposes.

The above ground components of the OCC building and compound will be removed fully from the Onshore Site. For the underground components, such as the foundations and non-electrical infrastructure, the Best Environmentally Practicable Option (BEPO) is for these to remain in situ.

For the electrical infrastructure to be removed from the Onshore Site, any materials that can be reused or recycled will be. For example, steel or aluminium can be recycled and reused as building materials. This ensures that the volume of waste generated during decommissioning is kept to a minimum and promotes a circular economy.

The same mitigations described in Section 5.1 to prevent adverse effects on the integrity of the relevant European Sites as a result of disturbance and deterioration of water quality during construction will be applied during the decommissioning phase. It can be concluded that following the implementation of preventative mitigation, there is no potential for the decommissioning of the Onshore Site to result in adverse effects on the integrity of any European Site.

5.3 Vegetation Control/Invasive Species

The Third Schedule invasive species Japanese knotweed and Rhododendron ponticum were recorded within the Onshore Site. Whilst just one small stand of Rhododendron was recorded outside the Onshore Site works area, several large stands of Japanese knotweed were recorded at several locations adjacent to the OGC. These are indicated in Figures 3-2a, 3-2b, 3-2c and 3-2d above.

The spread of Japanese knotweed into the wider environment, as a result of the Onshore Site, has potential to result in adverse effects on the integrity of the following European Sites, in light of their conservation objective and in the absence of mitigations, as a result of deterioration of QI habitats or supporting QI species habitat, during the construction of the Onshore Site:

- Tullaher Lough and Bog SAC (002343),
- Lower River Shannon SAC (002165).

The establishment of this species can impact native species by shading and impact species by reducing supporting habitat by destabilizing riverbanks. Therefore, the sections below provide for the management of Japanese knotweed during the construction phase of the Onshore Site.

With above mitigations in place, the potential for adverse impact on the integrity of the above European Sites as a result of habitat deterioration from the construction phase of the Onshore Site is avoided. The measures ensure that the proposed works do not prevent or obstruct any of the QIs of the SACs from reaching favourable conservation status as per Article 1 of the EU Habitats Directive.

5.3.1 Japanese Knotweed Management Plan

Japanese knotweed (*Fallopia japonica*) is a tall, vigorous, hardy perennial plant. native to Japan, Korea and North Western China. The species was introduced to Britain in the mid-19th century as an ornamental plant for large gardens, prized due to its imposing size and sprays of creamy white flowers. By 1886 it was established in the wild and now considered one of the most problematic plant species in the UK and Ireland. Japanese knotweed has a rapid upward growth rate of shoots at the beginning of the growing season which allows it to outcompete native vegetation, and lateral growth via extension of rhizomes which are capable of penetrating built structures over time. Japanese knotweed is characterised by shield-shaped leaves which are flat at the base and carried on zigzagged stems which are sturdy, purple spotted, hollow and bamboo-like with regular spaced nodes. The flowers (only female in the UK and Ireland), appear in late summer or early autumn and are creamy white -coloured in drooping clusters 8cm to 12cm in length. In spring, the emerging stems are green to red/purple with rolled leaves that unfurl as the shoots extend. At the end of the year, the stems persist and turn various shades of brown, sometimes with an orange tinge. The rhizome is dark brown in colour and slightly leathery with a brittle snap and a musty smell. The interior is an orange-yellow colour, generally darker towards the centre with lines often radiating from the centre.

Due in part to spreading vegetatively and rapid growth, Japanese knotweed is highly invasive and can impact native species by shading out native and rare plant species. As with other species of knotweed, Japanese knotweed is expensive to control and difficult to deal with.

As Japanese knotweed has been identified adjacent to the Onshore Site and within seven meters of its known location, as per Figures 3-2a, 3-2b, 3-2c and 3-2d, the following mitigations will be implemented to ensure that this high impact invasive species is not spread as a result of the Onshore Site.

Site set up

- Additional pre-commencement surveys will be undertaken to identify if the known infestation has spread since the preparatiuon of this application. The locations and extent of Japanese knotweed within the Onshore Site will be clearly marked out using temporary fencing/markers to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and the will inform the extent of the area to be treated as potentially contaminated. The exclusion zone will extend to 7m around the identified stands.
- An ecological clerk of works (ECoW) will be appointed to supervise all works carried out within the exclsuoiion zones.
- All staff will receive a tool box talk from the ECoW regarding the identification and protocols surrounding Japanese knotweed on the site.
- Given that short sections of the OGC will be lain within the above 7m exclsuiuon zones, the below measures will be in place to ensure there is no spread of this species.
- The treatment and control of invasive alien species will follow guidelines issued by the National Roads Authority – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA 2010).

Excavation within Contaminated Areas and retention on-site

- The OGC will be laid as far as possible from the identified stands to minimise the likelihood of encountering rhizomes.
- Once machinery and personnel enter the contaminated area, they will not leave until they have been cleaned down following the procedure that is set out below.
- Excavated material will be kept within the contaminated area and will either be backfilled into the trench following the pipelaying operation or will remain within the contaminated zone adjacent to the trench and be graded and reseeded. No excavated material will leave the contaminated zone.
- Following works, all personnel, equipment and machinery will be cleaned down as per the methodology below, prior to exiting the contaminated area.

Clean Down Procedure

- All plant, machinery, tools and personnel will be cleaned down prior to leaving the contaminated areas.
- Clean down will be undertaken on an impermeable membrane such as a radon barrier and following completion of the clean down operation, this will be brushed clean with sweepings left within the contaminated area to ensure that there is no potential to spread any contaminated material.
- Power washing avoided to prevent potentially contaminated run-off spreading outside the site.

Tool box talks will be held with all members of the site and contractors team responsible for carrying out measures detailed in this mangement plan. This will detail locations of infested material and how to carry out work on site in a biosecure way.

5.4 Summary Assessment of Residual Adverse Effects

The potential for residual adverse effects on each of the Screened In European Sites following the implementation of mitigation, is summarised in this section of the report.

Based on the preceding sections, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effect on the identified QIs/SCIs and their associated targets and attributes, and therefore on the integrity of any European Site. Potential pathways for effect have been robustly prevented through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the Onshore Site will not have an adverse effect on the integrity of any European Site.

The Onshore Site will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive. A definition of Favourable Conservation Status is provided below:

> *'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as 'favourable' when:*
>
> - *Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
> - *The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
> - *There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'*

Following the detailed assessment provided in the preceding sections, it is concluded that the Onshore Site will not result in any residual adverse effects on the integrity of any European Site, in light of their Conservation Objectives and in light of best available scientific information.

The assessment of cumulative effects of the Onshore Site with the Offshore Site, as well as in combination effects of the Onshore Site and the Project with other plans and projects, on all European Sites is provided in Section 6.

6. ASSESSMENT OF IN CUMULATION AND IN COMBINATION EFFECTS

6.1 Impacts of the Onshore Site in cumulation with the Offshore Site

Whilst this NIS assesses whether the Onshore Site will have an adverse effect on the integrity of the screened in European Sites, this section considers the potential for adverse effects on European Sites as a result of the cumulation of both the Onshore Site and Offshore Site i.e. the Project.

Having regard to this document, as well as the NIS for the Offshore Site in Volume 1, potential for adverse effects on the following European Sites have been identified as a result of both the Offshore and Onshore Sites:

- Lower River Shannon SAC (002165),
- Carrowmore Dunes SAC (002250),
- River Shannon and River Fergus Estuaries SPA (004077), and
- Mid-Clare Coast SPA (004182).

The assessment of residual effects from the Onshore Site, as provided in Section 5.4.1 above, was considered in cumulation with the assessment of residual effects from the Offshore Site, provided in Section 5.1 in Volume 1. When considered in cumulation, the residual effects of the project as a whole do not result in any potential for additional effects on any European Site and do not change the findings of the residual effects assessment for the Onshore Site as provided above. All potential effects have been mitigated to the extent that there is no potential for adverse effects on the integrity of any European Site, as a result of the effects of both the Onshore and Offshore Sites.

6.2 In-combination effects

This assessment focuses on the potential for in-combination effects arising from the Project and other plans and projects on the European Sites. A search and review in relation to plans and projects that may have the potential to result in in-combination impacts on European Sites was conducted.

This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects. A list of the plans and projects considered is provided in Appendix 4.

6.2.1 Review of Plans

The following development plans have been reviewed and taken into consideration as part of this assessment:

- Regional Spatial and Economic Strategy for the Southern Region (RSES) (2020-2032)
- Clare County Development Plan 2023-2029
- Ireland 4th National Biodiversity Action plan 2023-2030.
- Clare Biodiversity Action Plan 2017 – 2023
- Water Action Plan 2024

The review focused on policies and objectives that relate to European Sites of the Natura 2000 Network and are fully detailed in Appendix 4.

6.2.2 Review of Other Projects

Assessment material for this in-combination impact assessment was compiled on the relevant developments within the vicinity of the Project. The material was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities and their environmental impacts. Applying the methodology detailed in Section 1.5.4, all relevant plans (where applicable) and projects were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g. individual AASRs, NISs, layouts, drawings etc.) for all relevant projects where available.

The projects considered include those listed in Table 6-1 and in Appendix 4 of this NIS, in conjunction with the plans and projects described in Volume 1 Offshore – Appendix 14. The residual construction, operation and maintenance, and decommissioning impacts of the Onshore Site are considered cumulatively with other plans and projects. Particular focus has been placed on those projects that are in closest proximity to the Onshore Site and those that could potentially result in impacts on SCI bird species, surface water, groundwater and QI habitats and species. Subsequently the residual construction, operation and maintenance, and decommissioning impacts of the Project are considered cumulatively with other plans and project.

All projects within the vicinity of the Onshore Site were considered as part of this assessment and predominantly included developments pertaining to the following:

- Private developments
- Commercial
- Agriculture
- Forestry
- Other renewable energy developments/infrastructure

Table 6-1 List of Projects considered in the in-combination impact assessment for the Onshore Site

Case number	Project description	Status
ABP Case ID: 319080	Proposed transition and conversion of the existing 900MW electricity generating station from coal to heavy fuel oil and associated ancillary development at Moneypoint Generating Station, Moneypoint, Co. Clare.	Approved with conditions on 25/09/2024
ABP Case ID: 307798	Proposed 400kV electricity transmission cables, extension to the existing Kilpaddoge Electrical Substation and associated works, between the existing Moneypoint 400kV Electrical Substation in the townland of Carrowdoita South County Clare and existing Kilpaddoge 220/110kV Electrical Substation in the townland of Kilpaddoge County Kerry. The development includes work in the foreshore.	Approved with conditions on 04/06/2021
CCC Planning Ref: 22255	Change of design of a dwelling house and garage previously granted under C/603 granted by Kilrush Urban District council, along with all associated works.	Granted with conditions on 15/06/2022
CCC Planning Ref: 19890)	To RETAIN attic conversion, fenestration and materials changes together with all ancillary site development works and services.	Granted with conditions on 10/06/2020

CCC Planning Ref: 21638	To demolish existing substandard derelict cottage and sheds and to construct a replacement dwelling house, site entrance, private garage and on-site waste water treatment system along with all associated site works.	Granted with conditions on 16/02/2022
CCC Planning Ref: 23265	For development which will consist of the completion of the construction of partially constructed domestic dwelling and all ancillary site work. The site is within an area of Special Control, designated as a Rural Area under Strong Urban Pressure in the Clare County Development Plan 2017-2023.	Granted with conditions on 21/09/2023
CCC Planning Ref: 20672	To RETAIN a private garage and conversion of attic space to habitable accommodation along with all associated works.	Granted with conditions on 18/12/2020
CCC Planning Ref: 211174	To construct new dwelling including garage, proposed site entrance, proposed treatment unit and percolation area, including all ancillary site works.	Granted with conditions on 25/05/2022
CCC Planning Ref: 20661	For development comprising (a) demolition of (i) single storey porch to front, (ii) single storey extension to rear, (iii) 2 no. gables to front, (iv) existing roof structure and 2 no. chimneys, (b) lowering of existing window head and cill to front elevation , creation of new sliding door open to side (north-east) elevation and creation of new window open to rear elevation, (c) construction of (i) new first floor extension over entire existing ground floor, (ii) storey and a half extension to front and (iii) storey and a half extension to rear, (d) construction of new pitched roof structure over entire comprising new gables to all (front, side and rear) elevations, raising of existing ridge height, 5 no. velux to front and 3 no. velux to side (north-east), (e) new on-site waste water treatment system with soil polishing filter and (f) all ancillary site works.	Granted with conditions on 14/12/2020
CCC Planning Ref: 20551	The development will consist of construction of an agricultural shed, with underground slatted slurry storage tanks in place of existing open slurry tank and all associated site works.	Granted with conditions on 19/12/2020
CCC Planning Ref: 22956	Of existing extension and alterations to P07/173.	Granted with conditions on 24/01/2023
CCC Planning Ref: 20275	For the Construction of a single storey extension to existing dwelling to include front porch, Living area, Dining area, T.V Room, Play room and for internal and elevational changes to existing dwelling. Also PERMISSION is sought for the demolition of existing conservatory to side of dwelling and demolition of detached garage, including ancillary site works.	Granted with conditions on 08/08/2020

CCC Planning Ref: 211095	To demolish existing derelict former dwelling and to construct a single dwelling house, waste-water treatment system along with ancillary site works.	Granted with conditions on 15/11/2022
CCC Planning Ref: 19523	To erect dwelling house, septic tank - foul sewer treatment plant, percolation area and new site entrance.	Granted with conditions on 25/11/2019
CCC Planning Ref: 19380	To develop a 9-hole pitch and putt course, reception hut and car parking facilities along with all associated works.	Granted with conditions on 12/10/2019
CCC Planning Ref: 19816	To construct a single story extension and to RETAIN conservatory to existing dwelling house with all necessary ancillary works.	Granted with conditions on 11/01/2020
CCC Planning Ref: 19746	For development on a c. 1.8 ha site located within Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref.P0605-04) and Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015. The development, which will be located within a fenced compound c. 0.94 ha. will consist of a 300 to 400 MVA (electrical rating) synchronous condenser, including the following elements: a) a Generator and Flywheel building (c. 962 sq.m., c. 15m high) to house equipment including the generator, flywheel, lube oil skid, air compressor and pumps; b) supporting items of plant located within the compound including *cooling equipment (c. 690 sq.m., c. 3m high); *c. 7m high modular containers to house electrical and control equipment (total area of c. 384sq.m); *a generator step-up transformer (c.150 sq.m c. 8m high), auxiliary transformer (c. 48 sq.m., 7m high) and electrical plant including an external circuit breaker (c 66 sq.m., c. 9m high); *fire fighting water tank (c. 7m dia., c. 8m high, pump house (c. 21 sq.m., c. 3m high); and * an above-ground oil separator and collection pit (c. 72sq.m.) connections to existing site services networks including electrical, water and wastewater and an underground surface water attenuation tank connecting to existing surface water drains; c) all other ancillary and miscellaneous site works including site clearance; site access, internal roads and development of areas of hard standing including a maintenance lay-down area; and d) the development will be bounded by a c. 3m high chainlink fence. Site access will be by means of a new c. 2.7 m high palisade gate accessed from existing roads within the station site. Planning Permission is being sought for a duration of 10 years.	Granted with conditions on 21/12/2019

CCC Planning Ref: 19817	The development will consist of the addition of a porch to the main entrance at the front of existing dwelling and the addition of a stand-alone garage to the side of existing dwelling and associated ancillary site works.	Granted with conditions on 16/01/2020
CCC Planning Ref: 23502	To construct new club house and facilities, with effluent treatment system, all associated site and ancillary works, and change of use of the existing club house into a club training room and gym.	Granted with conditions on 20/12/2023
CCC Planning Ref: 211241	Of the development at a c.0.012 ha site in the car park of Tesco, Ennis Road, Kilrush, Co. Clare. The development consists of RETENTION permission for "Click and Collect" signage in the existing Tesco car park.	Granted with conditions on 01/03/2022
CCC Planning Ref: 21947	For development at a c.0.015ha site in the car park of Tesco, Ennis Road, Kilrush, Co Clare. The development will consist of; (i) the construction of a sheltered canopy (c. 50 sq.m) in the existing car park for the purpose of providing 2 no. dedicated "Click and Collect" spaces for the existing Tesco store; and (ii) ancillary signage, a pedestrian crossing and all associated site development works.	Granted with conditions on 30/11/2021
CCC Planning Ref: 21595	To RETAIN the as constructed foundation for a machinery shed and planning PERMISSION to complete the construction of the machinery shed along with all associated site works and services.	Granted with conditions on 18/01/2022
CCC Planning Ref: 2360574	For (a) to construct extensions to the front, side and rear of the existing dwelling house; (b) to make elevational alterations to the existing house; (c) to construct a standalone storage outbuilding ancillary to the dwelling house; (d) to construct a garden room ancillary to the dwelling house; (e) to make alterations to the existing private shed; and (f) all associated site works and services.	Granted with conditions on 19/03/2024
CCC Planning Ref: 2332	For development within the Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref P0605-04) and Upper tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015. The development, which will be located at various locations within the station complex, will consist of land based site Investigation (SI) works comprising of boreholes and trial pits across the site.	Granted with conditions on 18/04/2023
CCC Planning Ref: 22553	To construct new bay window and porch to front elevation.	Granted with conditions on 20/09/2022
CCC Planning Ref: 168002	For the following proposed development; (a) Three metre long two metre high wall and associated works to divide the existing laneway, (b) New	Granted with conditions on 09/05/2016.

	vehicular access and three metre wide paved road to facilitate vehicular access from Sycamore Drive to the eastern section of the existing laneway, (c) Relocation of the existing pedestrian crossing point within Sycamore Drive, (d) Site clearance of all waste material from the existing laneway and (e) ancillary site works.	
CCC Planning Ref: 22435	Of as-constructed ground floor bay window and PERMISSION for alterations to first floor windows on front elevation.	Granted with conditions on 05/08/2022
CCC Planning Ref: 23253	To demolish existing shed at rear of house and construct new single storey extension to rear of dwelling.	Granted with conditions on 26/07/2023
CCC Planning Ref: 20318	For development on a c. 2.7 ha site located within Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref. P0605-04) and an Upper Tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations(COMAH) Regulations, 2015. The development, which will be located within a fenced compound c. 0.4 ha, will consist of a up to 400 MVA (electrical rating) synchronous condenser which shares the existing 400 KV/17 kV transformer and 400kV underground cable belonging to the existing coal fired unit 2. The following plant will be included within the compound: (a) main building (c. 420sq.m., c. 15m high) to house equipment including the synchronous condenser, flywheel, lube oil skid, air compressor and pumps. (b) supporting items of plant including; cooling equipment (c. 690sq.m., c. 3m high); c. 7m high modular containers to house electrical and control equipment (total area of c. 384sq.m.); auxiliary transformer (c. 48sq.m., 7m high) and electrical plant including an external circuit breaker (c. 66sq.m., c. 9m high); connections to existing site services networks including electrical, water and wastewater and an underground surface water attenuation tank connecting to existing surface water drains. (c) all other ancillary and miscellaneous site works including site clearance, site access, internal roads and development of areas of hard standing including a maintenance laydown area. (d) the development will be bounded by a c. 3m high chainlink fence. Site access will be by means of a new c. 2.7 m high palisade gate accessed from a new internal road within the station site. PERMISSION is also sought to continue the use of the existing underground cable grid connection, including the 400kV/17kV transformer and 400 kV underground cable belonging to the existing coal fired Unit 2 for use by the synchronous condenser into the future. Planning PERMISSION is being sought for a duration of 10 years. This application represents a relocation within Moneypoint of a	Granted with conditions on 24/06/2021

	similar application permitted by Clare County Council under Reg. Ref. P19/746. A Natura Impact Statement (NIS) has been prepared and accompanies this planning application. Granted with conditions on 16/07/2020.	
	To construct bay window to the front of existing dwellinghouse plus all ancillary site works. Planning Ref: 21259.	
CCC Planning Ref: 19654	To demolish existing front porch and rear extension and garden shed, and planning permission for proposed extension consisting of new front porch and extended sitting room, and also extension to rear consisting of new kitchen area.	Granted with conditions on 24/11/2019
CCC Planning Ref: 20261	For the following development at Glebe House Building: to (a) provide new disabled access ramp and steps to replace existing ramp and (b) to provide 18 number PV Panels on existing roof as per associated drawings, all within existing site boundaries.	Granted with conditions on 08/08/2020
CCC Planning Ref: 19219	For the following: 1) To construct a single storey extension to entrance area of existing Cairde Beag Building; 2) Permission to construct a Lift Shaft to rear of existing Glebe House Building; 3)Permission to construct a storage shed adjacent to Cairde Beag Building; 4) Permission for additional parking spaces, all within existing site boundaries at Glebe House.	Granted with conditions on 20/06/2019
CCC Planning Ref: 2332	For development within the Moneypoint Generating Station, Carrowdotia North and Carrowdotia South, Kilimer, County Clare (Eircode V15 R963) which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence (Ref P0605-04) and Upper tier COMAH site and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015. The development, which will be located at various locations within the station complex, will consist of land based site Investigation (SI) works comprising of boreholes and trial pits across the site.	Granted with conditions on 18/04/2023
CCC Planning Ref: 211391	To make the following alterations to the existing dwelling house. a) demolish existing front porch and rear kitchen/utility extension; c) construct link extension to connect house to existing outbuildings; d) convert section of existing outbuildings to residential use ancillary to the main dwelling; e) make elevational changes to the existing house and outbuilding; f) upgrade existing sewerage treatment system and g) all associated site works and services.	Granted with conditions on 04/04/2022
CCC Planning Ref: 211391	To construct a dwelling house, garage with a waste water treatment system and percolation area.	Granted with conditions on 03/11/2021

CCC Planning ref: 20668	To erect extension to dwelling house include first floor living area.	Grante with conditions on 18/12/2020
CCC Planning Ref: 2360308	To restore, refurbish & extend an existing derelict dwelling and outbuilding, installation of new sewerage treatment system, construct new entrance walls, along with all associated works.	Granted with conditions on 03/11/2023
CCC Planning Ref: 23198	To extend the existing dwelling house, including part demolition with all necessary ancillary services.	Granted with conditions on 23/06/2023
CCC Planning Ref: 204	for the construction of a Dwellinghouse, new entrance and connection to public services including ancillary site works.	Granted with conditions on 23/07/2020
CCC Planning Ref: 21719	To construct new dwelling and garage, including all ancillary site works, connecting to existing sewers and watermain services, utlising existing service road.	Granted with conditions on 17/01/2022
CCC Planning Ref: 20548	To construct new garage, including all ancillary site works.	Granted with conditions on 02/11/2020
CCC Planning Ref: 21445	To construct new dwelling, utilising existing site entrance and using existing sewer connections, including all ancillary site works.	Granted with conditions on 10/08/2021
CCC Planning Ref: 21383	For the change of design of a dwelling house and garage previously granted under P8-15168 along with all associated works.	Granted with conditions on 30/07/2021
CCC Planning Ref: 23385	To construct 2 dwelling houses, each with entrance from public road, connection to public services and associated site works.	Granted with conditions on 03/10/2023.
CCC Planning Ref: 20306	To construct new dual sided, sports-wall training area.	Granted with conditions on 08/08/2020
CCC Planning Ref: 19734	The development will consist of retaining attic conversion, private garage extension, utility extension, conservatory extension, 7 extra windows and ancillary minor changes.	Granted with conditions on 06/12/2019
CCC Planning Ref: 2460149	To remove existing sheds and to construct a new dwelling house, site entrance, access road, wastewater treatment system and all associated site works.	Granted with conditions on 28/05/2024
CCC Planning Ref: 21243.	To demolish existing sub-standard dwelling and construct new replacement dwelling, using existing sewer connections, including all ancillary site works and utilising existing site entrance area.	Granted with conditions on 17/06/2021
CCC Planning Ref: 20440	To construct a new dwelling house and private garage with new wastewater treatment system with all necessary ancillary works.	Granted with conditions on 08/12/2020
CCC Planning Ref: 21739	To construct gable extension to existing dwelling plus all ancillary site works.	Granted with conditions on 08/10/2021

CCC Planning Ref: 2360426	Of the construction of a mechanic workshop & planning PERMISSION to construct a carpark and handling area ancillary to the workshop along with all associated works.	Granted on 15/08/2024
CCC Planning Ref: 2360287	For the construction of a new dwelling house and attached garage complete with a new entrance, sewage treatment system and ancillary works.	Granted with conditions on 23/04/2024
CCC Planning Ref: 239	To construct a slatted cubicle house, complete with associated underground slurry tanks, and also including cattle crush and ancillary concrete yard, and all associated site works.	Granted with conditions on 19/06/2023
CCC Planning Ref: 22428	To construct a dwelling house, garage, access road linking to an existing private entrance onto the public road, new sewerage treatment system and percolation area along with all other necessary ancillary works.	Granted with conditions on 30/09/2022
CCC Planning Ref: 20948	To carry out alterations and refurbishment of an existing dwelling house along with all associated works.	Granted with conditions on 16/03/2021
CCC Planning Ref: 168002	For the following proposed development; (a) Three metre long two metre high wall and associated works to divide the existing laneway, (b) New vehicular access and three metre wide paved road to facilitate vehicular access from Sycamore Drive to the eastern section of the existing laneway, (c) Relocation of the existing pedestrian crossing point within Sycamore Drive, (d) Site clearance of all waste material from the existing laneway and (e) ancillary site works.	Granted with conditions on 09/05/2016
CCC Planning Ref: 22435	Of as-constructed ground floor bay window and PERMISSION for alterations to first floor windows on front elevation.	Granted with conditions on 05/08/2022

APB – An Board Pleanála, CCC – Clare County Council

The potential for the Onshore Site to result in adverse effects European Sites when assessed alongside these developments was considered. The conclusion of the NISs for these developments, where available, was that there would be no residual adverse effect on any European Site with the implementation of mitigation measures outlined in their respective reports. Considering the nature and scale, distance from the Onshore Site and the Project, locations, and residual effects of the projects listed above, and given the lack of residual effects predicted as a result of the Onshore Site, no overlapping pathways for adverse effect have been identified and there is no potential for significant in combination effects.

6.3 Conclusion of In-Combination Assessment for the Onshore Site

Following the detailed assessment provided in the preceding sections, it is concluded that, the Onshore Site will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own. There is, therefore, no potential for the Onshore Site to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Onshore Site.

Taking into consideration the reported residual impacts on any European Site from other plans and projects in the area and the predicted impacts with the Onshore Site, no residual in combination effects have been identified with regard to the integrity of any European Site.

6.4 Conclusion of In-Combination Assessment for the Project

Following the detailed assessment provided in Volumes 1 and 2 of the NIS, it is concluded that, the Project will not result in any residual adverse effects on the integrity of any European Sites' conservation objectives when considered on its own. In the review of the projects (Onshore and Offshore) that was undertaken, no connection, that could potentially result in combination effects was identified. Neither was any potential for different (new) effects resulting from the combination of the projects and plans in association with the Project.

There is, therefore, no potential for the Project to contribute to any cumulative adverse effects on any European Site when considered in-combination with other plans and projects.

Taking into consideration the reported residual effects on the integrity of any European Site from other plans and projects in the area and the predicted effects of the Project, no residual in combination effects have been identified with regard to the integrity of any European Site.

7. NIS CONCLUDING STATEMENT

This NIS (Volumes 1 and 2) has assessed the impacts of the construction, operations and maintenance and decommissioning of the Project on European Sites and their relevant QI to determine whether the Project will have an adverse effect on the integrity of European Sites, either alone or in combination with other plans or projects and in light of the conservation objectives of the sites. The assessment concluded that there will be no adverse effect on the integrity of the

- Inishmore Island SAC,
- Kilkieran Bay and Islands SAC,
- Lower River Shannon SAC,
- Slyne Head Peninsula SAC,
- Slyne Head Islands SAC,
- West Connacht Coast SAC,
- Galway Bay Complex SAC,
- Blasket Islands SAC,
- Duvillaun Islands SAC,
- Connemara Bog Complex SAC,
- Twelve Bens/Garraun Complex SAC,
- Maumturk Mountains SAC,
- Lough Corrib SAC,
- Mweelrea/Sheeffry/Erriff Complex SAC,
- Inishmaan Island SAC,
- Carrowmore Point to Spanish Point and Islands SAC,
- Carrowmore Dunes SAC,
- Kilkee Reefs SAC,
- Kenmare River SAC,
- Hook Head SAC,
- Belgica Mound Province SAC,
- Roaringwater Bay and Islands SAC,
- Gweedore Bay and Islands SAC,
- Bunduff Lough and Machair/Trawalua/Mullaghmore SAC,
- St John's Point SAC,
- Carnsore Point SAC,
- Blackwater Bank SAC,
- Lough Swilly SAC,
- Codling Fault Zone SAC,
- Rockabill to Dalkey SAC,
- North Channel SAC,
- West Wales Marine / Gorllewin Cymru Foro SAC,
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC,
- Mers Celtiques - Talus du golfe de Gascogne SCI,
- North Anglesey Marine / Gogledd Môn Foro SAC,
- Lambay Island SAC,
- Nord Bretagne DH SAC,
- Ouessant-Molène SAC,
- Abers -Côte des legends SAC,
- Chaussée de Sein SAC,
- Côte de Granit rose-Sept-Iles SAC,
- Baie de Morlaix SAC,
- Côtes de Crozon SAC,
- Récifs et landes de la Hague SAC,
- Anse de Vauville SAC,
- Banc et récifs de Surtainville SAC,

- Baie du Mont Saint-Michel SAC,
- Estuaire de la Rance SAC,
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC,
- Cap d'Erquy-Cap Fréhel SAC,
- Baie de Saint-Brieuc SAC,
- Tregor Goëlo Es SAC,
- Mid-Clare Coast SPA
- Slyne Head to Ardmore Point Islands SPA
- Inishmore SPA
- Cruagh Island SPA
- River Shannon and River Fergus Estuaries SPA
- Cliffs of Moher SPA
- Illaunonearaun SPA
- High Island, Inishark and Duvillaun SPA
- Inner Galway Bay SPA
- Illaunnanoon SPA
- Magharee Islands SPA
- Clare Island SPA
- Loop Head SPA
- Bills Rock SPA
- Dingle Peninsula SPA
- Duvillaun Islands SPA
- Inishglora and InisKeeragh SPA
- Blasket Islands SPA
- Puffin Islands SPA
- Iveragh Peninsula SPA
- Skelligs SPA
- Stages of Broadhaven SPA
- Eirk SPA
- The Gearagh SPA
- Deenish Island and Scariff Island SPA
- Clonakilty SPA
- Illanmaster SPA
- The Bull and The Cow Rocks SPA
- Beara Peninsula SPA
- Aughris Head SPA
- West Donegal Coast SPA
- Tory Island SPA
- Horn Head to Fanad Head SPA
- Saltee Islands SPA
- Mingulay and Berneray SPA
- Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA
- Rum SPA
- Seas off St Kilda SPA
- St Kilda SPA
- Copeland Islands SPA
- Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA
- Shiant Isles SPA
- Flannan Isles SPA
- Lambay Island SPA
- Ouessant-Molène SPA (France)
- Handa SPA
- Cape Wrath SPA
- Cote de Granit Rose-Sept Iles SPA
- Camaret SPA

- North Rona and Sula Sgeir SPA
- North Caithness Cliffs SPA
- Hoy SPA
- Cap d'Erquy-Cap Fréhel SPA (France)
- Rousay SPA
- West Westray SPA
- Copinsay SPA
- East Caithness Cliffs SPA
- Calf of Eday SPA
- Iles Houat-Hoedic SPA (France)
- Falaise du Bessin Occidental SPA (France)
- Seas off Foula SPA
- Fair Isle SPA
- Littoral seino-marin SPA
- Troup, Pennan and Lion's Heads SPA
- Foula SPA
- Sumburgh Head SPA
- Buchan Ness to Collieston Coast SPA
- Noss SPA
- Hermaness, Saxa Vord and Valla Field SPA
- Fetlar SPA
- Tullaher Lough and Bog SAC

either as a result of the Project alone or in combination with other plans or projects, provided that the mitigation listed is adhered to.

Therefore, it can be objectively concluded, following an examination, analysis and evaluation of the relevant information, including in particular the nature of predicted impacts from the Project, that the Project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site in light of its conservation objectives and best scientific information, and there is no reasonable scientific doubt in relation to this conclusion.

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