

Appendix 9B
Natura Impact Statement (NIS)

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SSE Tarbert Next Generation Power Station

Environmental Impact Assessment Report (EIAR)
Volume II
Natura Impact Statement (NIS)

SSE Generation Ireland Limited

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1. Introduction

1.1 Background and Project Description

AECOM was commissioned by SSE Generation Ireland Limited to carry out an Appropriate Assessment (AA) Screening and, if required, Natura Impact Statement (NIS) for the Proposed Development, as described in section 3.1.2 of this document (the 'Proposed Development'). The site of the Proposed Development (herein referred to as "the Site") is located within the boundary of the existing Tarbert Power Station, in the townland of Tarbert Island, Co. Kerry. The location of the Site is presented edged red in Plate 1.

This Appropriate Assessment Screening identifies any likely significant effects from the Proposed Development, alone or in-combination with other projects, on European sites (which comprise Special Areas of Conservation (SAC) and Special Protection Areas (SPA)). Where likely significant effects from the Proposed Development cannot be excluded, either alone or in-combination with other plans or projects, a detailed Appropriate Assessment has been carried out to determine whether this could result in adverse effects on the integrity of any relevant European site, either alone or in-combination with other plans or projects, and in view of the site's conservation objectives.



Plate 1: Site location of the Proposed Development.

1.2 Purpose of this Report

This Report has been prepared to inform An Bord Pleanála (as the competent authority) in their determination of whether the Proposed Development will have effects on any European sites.

The objective of this assessment is to firstly identify any likely significant effects arising from the Proposed Development to any European site either in isolation or in-combination with other plans and

projects. This determination is referred to as an Appropriate Assessment (AA) Screening. It is worth noting that mitigation measures cannot be, and have not been, considered at Stage 1; this is explained further in Section 2.3.

If the AA Screening cannot exclude the possibility of significant effects on European sites on the basis of objective information, then the assessment proceeds to the next stage of AA. It is only at Stage 2 AA that consideration can be given to mitigation measures. The purpose of the AA stage is to determine whether the Proposed Development will result in adverse effects on the integrity of any European site, either alone or in-combination with other plans or projects, in view of the Conservation Objectives of the relevant site(s).

1.3 Legislative Context

Council Directive 92/43/EEC (as amended) of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which is more commonly known as the 'Habitats Directive', requires Member States of the European Union (EU) to take measures to maintain or restore, at favourable conservation status, natural habitats and wild species of fauna and flora of Community interest. The provisions of the Habitats Directive require that Member States designate SACs for habitats listed in Annex I and for species listed in Annex II.

Similarly, Directive 2009/147/EC (as amended) on the conservation of wild birds, which is more commonly known as the 'Birds Directive', provides a framework for the conservation and management of wild birds. It also requires Member States to identify and classify Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex I of the Birds Directive, as well as for certain regularly occurring migratory species. Collectively, SACs and SPAs are known as 'European sites'.

In the Republic of Ireland, the habitats and/or species which are the reason(s) for designation of an SAC are referred to as 'Qualifying Interests' (QI). In relation to SPAs, the bird species for which a particular site is designated are referred to as the 'Special Conservation Interests' (SCI).

Under Article 6(3) of the Habitats Directive, any plan or project which is not directly connected with or necessary to the management of a European site but would be likely to have a significant effect on such a site, either individually or in-combination with other plans or projects, must be subject to an AA of its implications for the SAC / SPA in view of the site's Conservation Objectives.

In Ireland, the requirements of Article 6(3) are transposed inter alia by Part XAB of the Planning and Development Act 2000 (as amended). Section 177U(1)(4) and (5) provide as follows:

"(1) A screening for appropriate assessment of a draft Land use plan or application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.

(4) The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed development, as the case may be, is required if it cannot be excluded, on the basis of objective information, that the draft Land use plan or proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

(5) "The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed development, as the case may be, is not required if it can be excluded, on the basis of objective information, that the draft Land use plan or proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. "

177T (1)(b) and (2) provides" (1) In this Part—

(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.

(2) Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data,

carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites.

2. Methods

2.1 Sources of Guidance

This Report has been prepared in accordance with the EC guidance document *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* (European Commission, 2021). It also accords with the guidance provided in the Office of the Planning Regulator (OPR) document on *Appropriate Assessment Screening for Development Management* (OPR, 2021), and follows the structure and approach recommended, as shown in Plate 2.



Plate 2: The AA Screening process (taken from OPR (2021)).

In addition to the references above, the following relevant guidance was adhered to during the preparation of this Report:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (Department of the Environment, Heritage and Local Government (DoEHLG) 2009, Revised February 2010);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular Letter NPWS 1/10 & PSSP 2/10* (NPWS, 2010); and,
- *Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2018).

2.2 The Precautionary Principle

The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as:

“When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis”.

Reasoned application of the Precautionary Principle is fundamental to all stages of AA. In Stage 1 Screening, significant effects would be presumed without evidence to the contrary, where there was evidence of possible effects on a European site(s) from the Proposed Development, but uncertainty remained.

2.3 The Stages in Appropriate Assessment

Article 6(3) and (4) sets out a step-by-step procedure for assessing plans or projects that are likely to have impact on European sites. This involves three main sequential stages, as outlined in the EC Guidance document (2021). Each stage of the procedure is influenced by the previous one. The order in which the stages are followed is therefore essential for applying Article 6(3) and (4) correctly. The following is a summary of these steps.

- **Stage 1 – Screening:** This stage consists of a pre-assessment stage (i.e. Screening) to ascertain whether the plan or project is directly connected with, or necessary to, the management of a European site, and if not, subsequently examines whether it is likely to have significant effects to the European site(s), either alone or in-combination with other projects, in view of the conservation objectives. There is no necessity to establish such an effect; it is merely necessary for the competent authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment (AA) has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether a Stage Two AA must be undertaken by the competent authority on the implications of the proposed development for the conservation objectives of a European site. Therefore, where significant effects are likely, uncertain or unknown at screening stage, a second stage AA will be required.
- **Stage 2 – Appropriate Assessment:** A Stage Two AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted, in summary:
 - (i) must identify, in the light of the best scientific knowledge in the field, all aspects of the proposed development which can, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
 - (ii) must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and
 - (iii) may only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of the identified potential effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three and, if necessary, stage four.

2.3.1 AA Screening

The first stage of the AA process examines the likelihood of a plan or project having significant effects upon a European site, either alone or in-combination with other plans or projects.

OPR guidance (OPR, 2021) describes a likely significant effect as follows:

- **Likely** means a risk or possibility of effects occurring that cannot be ruled out based on objective information.

- **Significant effects** are those that would undermine the conservation objectives of the European sites, either alone or in-combination with other plans and projects. The significance of ecological impacts depends on:
 - the ecological characteristics of the species or habitat, including their structure, function, conservation status and sensitivity to change, and/or the character, magnitude, duration, consequences and probability of the impacts occurring.
 - In undertaking a screening assessment for likely significant effects “*it is not that significant effects are probable, a risk is sufficient*”, but there must be credible evidence that there is “*a real, rather than a hypothetical, risk*”.

The significance of effects should be determined in relation to the specific features and environmental conditions of the European site concerned by the plan or project, taking particular account of the site’s conservation objectives and ecological characteristics (EC, 2018). The nature of the likely interactions between the proposed works and the integrity of a European site will depend upon: the sensitivity of the European site’s qualifying features to potential impacts arising from the project; the current conservation status of the European site and its selection features; and, any likely changes to key environmental indicators (e.g. water quality) that underpin the conservation status of European sites and their qualifying features, in combination with other plans and projects.

The EC Guidelines (2021) outline the stages involved in carrying a Stage 1 Screening of a project that has the potential to have likely significant effects on European sites. The method adopted for this Stage 1 Screening is informed by these guidelines and was conducted in the following stages:

- Determine whether the proposed works are connected with, or necessary for, the conservation management of European sites.
- With reference to the baseline environment, define and describe the project and identify the relevant elements of the proposed works and their likely impacts (including construction, operation, and decommissioning phases).
- Identify and define any inherent design components (i.e., inherent project mitigation), such as good practice or legal requirements, to minimise potential impacts of the proposed works.
- Identify European sites likely to be impacted by the proposed works (i.e., those which are potentially connected to the proposal by source-pathway-receptor links or lie in the zone of influence (ZoI) of potential impacts).
- Identify other plans or projects that, in-combination with the project, have the potential to affect European sites.
- Assess whether likely significant effects on the European site(s) can be ruled out, in view of the conservation objectives.

If it can be demonstrated that likely significant effects can be excluded, no further assessment is required. However, if likely significant effects cannot be ruled out, then the assessment will proceed to Stage 2 AA.

2.3.1.1 The Source-Pathway-Receptor Model and Zones of Influence

Department of the Environment, Heritage and Local Government guidance (DoEHLG, 2010) states that European sites with the potential to be affected by a plan or project should be identified taking into consideration the potential for direct, indirect and / or cumulative (in-combination) effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- all European sites within or immediately adjacent to the plan or project area;
- all European sites within the likely ‘zone of influence’ of the plan or project; and,

- adopting the Precautionary Principle (UNESCO, 2005), all European sites for which there is doubt as to whether or not such sites might be significantly affected.

The likely zone of influence (ZoI) of a plan or project is the geographic extent over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests (QI) / Special Conservation Interests (SCI) of a European site (OPR, 2021). In the case of projects, the DoEHLG guidance acknowledges that the ZoI must be devised on a case-by-case basis with reference to the following criteria: the nature, size / scale and location of the project, sensitivity of ecological features under consideration, and cumulative effects.

When seeking to identify the relevant European sites, consideration was given to identified impact pathways and the source-pathway-receptor approach (OPR, 2021), rather than adopting a purely 'zones'-based approach whereby European sites within, potentially arbitrary, set distances of the Proposed Development would be assessed. The source-pathway-receptor approach is a standard tool in environmental assessment. For an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no possibility of an effect occurring. If, for example, there is a sensitive European site in the vicinity of the Proposed Development but no mechanism by which the Proposed Development could affect that site then there is no potential for a likely significant effect. Furthermore, even where an impact is predicted to occur, it may not result in significant effects.

An example of this model is provided below:

- Source(s), e.g., piling.
- Pathway(s) e.g., vibration.
- Receptor(s) e.g., underground otter *Lutra lutra* resting site at risk of collapse.

The model is focused solely on the selection features for which sites are designated or features which support the qualifying features.

Habitats and plants are not mobile, and it can therefore be easier to determine whether habitats and plants are within the ZoI. In contrast, fauna species are mobile and so the distances they move beyond European sites (i.e., range) must be considered when determining if they occur within the ZoI. The range of fauna species varies considerably, from a maximum of several metres (e.g., in the case of whorl snails *Vertigo* spp.) to hundreds of kilometres (in the case of migratory wetland birds). Whilst habitats and plants are not mobile, these features can still be significantly affected at considerable distances from an effect source; for instance, where an instream habitat is located many kilometres downstream from a pollution source.

2.3.1.2 Likely Significant Effects

For each of the European sites considered as part of this Screening assessment, the potential impacts of the Proposed Development are considered, with reference to the Conservation Objectives of each European site, to assess for likely significant effects.

2.3.1.3 Assessment In-combination

It is a requirement of the Habitats Regulations (s177U of the Planning and Development Act 2000 (as amended)) that the impacts and effects of any development are not considered in isolation but in-combination with other plans and projects that may also affect the European site(s) in question.

A review of planning applications within 5km of the Site was completed using the County Kerry, County Clare and County Limerick Online Planning Systems, and An Bord Pleanála online records, for applications submitted in the last five years. Only existing and approved planning applications were considered. A check for further projects within 10 years was completed, however, there were no other projects other than those listed, with 10-year planning consents of relevance. The 5km search area was used due to the rural nature of the area and the existing sparse development.

2.4 Ecological Baseline

2.4.1 Assessment of Environmental Baseline

Ecological baseline information relevant to the Site was gathered via a desk study and ecological surveys carried out by AECOM Ecologists (Dr Paul Lynas, Dr Erfan Fadaei, Alison Donnelly, Susanne Dunne, Shona Jessiman and Tony Marshall) between November 2022 and August 2023. Due to the time of commissioning, no wintering birds survey was completed in October. Given the similarly low numbers of wintering waterbirds recorded on the Site, this is not considered to be a limitation.

The relevant ecological baseline of the Site is described in Section 3 and referred to throughout this Report as required.

The following resources were analysed to help inform the baseline description of the Site and for assessing sensitivities of European sites:

- Environmental Protection Agency (EPA) maps website (<https://gis.epa.ie/EPAMaps/>) (accessed 10/10/23);
- National Parks and Wildlife Service (NPWS) Protected Sites in Ireland website (<https://www.npws.ie/protected-sites>) (accessed 10/10/23);
- Google Maps website (<https://maps.google.com/>) (accessed 10/10/23); and,
- *The Status of European Union (EU) Protected Habitats and Species in Ireland (Article 17 Report)* (<https://www.npws.ie/publications/article-17-reports/article-17-reports-2019>) (accessed 10/10/23);.

2.5 Statement of Authority

This Stage 1 Screening was prepared by Dr Erfan Fadaei, checked by Jenny Hunter and verified by Dr Paul Lynas. Wintering bird surveyors were carried out by Alison Donnelly, Susanne Dunne, Shona Jessiman and Tony Marshall.

Dr Erfan Fadaei BSc (Hons) ACIEEM is a Senior Ecologist with a wealth of experience carrying out a wide range of ecological surveys including bat activity, wintering and breeding bird, badger, pine marten, otter, smooth newt, common lizard, deer, and invasive species. Erfan is a competent habitat surveyor, with extensive experience of using both Phase 1 and NVC methods. He has undertaken ecological assessments for both public and private sector clients, including for large infrastructure projects including renewable energy, rail, and residential housing developments. These have included Preliminary Ecological Appraisals, Appropriate Assessments, and Ecological Impact Assessments for projects both in Ireland and the UK.

Dr Paul Lynas BSc (Hons) MRes CEnv MCIEEM is an Associate Director for Ecology and is an all-round ecologist with over 19 years' professional conservation and consultancy experience and is the immediate past Convener of the Irish Section of CIEEM. He has undertaken numerous flora and fauna assessments for both public and private sector clients, working in multi-disciplinary teams on many large infrastructure and small-scale projects, from roads to data centres to residential developments where he has also worked extensively on Appropriate Assessments throughout.

Dr Jackie Hill BSc (Hons), MCIEEM is a Technical Director for Marine Ecology who has been with AECOM since 2013. She has particular expertise in the assessment of impacts to marine ecological receptors as result of project developments in the marine environment, particularly the impact of underwater sound on marine mammals and fish.

Alison Donnelly BSc (Hons) MSc is a Consultant Marine Ecologist who has been with AECOM since November 2018. Alison has gained experience surveying on a range of commercial and residential infrastructure projects. Alison's survey experience ranges from marine to terrestrial habitats varying from deep sea pelagic fish abundance assessments to wintering bird surveys. Alison's primary expertise

involves surveying for protected species including birds, bats, amphibians and mammals. Alison has carried out numerous bat emergence / re-entry surveys and preliminary roost assessment surveys, assessing both trees and buildings for roost suitability Alison has also carried out protected terrestrial mammal surveys for a wide range of projects including road, railway, housing and a range of large-scale private sector developments.

Susanne is a Senior Ecologist with AECOM's Ireland Ecology team. Susanne has worked for six years as a professional Ecologist for private and public sector clients. Project experience has varied from road, rail and building infrastructure projects the Republic of Ireland, Northern Ireland and the UK. Susanne has experience in a variety of species surveys, Appropriate Assessment (AA), Preliminary Ecological Appraisals (PEAs), species technical reports, Environmental Impact Assessments (EIA), Ecological Impact Assessment (EclA), and also experience working on large Irish national plans. Susanne is a Qualifying Member of CIEEM.

Shona Jessiman BSc (Hons), qualifying member of CIEEM, is a Consultant Ecologist with a range of experience in projects throughout the UK and Ireland. Shona has taken on the majority of the team's breeding and non-breeding ornithological survey work and has helped to co-ordinate fieldwork programmes for several projects. These have ranged from smaller road improvement works to large-scale powerline projects. As well as ornithological surveys, Shona has led Phase 1 habitat and protected species surveys including for badger, otter, water vole, pine marten and bats. She has undertaken Preliminary Ecological Appraisals and Ecological Impact Assessments on a variety of projects throughout Scotland.

Tony Marshall CEcol MCIEEM, is an AECOM Technical Director with a first-class honours degree in Biological Sciences (Ecology) from the University of Edinburgh. Tony leads AECOM's ecology teams in Ireland and Scotland, and has over thirteen years' experience as a professional ecological consultant. He has substantial experience in undertaking Appropriate Assessments for projects (and plans) in Ireland and Scotland.

3. Proposed Development and Baseline Environment

3.1.1 Baseline Site Conditions

The Site is situated on Tarbert Island, north of Tarbert, Co. Kerry, Ireland (Irish Grid Reference X; 475237; Y: 5826671), see Plate 1. The entire Site is located within the administrative area of Kerry County Council (KCC). The Site is bordered to the north, east and west by the Shannon Estuary, and owing to the local topography all surface water drains into the estuary. As such it is not possible for hydrological links to exist beyond Tarbert Island. The existing Tarbert HFO Power Station and a section of the EirGrid 220kV electrical substation are within the Site. The adjoining Tarbert Emergency Generation (TEG) Site and the National Oil Reserves Agency (NORA) tank farm are located to the south-west of the Proposed Development boundary.

The Site is primarily composed of buildings and artificial surfaces of the existing Tarbert HFO Power Station, with much smaller areas of amenity grassland, dry meadows and grassy strips, scrub, bare ground, recolonizing bare ground, ornamental shrubs, and reservoir.

3.1.2 Description of the Proposed Development

The Proposed Development includes an OCGT (350MW) plant fuelled by Hydrotreated Vegetable Oil (HVO). The power output of the plant will be controlled and limited to a maximum of 350MW. The OCGT will be located within the existing established and operational SSE Tarbert site. The Proposed Development will include an overhead cable 75 m in length, which will connect to an existing electrical substation to the south of the proposed OCGT building. There will be no alterations to the electricity transmission system outside of the Site as part of the Proposed Development.

As part of the Proposed Development, a number of ancillary buildings associated with the existing Tarbert HFO Power Station (but not the Tarbert HFO Power Station building) will be demolished in the north of the main development area, including:

- Carpenters workshop (1200m³).
- Boiler ash and brickwork
- Water treatment plant (9500m³).
- Wastewater treatment plant
- Demin tank
- Fuel lines
- Contractor / Canteen building (3300m³).
- Boiler wash open top storage tank (5,500m³).
- Mechanical workshop
- Chemical storage bund(175m³).
- Shot blasting shed.
- Lube oil store (2800m³); and
- Site toilets (300m³).

This is to facilitate the construction of new ancillary buildings including: 2 no. demineralisation water tanks, a raw water and fire water storage tank, fuel tanks, and fuel polishing and transfer system. Other

infrastructure to be constructed as part of the Proposed Development includes: a 55m emissions stack, Selective Catalytic Reducer, a demineralisation water treatment plant, HVO pipework, a wastewater treatment plant, an administration building and workshop, stores and car parking, and flood defence works. The construction phase of the Proposed Development will include: temporary construction and laydown areas, temporary open storage areas and stores, materials and plant storage, contractor compounds and construction staff office and welfare facilities, and temporary vehicle parking facilities.

The application boundary for the Proposed Development encloses an area of approximately 15.18 hectares (ha), which is contained within the SSE Tarbert site, which is an area of 42 ha. with the majority of the area being under the control of SSE Generation Ireland Limited (herein referred to as ‘the Applicant’). Further information on the Proposed Development, Site and SSE Tarbert Site is provided in Chapter 5 of the Environmental Impact Assessment Report.

3.1.3 Wintering Bird Surveys

Surveys of wintering birds were carried out monthly between November 2022 and March 2023 in accordance with specific best practice guidelines to establish the baseline activity of wintering birds at the Site and in adjacent habitats, namely intertidal habitats including mudflats and shoreline, and the Shannon Estuary. Surveys involved walking a pre-determined transect through the Site, concentrating on coastal sections, and recording birds up to around 500m from the shore. As per WeBS methods, counts of numbers of all waterbird species, as defined by Wetlands International (Rose and Scott, 1997), are recorded. This comprises divers, grebes, cormorants, herons, spoonbill, swans, geese, ducks, rails, cranes, waders, and kingfisher. Counts of gulls and terns are optional, however have been included during these surveys both for robustness and because they appear around the area in large numbers.

Across all surveys, a total of 22 species of bird were recorded within the survey area, of which nine species are SCI of River Shannon and River Fergus Estuaries SPA. These species, as well as the peak counts of each species are detailed in Table 3.1. The five year mean counts (from 1995/96 to 1999/2000) of each species from the SPA (NPWS, 2012b) are also given, as well as the peak count as a proportion of the SPA population.

Table 3.1: Numbers of SCI bird species of River Shannon and River Fergus Estuaries SPA recorded during wintering bird surveys.

BTO code	Common Name	Scientific Name	Peak Count	SPA population	Peak count as proportion of SPA population (%)
BH	Black-headed gull	<i>Chroicocephalus ridibundus</i>	372	2681	13.9
CA	Cormorant	<i>Phalacrocorax carbo</i>	27	245	11
CU	Curlew	<i>Numenius arquata</i>	2	2396	0.1
DN	Dunlin	<i>Calidris alpina</i>	388	15131	2.6
GK	Greenshank	<i>Tringa nebularia</i>	6	61	9.8
RK	Redshank	<i>Tringa totanus</i>	17	2645	0.6
SU	Shelduck	<i>Tadorna tadorna</i>	5	1025	0.5
T.	Teal	<i>Anas crecca</i>	12	2260	0.5
WN	Wigeon	<i>Mareca penelope</i>	28	3761	0.7

4. Screening for AA

4.1 Identification of Relevant European Sites

European sites (including candidate sites) are relevant where there may be a source-pathway-receptor relationship which may give rise to likely significant effects on the qualifying features. The European sites identified as relevant are based on proximity and factors such as the hydrological connectivity and the potential connection to the Site due to mobile QI / SCI that may be associated with the habitats within the Zol of the Proposed Development.

Based on this selection criteria, seven European sites are located within the Zol of the Proposed Development. These sites, their qualifying features and conservation objectives are detailed in Table 4.1 and their locations are displayed in Figure 1. All other European sites are considered to be outside the Zol of the Proposed Development due to a lack of source-pathway-receptor relationships. SPAs up to 20km were searched for, as this is given as the largest core foraging range for any species (non-breeding pink-footed goose *Anser brachyrhynchus* and greylag goose *Anser anser*) (SNH, 2016).

With regard to marine mammals a Zone of Influence was considered up to 135km given recent guidance (NIEA, pers. comm).

Table 4.1: European sites within the potential Zol of the Proposed Development.

European site name and code	Summary of QI / SCI	Approximate distance from the Proposed Development
River Shannon and River Fergus Estuaries SPA [004077]	<ul style="list-style-type: none"> • Cormorant <i>Phalacrocorax carbo</i> [A017] • Whooper swan <i>Cygnus cygnus</i> [A038] • Light-bellied brent goose <i>Branta bernicla hrota</i> [A046] • Shelduck <i>Tadorna tadorna</i> [A048] • Wigeon <i>Anas penelope</i> [A050] • Teal <i>Anas crecca</i> [A052] • Pintail <i>Anas acuta</i> [A054] • Shoveler <i>Anas clypeata</i> [A056] • Scaup <i>Aythya marila</i> [A062] • Ringed plover <i>Charadrius hiaticula</i> [A137] • Golden plover <i>Pluvialis apricaria</i> [A140] • Grey plover <i>Pluvialis squatarola</i> [A141] • Lapwing <i>Vanellus vanellus</i> [A142] • Knot <i>Calidris canutus</i> [A143] • Dunlin <i>Calidris alpina</i> [A149] • Black-tailed godwit <i>Limosa limosa</i> [A156] • Bar-tailed godwit <i>Limosa lapponica</i> [A157] • Curlew <i>Numenius arquata</i> [A160] • Redshank <i>Tringa totanus</i> [A162] • Greenshank <i>Tringa nebularia</i> [A164] • Black-headed gull <i>Chroicocephalus ridibundus</i> [A179] • Wetland and waterbirds [A999] 	0km – immediately adjacent to Site boundary
Lower River Shannon SAC [002165]	<ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time [1110] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] 	0km – immediately adjacent to Site boundary

European site name and code	Summary of QI / SCI	Approximate distance from the Proposed Development
	<ul style="list-style-type: none"> • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] • Freshwater pearl mussel <i>Margaritifera margaritifera</i> [1029] • Sea lamprey <i>Petromyzon marinus</i> [1095] • Brook lamprey <i>Lampetra planeri</i> [1096] • River lamprey <i>Lampetra fluviatilis</i> [1099] • Salmon <i>Salmo salar</i> [1106] • Common bottlenose dolphin <i>Tursiops truncatus</i> [1349] • Otter <i>Lutra lutra</i> [1355] 	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [004161]	<ul style="list-style-type: none"> • Hen harrier <i>Circus cyaneus</i> [A082] 	6.6km south-east
Moanveanlough Bog SAC [002351]	<ul style="list-style-type: none"> • Active raised bogs [7110] • Degraded raised bogs still capable of natural regeneration [7120] • Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] 	13.9km south
Basket Islands SAC [002172]	<ul style="list-style-type: none"> • Reefs [1170] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • European dry heaths [4030] • Submerged or partially submerged sea caves [8330] • Harbour porpoise <i>Phocoena phocoena</i> [1351] • Grey seal <i>Halichoerus grypus</i> [1364] 	89km south-west, 95km hydrological connection
Kilkieran Bay and Islands SAC [002111]	<ul style="list-style-type: none"> • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Machairs (* in Ireland) [21A0] • Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] • Otter <i>Lutra lutra</i> [1355] 	70km north, 117km hydrological connection

European site name and code	Summary of QI / SCI	Approximate distance from the Proposed Development
	<ul style="list-style-type: none"> Harbour seal <i>Phoca vitulina</i> [1365] Slender naiad <i>Najas flexilis</i> [1833] 	
Slyne Head Islands SAC [000328]	<ul style="list-style-type: none"> Reefs [1170] Common bottlenose dolphin <i>Tursiops truncatus</i> [1349] Grey seal <i>Halichoerus grypus</i> [1364] 	106km north-west, 134km hydrological connection

Source: NPWS (2012a,b,c, 2014a,b, 2015, 2022)

4.2 Assessment of Likely Significant Effects on European Sites

4.2.1 Sources of Impact from the Proposed Development

The following broad categories of impact could arise during the construction, operation and / or decommissioning of the Proposed Development and are considered, where potentially relevant, in relation to each of the ecological features scoped in to detailed assessment above:

- permanent and / or temporary loss or degradation of habitats during construction, and potentially decommissioning also;
- airborne pollution as a result of emissions during construction, operation and / or decommissioning of the Proposed Development;
- disturbance of animal species during the construction, operation and / or decommissioning due to increased noise, vibration, lighting, or the presence of personnel, plant and / or machinery;
- damage or destruction of the resting places of protected or notable animal species during construction and decommissioning of the Proposed Development;
- displacement of animal species during all phases of the Proposed Development;
- injury or mortality of plant or animal species during construction and decommissioning; and
- the spread of invasive non-native plant species during construction and decommissioning.

4.2.2 Decommissioning Phase

Decommissioning will involve disassembly and removal from the Site of all above-ground components associated with the Proposed Development. Impacts arising from the decommissioning stage of the Proposed Development are likely to be similar as those of the construction phase, except for the absence of piling, and therefore effects on European sites from decommissioning are not repeated in this Report.

4.2.3 Potential Effects on European Sites

4.2.3.1 River Shannon and River Fergus Estuaries SPA

The Site is surrounded by the SPA, and the northern and eastern boundaries of the Site are contiguous with River Shannon and River Fergus Estuaries SPA. The SPA is designated for 21 bird species, and wetland habitats which support these species.

Construction

The Site boundary is contiguous with the SPA boundary and there will be no construction or land take outside the Site boundary, i.e., within the SPA. A flood defence wall will be constructed along the SPA boundary at the eastern end of the Site, however, this will not require construction within the SPA.

Construction of the Proposed Development in close proximity to wetland and estuarine habitats has the potential to impact bird SCI. Noise and visual disturbance, arising from the presence of personnel, plant and machinery, noise generated by demolition and construction works, including piling, may disturb birds using habitats surrounding the Site. Any lighting used during the construction phase could also cause disturbance of SCI birds when foraging or roosting. Disturbance could cause birds to avoid areas otherwise suitable for foraging or roosting, causing their distribution within the SPA to shift and potentially leading to reduced abundance of birds within the SPA.

Construction works have the potential to impact a significant proportion of the SPA bird population, as a peak counts of 372 black-headed gull, 27 cormorant and six greenshank were recorded at or near the Site, representing 13.9%, 11% and 9.8% of the SPA population, respectively (NPWS, 2012b).

River Shannon and River Fergus Estuaries SPA is not susceptible to construction dust due to the mobile qualifying bird interests, and no significant effects on birds or wetland habitats are likely.

Industry standard pollution prevention measures will be implemented across the Site to ensure there is no runoff of contaminated water into intertidal or estuarine habitats during construction.

Operation

Discharge of stormwater run-off will be to existing outfalls and will be uncontaminated. There will be no abstraction of water from the Shannon Estuary, and small volumes of uncontaminated process water from the demineralisation process and foul water generated from the new wastewater treatment plant will be discharged into the estuary at an existing outfall. This discharge will be regulated by a new IE Licence or by amendment of the existing IE Licence P0607-02, following a review. Due to the small volumes of uncontaminated water, there will be no impacts on wetlands habitats or estuarine waters used by bird SCI.

The Proposed Development will run on HVO fuel which will be delivered by lorry. When transferring this fuel into the storage tanks there is potential for spills to occur, however in line with industry standards, the tank area will have an impermeable base and will be bunded, with a capacity at least 110% of the total volume of a fuel delivery lorry. Spills outside of this are unlikely, and emergency spill protocols will be enacted as standard practice. All runoff with the potential to become contaminated passes through oil interceptors to retain any hydrocarbons present.

The results of air quality modelling of construction and operational emissions in relation to the Proposed Development (EIAR Chapter 7 Air Quality) indicates that there will be no effect on the habitats within River Shannon and River Fergus Estuaries SPA, meaning that the Conservation Objectives of the site will not be compromised.

In the absence of specific mitigation to prevent disturbance to birds during construction of the Proposed Development, likely significant effects on River Shannon and River Fergus Estuaries SPA cannot be ruled out.

4.2.3.2 Lower River Shannon SAC

Lower River Shannon SAC is located immediately adjacent to, but outside of the Site. The SAC is designated for a range of Annex I habitats, mostly marine or coastal in nature, and seven Annex II species, all of which are aquatic except for otter which is terrestrial but relies on freshwater or coastal habitats. Otter, bottlenose dolphin, Atlantic salmon and three species of lamprey are likely to be present within the Shannon Estuary immediately north of the Site, at least temporarily. Otter may occasionally forage and commute along the coastline of Tarbert Island, however, during baseline ecology surveys no evidence of resident otter was recorded within the Site or along the coastline surrounding the Site, and therefore construction of the Proposed Development is unlikely to impact otter.

Bottlenose dolphin have been recorded just off the coast close to the Site, and the waters of the Shannon Estuary to the north of the Site are within the critical habitat for this species (NPWS, 2012a). Noise from general construction works is unlikely to significantly impact dolphin as this species is likely to be habituated to regular noise disturbance from marine traffic, mostly from the Killimer-Tarbert ferry

that crosses the estuary multiple times a day, as well as larger ships accessing Foynes. Similarly, until recently, the existing Tarbert HFO Power Station was a constant source of high noise levels. However, piling works for the Proposed Development will potentially be a source of greater noise intensity, albeit of relatively short duration. There is potential for some transmission of sound and/or vibration from land-based piling to the estuarine water column but this is expected to be minimal. As sound or vibration propagates away from the source through a solid medium before reaching the water body the sound energy entering the water column will be significantly reduced. Given the proximity of the Site to critical dolphin habitat within the SAC, it may be the case that an animal very close to the shore may be able to detect land-based piling noise but it is unlikely this would cause any significant disturbance. As highly mobile animals, any dolphin in the vicinity can easily move away. Likewise, there is potential for noise / vibration from construction works transferring to the Shannon Estuary and affecting salmon and lamprey species which may spawn in and migrate up the estuary. Such impacts could lead to the displacement of QI species away from areas which would otherwise be suitable for foraging or commuting. However, given that fish have low hearing sensitivity (Popper *et al.*, 2014), the very low intensity of sound or vibration propagating into the estuary and the width of the estuary at this location which would allow salmon migration to continue away from such a small Zol, any significant effects on migratory fish are considered unlikely.

Industry standard pollution prevention measures will be implemented across the Site to ensure there is no runoff of contaminated water into intertidal or estuarine habitats. As such, there will be no impacts on aquatic habitats or species.

The results of air quality modelling emissions (EIAR Chapter 7 Air Quality, Section 4) in relation to the Proposed Development indicate that there will be no effect on the habitats within Lower River Shannon SAC, meaning that the Conservation Objectives of the site will not be compromised.

Likely significant effects on Lower River Shannon SAC through impacts to fish and dolphin are extremely unlikely, but under the precautionary principle, these are not ruled out at this stage and are explored in greater detail in Stage 2.

4.2.3.3 Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

This SPA is located 6.6km south-east of the Site and is designated for hen harrier. Although a mobile species, hen harrier is unlikely to be present at or near the Site given the lack of suitable habitat, and thus there are no pathways for effect on this species. There is no hydrological connection to this site from the Proposed Development.

4.2.3.4 Moanveanlugh Bog SAC

This SAC is located 13.9km south of the Site and is designated for raised bog habitat. The results of air quality modelling of construction and operational emissions in relation to the Proposed Development indicates that there will be no effect on the raised bog habitats of the SAC, due to the distances involved and the Conservation Objectives of the site will not be compromised. There is no hydrological connection to this site from the Proposed Development.

4.2.3.5 Blasket Islands SAC

Blasket Islands SAC is located 95km south-west of the Site by direct distance and is connected hydrologically at a distance of 95km, via the Shannon Estuary and Atlantic Ocean. The SAC is designated for several Annex I habitats, harbour porpoise and grey seal. Given the separation distance, there is no source-pathway-receptor relationship between the Site and the SAC for significant effects to habitat features, however, as mobile species, grey seal and harbour porpoise may potentially venture into the Shannon Estuary and in proximity to the Site. Studies indicate that seals typically forage up to 50km from their haul out sites, though sometimes further afield, particularly for grey seal (Stewart *et al.*, 1989; McConnell *et al.*, 1999; Sharples *et al.*, 2005; Thompson *et al.*, 1996) which may venture over 100km from their haul out sites.

As with bottlenose dolphin described in Section 4.2.1.2, likely significant effects to harbour porpoise and grey seal from construction works, particularly piling, cannot be excluded.

4.2.3.6 Kilkieran Islands SAC

This SAC which is located 70km north of the Site and connected hydrologically at a distance of 117km via the Shannon Estuary and Atlantic Ocean, is designated for numerous habitats and several Annex II species, including harbour seal. As a mobile species, harbour seal may potentially venture into the Shannon Estuary and in proximity to the Site. Studies indicate that seals typically forage up to 50km from their haul out sites, though sometimes further afield, particularly for grey seal (Stewart *et al.*, 1989; McConnell *et al.*, 1999; Sharples *et al.*, 2005; Thompson *et al.*, 1996) which may venture over 100km from their haul out sites.

As described above, significant effects to harbour seal from construction works, particularly piling, cannot be excluded.

4.2.3.7 Slyne Head SAC

Slyne Head SAC is connected hydrologically to the Site at a distance of 135km via the Shannon Estuary and Atlantic Ocean, and is designated for reefs, bottlenose dolphin and grey seal. Given the separation distance, there is no source-pathway-receptor relationship between the Site and the SAC for significant effects to reefs, however, as mobile species, grey seal and bottlenose dolphin may potentially venture into the Shannon Estuary and in proximity to the Site.

As described above in Section 4.2.1.2, likely significant effects to marine mammals from construction works, particularly piling, cannot be excluded.

Table 4.2: Screening matrix.

Assessment Criteria

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

Are the works connected with or necessary to the management of any European site?

Size and scale	There will be no works within any European site, however construction works will be carried out in close proximity to the boundary of River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC. The Site is approximately 15.18ha.
Land-take	There will be no land take from any European sites.
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Refer to Table 4.1.
Excavation and Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	There will be no excavation or exploitation of any resources within any European sites to facilitate the Proposed Development.
Emissions (e.g., polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	There will be minor discharge of uncontaminated water to the Shannon Estuary during operation as part of the demineralisation process, as per existing limits, and there will also be emissions from surface water run-off and foul water following wastewater treatment. Industry standard mitigation measures to protect watercourses and waterbodies will prevent construction materials, chemical, and hydrocarbons from entering the estuary including via surface water runoff. Impacts on adjacent ecological sites from emissions arising from the operation of the Power Station are unlikely to be significant.
Transportation requirements	Transport requirements will use the existing road network.

Assessment Criteria

Duration of construction, operation, etc. Construction phase will be approximately 29 months. Operational phase is expected to be 25 years. After 25 years in operation, the Proposed Development will either be upgraded to extend its operational life or it may be decommissioned, depending on the national grid requirement.

4.3 In-combination Effects

A number of projects were identified which may potentially act in-combination with the Proposed Development. Details of each project are given in Table 4.3. There are no proposals within plans that could act in-combination with the Proposed Development.

Table 4.3: Projects within 5km of the Proposed Development.

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
23350	31/03/2023	The Proposed Development will comprise of the following on a site measuring approximately 6.9 hectares: (1) removal of existing cable joint, bay within Tarbert generating station, 220kV switchgear within the existing Tarbert substation compound and associated 220Kv cabling; (2) two no. new lengths of 220kV underground cabling measuring approximately 340m each, running between two no. new underground cable joint base in Tarbert generating station and the connection point at Tarbert substation; (3) the new 220kV switchgear bay within the existing Tarbert substation compound comprising associated electrical equipment, including cable sealing ends, insulators, overhead conductors, surge arrestors, lightning masts and lighting poles; and (4) all ancillary site development works including temporary construction compound and a layout areas, site preparation works and ground levelling as required to facilitate the works. Tarbert generating station is licensed by the Environment Protection Agency (EPA) under the Industrial Emissions (IE) License (Ref: P0607-02). The Proposed Development includes works located within the IE License Boundary of Tarbert Generating Station which is an Upper Tier Establishment to which the Chemicals Act (Control of Major Accidents Hazards Involving Dangerous Substances) Regulations 2015 (the COMAH Regulations) apply. This planning is accompanied by a Natura Impact Statement (NIS).	EirGrid PLC	Further Information Requested	Within the site boundary.	<p>The EirGrid proposed development boundary and the SSE Proposed Development boundary overlap and both occur within Tarbert Island, Co. Kerry. The proposed works for each project may overlap for the duration of the EirGrid development from Q3 2024 to Q4 2025.</p> <p>Noise and visual disturbance arising from EirGrid project will be minor compared with the Proposed Development, and given the spatial and temporal overlap of the two projects, there will be no significant increase in disturbance from the EirGrid project.</p> <p>The EirGrid development has outlined mitigation designed to avoid effects on River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC. Following implementation of these measures, no significant effects on European sites is expected. Therefore, no in-combination effects on sensitive receptors</p>

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
						associated with European sites are likely from the EirGrid application.
EE08.31583 8	17/02/2023	Application received under Section 4 of the Development (Emergency Electrical Generation) Act 2022 (the Act) for a Proposed Development located at Tarbert Power Station, Tarbert, in the townland of Tarbert Island, Co. Kerry.	SSE Generation Ireland Ltd.	Granted Conditional 29/03/2023	0m adjacent Site boundary.	An NIS found that following implementation of mitigation measures, there will be no likely significant effects on SCI birds of River Shannon and River Fergus Estuaries SPA and QI of Lower River Shannon SAC. Given that development is scheduled to be completed prior to the start of the Proposed Development and there will be no overlap in construction phases when impacts on QI / SCI may arise, there will be no in-combination effects with the Proposed Development.
2332	23/01/2023	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 (Re 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 Investigations (SI) works comprising of boreholes and trial pits across the site.	Electricity Supply Board (ESB)	Granted Conditional 15/03/2023	3.66km north-west.	This application is for minor works which will be carried out at significant distance from the Proposed Development, and therefore no in-combination effects are anticipated.
21549	25/05/2021	A high inertia synchronous compensator (HISC) compound containing 1 no. HISC unit enclosed within a steel clad framed style structure (12.1m max height) and supported by 8 no. electrical equipment containers (containing ancillary	Donal Murphy Glencloosagh Energy Limited	Granted Conditional 19/07/21	1.7km south-west	An NIS was prepared in which mitigation was prescribed to prevent degradation in water quality and potential impacts on River Shannon and

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
		<p>power supply products including a static frequency converts, mv switchgear, exciters, lv distribution, control room, welfare and office, main auxiliary and start-up electrical transformers, generator circuit breaker, switchgear equipment, external cooler units and 1 no. back up diesel generator and associated diesel storage tank; (b) 220kV high voltage gas insulated switchgear (GIS) substation compound containing a GIS substation building with all control and hv equipment within a single storey building (13.2m max height). The building will be surrounded by a compound road and contained within a 2.6m high galvanised steel palisade fence; (c) a battery storage compound containing 5 no. battery storage containers, enclosed in steel containers of dimensions approximately 13m by 2.5m by 3m, housing individual battery components with 2 fitted external HVAC systems for each unit and supported by 13 no. inverter stations, 14 no. auxiliary transformers and control container; (d) 220kV underground cable to the existing adjoining EirGrid substation; (e) associated elements comprising various underground cables and ducts, equipment plinths, boundary security fence, compound lighting and palisade gates and fencing, security lighting, CCTV, internal access roads, hardstanding areas and all necessary foundations works for the above compounds. The planning application is on lands where grid stabilisation facility was previously permitted under planning register no 19/115. Planning permission to construct the development is sought for a period of 10 years. A Natura Impact Statement has been prepared in respect of the Proposed Development and accompanies the application.</p>				<p>River Fergus Estuaries SPA and Lower River Shannon SAC. Following implementation of these measures, no significant effects are likely and no potential for in-combination effects is identified.</p>

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
20850	18/09/2020	For changes to the previously permitted peak power plant development (planning ref. 13/138). It is proposed to change the energy source for the charging of the battery storage system (BESS) containers from diesel to charging off the national grid and to change the permitted layout for electrical equipment based on the consequence of the proposed change in energy source at an area located within the permitted development. It is also proposed to include a small metering enclosure adjacent to the constructed substation building within the permitted development. A five-year planning permission is being sought for the Proposed Development.	Kilpadouge Green Energy Ltd	Conditional 12/11/2020.	1.75km south-west	This application is for minor works which will be carried out at some distance from the Proposed Development. No material change in the ecology of the site, including designated nature conservations site, is expected as a result of the proposed changes. Therefore, no in-combination effects are anticipated.
19746	26/09/2019	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 licensed by the EPA under an Industrial Emissions (IE) Licence (Ref. P0605-04) and Upper Tier COMAH sire and therefore falls under the requirements of the Control of Major Accident Hazard Regulations (COMAH), 2015. The Development, which will be located within a fenced compound c. 0.94ha. 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. 3m high); *c 7m high modular containers to house electrical and control equipment (total area of c. 384 sq.m); *a generator step-up transformer (c.150 sq. m c.8m high), auxiliary transformer (c.48 sq. m., c.3m	ESB	Granted Conditional 20/11/2019.	4.24km north-west.	The planned development will not result in any emissions or noise beyond the allowable existing limits of the existing power station development. Therefore, this will not combine with the Proposed Development at a distance of 4.24km.

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
		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 hardstanding including a maintenance lay-down area; and d) the development will be bounded by a c.3m high chain-link fence. Site access will be by means of a new c. 2.7m high palisade gate accessed from existing roads within the station site. Planning permission is being sought for a duration for a duration of 10 years.				
19115	12/02/2019	The development will consist of a grid stabilisation facility comprising of the construction up to 4 no. rotating stabilizers, 5 no. battery storage containers, 1 no. control room, 2 transformers and ancillary equipment within a site area of approx. 1.46 hectares. It is proposed to connect the Proposed Development to the adjacent EirGrid substation by underground cable which will traverse the permitted and under construction peaking plant. The rotating stabilisers will be supported by 10 no. electrical equipment rooms which will contain ancillary power supply products including a static frequency convert (SFC), mv switchgear, exciters and lv distribution, and step-up / down transformers. A heating ventilation and air conditioning system (HVAC) will be attached to each rotating stabiliser, 4 no. auxiliary transformers also proposed. The battery containers will house individual battery components with 2 no. fitted external HVAC system for each. 13 no. invertor stations and 14 auxiliary transformers are proposed for the battery containers. The entire site will consist of various underground cables and ducts, boundary securing fence,	Glencloosagh Energy Limited	Granted Conditional 25/10/2019	1.65km south-west	An NIS was prepared in which potential pollution impacts on River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC were assessed. Following implementation of these mitigation, it was concluded no significant effects are likely. Given the relatively minor scale of the development and that the potential impact pathways of this development and the Proposed Development are different, there is no potential for in-combination effects.

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
		compound lighting and palisade gates and fencing, new internal access track, security lighting, CCTV, hardstanding areas and all necessary foundation works. Permission is also sought for 2 electrical transformers (up to 220kV), associated hv equipment and underground electrical grid connection cabling and ducting connecting the development to the national grid at the adjacent ESB/EirGrid substation. Planning permission is sought for a period of 10 years. A Natura Impact Statement accompanies this application.				
18520	21/06/2018	The development at Moneypoint ESB will consist of a c7.5 MW capacity battery storage facility within a secured compound, on a 0.4 Ha site, and will subject to detailed design, commercial and technical considerations, include (a) up to 3 No. battery storage units (each typically comprising a containerised battery (c 12.2m x 2.5m x 3.2m), HVAC (c2.7m x 2.7m), inverter (c. 3m x 3m) and transformer (c 3.3m x 3.3m); (b) a 28 sq. m single-storey switchgear building; (d) ancillary electrical plant including a transformer and var support units; (e) a c.15.6m high lightning mast and c. 18m high SCADA communications mast; (f) a 2.6m high chain-link fence and vehicular access gates via the existing station road to the south of the site; (g) ancillary site works including site clearance and the installation of site services.	ESB	Granted Conditional 24/07/2018	Approximately 4.5km north-west of the Site	This development involves works at a significant distance from the Proposed Development. No-in combination effects likely.
18392	27/04/2018	Tarbert Island Tarbert Co Kerry construct a battery storage facility within a total site area of up to 2.2278ha, to include 50 no. self-contained battery container units with associated HVAC cooling units, 13 converter and 13 step up transformer container units, associated compound cabling and ducting, a grid transformer, a single storey substation / control building with welfare facilities, a cable route grid connection to the existing ESB substation building, maintenance lighting, security fencing, a CCTV monitoring system, and all	SSE Renewables (Ireland) Limited	Granted Conditional 15/01/2019	Within the Site boundary.	This development, if constructed, would be constructed following the commissioning of the Proposed Development, and thus, there will be no overlap of construction phases between the two developments. No in-combination effects are considered likely due to the time factors involved.

Planning Application	Date Submitted	Summary Details	Applicant	Status	Distance from the Site	Potential for In-Combination Effects
		associated ancillary infrastructure on lands within the Tarbert generating facility. A ten-year planning permission is being sought to construct the development.				
18878	10/09/2018	For a 10-year permission to construct a battery energy storage system (BESS) facility on a total site area of up to 0.6ha that will provide grid balancing services to the Irish electrical grid, to include up to 26 no. self-contained battery container units with associated heating ventilation and air conditioning systems (HVAC), power conversion systems (PCS), step-up transformers, control systems and ancillary electrical components, 1 no. single – storey substation control building and associated electrical infrastructure, 1 no. 110kV generator transformers, all necessary ground and foundation works, associated compound cabling and ducting, palisade security fencing and lighting, CCTV security cameras, new site access from existing private road, temporary construction compound and all associated ancillary infrastructure and site development works. A Natura Impact Statement is now submitted in support of the application.	Shannon Clean Tech Ltd	Granted Conditional 23/09/2019	1.86km south-west	The development involves minor works and the AA Screening assessed the development would have no likely significant effects on European sites. Therefore, there will be no in-combination effects with Proposed Development.

4.4 AA Screening Conclusion

The need for an AA can only be excluded, on the basis of objective evidence and best scientific information, and in light of the conservation objectives of relevant European sites, that the Proposed Development, either individually or in-combination with other plans or projects, will not have likely significant effects on any European site.

Following the assessment of the likely significant effects of the Proposed Development on European sites considered in Section 4, two sites without a source-pathway-receptor link have been screened out as no significant effects are possible (Table 4.4). The European sites where sufficient uncertainty remains after Screening are presented in Table 4.4.

In the absence of mitigation measures, impacts that cannot be excluded comprise those associated with noise and visual disturbance which may arise as result of the construction of the Proposed Development, causing behavioural changes such as displacement or may impact breeding success or even cause injury to species, resulting in the inability for a European site to meet its conservation objectives.

No other likely significant effects on European sites, on the basis of objective scientific information, and in view of the conservation objectives of relevant sites, either individually or in-combination with other plans or projects are anticipated.

A Stage 2 AA is required for European sites where uncertainty remains, to assess if the Proposed Development will impact the integrity of any European sites in light of each site's conservation objectives.

Table 4.4: Screening Assessment Summary

Site	Direct Distance	Hydrological Distance	Outcome of Screening	Screened In ✓ / Out X
River Shannon and River Fergus Estuaries SPA [004077]	0km – SPA within Site boundary	0km	Sufficient uncertainty remains for impacts to bird species as a result of noise and visual disturbance from construction works.	✓
Lower River Shannon SAC [002165]	0km – immediately adjacent to Site boundary	0km	Sufficient uncertainty remains for impacts to QI species as a result of noise and vibration disturbance from construction works.	✓
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [004161]	6.6km south-east	No connection	No likely significant effects.	X
Moanveanlagh Bog SAC [002351]	13.9km south	No connection	No likely significant effects.	X
Blasket Islands SAC [002172]	89km west	south- 95km	Sufficient uncertainty remains for impacts to harbour porpoise and grey seal as a result of noise and vibration disturbance from construction works.	✓
Kilkieran Bay and Islands SAC [002111]	70km north	117km	Sufficient uncertainty remains for impacts to harbour seal as a result of noise and vibration disturbance from construction works.	✓

Site	Direct Distance	Hydrological Distance	Outcome of Screening	Screened In ✓ / Out X
Slyne Head Islands SAC [000328]	106km west	north- 134km	Sufficient uncertainty remains for impacts to bottlenose dolphin and grey seal as a result of noise and vibration disturbance from construction works.	✓

5. Natura Impact Statement

5.1 Introduction

An AA is required where significant effects on European sites cannot be excluded on the basis of objective information. An AA will assess the implications of the plan or project in respect of the site's conservation objectives, either individually or in-combination with other plans or projects, to ascertain whether the plan or project will adversely affect the integrity of the site concerned.

Following the completion of the Stage 1 Screening, there remains uncertainty in the case of five European sites, as to whether or not the Proposed Development has the likelihood to cause significant effects on the integrity of the sites in question. This is on account of the potential of the Proposed Development to cause disturbance to SCI and QI of the SPA and SAC, respectively.

Having completed the AA Screening, this Natura Impact Statement serves to provide AECOM's opinion on whether there will be an adverse effect on the integrity of any 'screened in' European site from the Proposed Development, either individually or in-combination with other plans or projects.

5.2 European Sites Screened In

5.2.1 Identified European Sites

River Shannon and River Fergus Estuaries SPA, Lower River Shannon SAC Blasket Islands SAC, Kilkieran Bay and Islands SAC and Slyne Head Islands SAC were identified by the Stage 1 Screening for likely significant effects from the Proposed Development through viable impact transfer pathways during the construction phase. These European sites, the receptor for likely significant effects and their conservation objectives are presented in Table 5.1.

Table 5.1: European Sites identified for Stage 2 Appropriate Assessment

European Site	Receptor for Likely Significant Conservation Objective(s) relevant to Effects	Conservation Objective(s) relevant to species that may be impacted
River Shannon and River Fergus Estuaries SPA	<ul style="list-style-type: none"> • 21 bird species 	To maintain the favourable conservation condition of bird species and wetland habitats.
Lower River Shannon SAC	<ul style="list-style-type: none"> • Otter • Bottlenose dolphin • Atlantic salmon • River lamprey • Sea lamprey • Brook lamprey • Freshwater pearl mussel 	To maintain or restore each feature to favourable conservation condition.
Blasket Islands SAC	<ul style="list-style-type: none"> • Harbour porpoise • Grey seal 	To maintain the favourable conservation condition of grey seal and harbour porpoise.
Kilkieran Bay and Islands SAC	<ul style="list-style-type: none"> • Harbour seal 	To maintain the favourable conservation condition of harbour seal.
Slyne Head Islands SAC	<ul style="list-style-type: none"> • Common bottlenose dolphin • Grey seal 	To maintain the favourable conservation condition of bottlenose dolphin and grey seal.

5.2.2 Likely Significant Effects on European Sites

The Screening Assessment (as presented in Section 4) concluded that, without mitigation in place, there is uncertainty as to whether there would be significant effects as a result of the construction of the

Proposed Development, specifically with regard to the potential for impacts associated with noise and visual disturbance to bird SCI of the SPA and aquatic Annex II QI species of the SAC.

The magnitude of indirect effects on habitats and mobile qualifying interest species of European sites is currently unknown, whilst mitigation measures are not considered. This Section provides further information on the potential effects of the Proposed Development on sensitive receptors, while the following Section proposes mitigation to eliminate the likely impacts and effects of the construction phase.

5.2.2.1 River Shannon and River Fergus Estuaries SPA

Construction phase noise and visual disturbance has the potential to impact SCI bird species of the SPA.

Noise disturbance

A substantial review of literature associated with the disturbance of waterbirds was produced for the Humber Industry Nature Conservation Association (INCA) by the University of Hull (Cutts *et al.*, 2009). This report recommended (with respect to waterfowl on mudflats) that construction noise levels should be restricted to below 70 dB because birds would habituate to regular noise below that level, but that sudden irregular noise above 50 dB should be avoided. The University of Hull subsequently produced refined guidance (also suitable for use in Ireland) in the *Waterbird Disturbance Mitigation Toolkit* (Cutts *et al.*, 2013). It concluded that:

- high level disturbance effects are likely with continuous noise above 72dB or sudden noise above 60dB;
- moderate level disturbance effects are likely with regular noise of 60 – 72dB or sudden noise of 55 – 60dB; and,
- there is unlikely to be any response by waterbirds to any noises below 55dB.

On the basis of the above, Cutts *et al.* (2013) provide definitions for ‘High’, ‘Moderate’ and ‘Low’ noise level effects on waterbirds, as set out in Table 5.2. The noise levels stated in the table are at the bird, rather than at the source of the noise.

Table 5.2: Noise level effects on birds (adapted from Cutts *et al.* (2013)).

Noise level effect Definition

High	Noise disturbance is typified by regular responses to stimuli, with birds moving away from the works to areas which are less disturbed (within noise tolerances). Most birds will show a degree of response to noise stimuli. Birds that remain in the affected area may not forage efficiently and if there are additional pressures on the birds (e.g., cold weather) then this may impact upon the survival of individual birds or their ability to breed. For auditory disturbance to qualify as High level, it must constitute a sudden noise event of over 60dB (at the bird, not the source) or a more prolonged noise of over 72dB.
Moderate	Moderate noise disturbance is typified as a High level noise which has occurred over long periods so that birds become habituated to it or lower level noise which causes some disturbance to birds. This encompasses occasional noise events above 55dB, regular noise 60-72dB, and long-term regular noise above 72dB, where birds have become habituated. There is cross-over in Moderate and High level noise thresholds, although the lower band can be assumed unless the species is particularly sensitive.
Low	Low level noise is classed as that which is unlikely to cause response in birds using a fronting intertidal area. As such, noises of less than 55dB at the bird are included in this category. These effects are likely to be masked by background inputs in all but the least disturbed area and thus would not disturb the birds close by. Noise between 55-72dB in some highly disturbed areas (e.g., industrial or urban areas, and adjacent to roads) may feature a Low level of disturbance provided the noise level was regular as birds will often habituate to a constant noise level.

Noise levels maps of predicted combined construction noise levels in typical and peak months have been produced (EIAR Volume III Figure 11.3a and 11.3b). Greatest noise levels (90 – 96 dB) are limited to the construction area, and outside of this area noise levels drop to less than 72dB in all areas used by SCI birds. Some small areas used by bird SCI, for example, parts of the inlet to the south of the Site, may experience up to 70dB of sound, while the majority of this inlet will experience up to 66 – 68dB. Most of the bird records are within areas which will receive less than 64dB noise. Therefore, regular noise at these levels may be considered to produce moderate disturbance. However, birds in these areas are likely to be habituated to background noise from maintenance of the existing Tarbert HFO Power Station, and construction that is currently taking place within the TEG site. Therefore, significant effects on SCI birds are not anticipated.

Operational noise from the Proposed Development will be less than 55dB in all areas beyond the Site where SCI birds were recorded. Therefore, there will be no impacts on birds arising from the Proposed Development.

Vibration disturbance

Ecological receptors are assumed to have the same sensitivity to vibration as human receptors. A detailed assessment of construction related vibration has been scoped out due to the distance to the nearest receptor being large enough that the values for human perception or structural damage will not be reached (EIAR Volume I Chapter 11.3.4). Similarly, construction related vibration will therefore not have impacts on SCI birds due to the threshold distances between vibration sources and locations of significant concentrations of SCI birds.

Visual disturbance

The visual disturbance of SCI bird species could be caused by the presence and activities of personnel, plant and machinery during the construction, operational or decommissioning phases.

In addition to noise disturbance, the *Waterbird Disturbance Mitigation Toolkit* (Cutts *et al.*, 2013) also considers visual disturbance effects on waterbirds. It states that, in most instances, a visual stimulus (e.g., a construction worker) will create a disturbance effect before any associated noise starts to have an effect. For example, the *Toolkit* suggests that a flight response may be expected in many waterbird species if approached to within circa 100-150m across a mudflat, whereas for such an effect to occur through noise alone this would require a noise level of around 120-130 dB to be generated at the source (this being the threshold of pain). Similarly to noise, Cutts *et al.* (2013) provide definitions for ‘High’, ‘Moderate’ and ‘Low’ visual disturbance level effects on waterbirds, as set out in Table 5.3.

Table 5.3: Disturbance level effects on birds (adapted from Cutts *et al.* (2013)).

Visual effect	level Definition
High	This is typified by regular reactions to visual stimuli, with birds moving away from the works to areas which are less disturbed. Most birds will show a degree of response to stimuli. Birds that remain in the affected area may not forage efficiently and if there are additional pressures on the birds (e.g., cold weather) this may impact upon the survival of individual birds or their ability to breed. Visual stimuli reaches High levels of disturbance extremely easily with workers operating outside of equipment, fast movement, large plant, and close proximity to the birds (especially encroachment on mudflats) contributing to this level of disturbance.
Moderate	Typified as either High level disturbance which has occurred over long periods so that birds become habituated to it or less sensitive to it, or less intrusive works which will still cause a degree of disturbance. This describes visual stimuli such as works or third parties on the flood bank. Habituation occurs less with workers on the flood bank or foreshore working outside machinery. If a worker leaves plant, it usually increases the disturbance level to High. There is cross-over in the Moderate and High level thresholds, although unless a species is particularly sensitive, or it is a new activity, then the lower band can be assumed.

Visual level Definition
effect

Low	This is stimuli that is unlikely to cause a response in birds using an adjacent wetland. Most works would not qualify as Low level impact unless they were out of sight of the birds and any disturbance then would be considered noise-related disturbance (although there remain over-flight issues for some species whereby flights to and from inland feeding and roosting sites can mean that behind bank works still have a visual disturbance effect). Long-term works, including plant on a flood bank, are also considered to be low impact. This type of work would initially qualify as Moderate disturbance but with the absence of workers on the flood bank, birds would quickly become habituated. If workers were to appear alongside plant, this would immediately increase the disturbance to Moderate.
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Comprehensive guidance on the disturbance distances of selected bird species, including many of the SCI species of the River Shannon and River Fergus Estuaries SPA has been recently published (Goodship and Furness, 2022). The guidance presents an extensive review of literature on disturbance of bird species and using information collected by that exercise makes recommendations for buffer distances to be applied to avoid or reduce the risk of disturbance being caused (for example by the presence or activities of people, vehicles, etc.). The recommended buffer zones for the non-breeding SCI species of the River Shannon and River Fergus Estuaries SPA which are included in Goodship and Furness (2022) are presented in Table 5.4.

Table 5.4: Buffer zones recommended by Goodship and Furness (2022) for selected SCI species of River Shannon and River Fergus Estuaries SPA.

SCI species	Likely sensitivity to disturbance	Recommended buffer zone
Whooper swan	Medium	200-600m
Light-bellied brent - goose	-	50-200m*
Shelduck	High	100-400m
Wigeon	High	200-500m
Pintail	Medium	100-200m
Shoveler	Medium	100-200m
Scaup	High	150-450m
Ringed plover	High	100-300m
Golden plover	Medium	150-300m
Grey plover	Medium	200-500m
Knot	Medium	100-300m
Dunlin	Medium	150-300m
Black-tailed godwit	Medium	100-200m
Bar-tailed godwit	Medium	200-300m
Curlew	High	200-650m
Redshank	Medium	200-300m
Greenshank	Medium / High	300-500m

For the SCI bird species not assessed in Goodship and Furness (2022), a precautionary approach has been taken whereby they are assumed to be highly sensitive to disturbance.

According to Cutts *et al.* (2013), visual disturbance of non-breeding waterbirds typically extends up to a distance of 300m. However, for individual species accounts given both in Cutts *et al.* (2013) and Goodship and Furness (2022), disturbance of particularly sensitive species is reported to occur at greater distances, up to a distance of 500m, or as far as 600m for whooper swan and 650m for curlew.

Much of the wintering bird activity was recorded immediately adjacent to the Site in estuarine or intertidal habitats, however, a significant proportion of the bird records are from the largest area of suitable habitat in the area – the mudflats area to the south-east. The majority of birds in this area were recorded more than 400m away from the Site boundary, and approximately 700m from the area of construction. This habitat is screened from the Proposed Development by existing topography, vegetation and buildings including the large existing power station. Vehicles accessing the Site will do so along an existing public road, to which birds can be expected to be habituated. It is therefore considered unlikely that any visual disturbance of birds using this mudflat would occur.

Other areas where birds were recorded, namely the intertidal inlet to the south of the Site, the coastline surrounding the Site, and the waters of the Shannon Estuary are within distances at which disturbance could be caused by construction or decommissioning works. However, the inlet to the south of the Site is likewise screened from the main development area by existing topography and vegetation. Very few birds were recorded along the coastline to the north-west of the main construction works area. The peak count of black-headed gull (372), the largest proportion of the SPA population (13.9%) was from the jetty to the west of the Site, approximately 300m the west of the Site boundary, and over 500m from the main development area, a distance at which birds are unlikely to be impacted by construction works.

During the operational phase, the presence of personnel and vehicles will be much reduced when compared to construction / decommissioning. There will also not be the same movements of heavy plant or machinery, with only an infrequent requirement for these for maintenance works. The movement of personnel and vehicles into and out of the Proposed Development is likely to be largely or entirely screened by the presence of the new buildings which form the new power station, and thus there are unlikely to be any disturbance effects on bird SCI.

Visual disturbance - lighting

A study carried out in central Scotland found that the increased artificial lighting of an estuary caused by adjacent industrial facilities benefitted redshank (which is an SCI species of River Shannon and River Fergus Estuaries SPA) by facilitating night-time foraging (Dwyer *et al.*, 2012). However, a literature review carried out by Adams *et al.* (2021) identifies numerous studies showing adverse impacts on bird species, including changes to bird perception of habitat quality, resulting in selection or avoidance of illuminated areas.

The Site is already illuminated throughout the night, particularly around the existing Tarbert HFO Power Station. The closest areas of coastline to the main development area, to the north and north-east of the Site, have the lowest screening from the construction works area, but also recorded very few SCI birds – only 12 black-headed gull. Therefore, any illumination of these areas is unlikely to adversely impact foraging or roosting birds, given that these areas are not well used by birds and there is abundant alternative habitat in the vicinity which will not be impacted by illumination.

It is thus concluded that there will be no significant effect from noise or visual disturbance of SCI birds of River Shannon and River Fergus Estuaries SPA during the construction, operation or decommissioning of the Proposed Development.

5.2.2.2 Lower River Shannon SAC

Construction phase noise, vibration and visual disturbance has the potential to impact Annex II QI species of the SAC.

Noise and vibration disturbance

The QI species of Lower River Shannon SAC which could be subject to disturbance are: Atlantic salmon, sea lamprey, brook lamprey, river lamprey, bottlenose dolphin and otter. Freshwater pearl

mussel are not directly susceptible to disturbance by noise or visual stimuli. However, any effects of disturbance on Atlantic salmon could have indirect effects on this species because freshwater pearl mussels rely on salmonid fish for part of their lifecycle.

The aquatic QI species (fish and bottlenose dolphin) are not considered to be vulnerable to noise which passes through air. This is because the transmission of sound from air into water involves a significant loss of acoustic energy, primarily due to the impedance mismatch between the two media (Pierce, 2019). Hawkins and Johnstone (1978) also concluded that Atlantic salmon are unlikely to detect sounds originating in air, but that they are sensitive to substrate-borne sounds.

Fish species

There have been multiple studies assessing the impacts of noise and vibration from piling on fish where the construction is in-stream, however very little has been investigated in relation to piling sound and vibration impacts from ground source into water (as will be the case for the Proposed Development).

Hastings and Popper (2005) determined that the degree of damage to fish is not related directly to the distance of the fish from the pile, but to the received level and duration of the sound exposure. It is evident that sound affects different species to a differing degree. For example, Atlantic salmon hearing compared to carp and cod *Gadus* sp. is poor due to a narrow frequency span meaning its power to discriminate signals is poor with low sensitivity. This is likely due to a lack of secondary hearing modifications linking the swim bladder to the auditory system. Atlantic salmon are known to detect low frequency acoustic stimuli below 380Hz (Hawkins and Johnstone, 1978), coinciding with the dominant frequencies produced during impact piling operations in the range of 100Hz to 2kHz (Bailey *et al.*, 2010). Studies have found no clear evidence of a startle response from Atlantic salmon in relation to playback of individual hammer strikes (Harding *et al.*, 2016). In a closely related species, the brown trout *Salmo trutta*, no observable changes in behaviour were recorded from exposure to a real piling event (average noise level 134 re 1 μ Pa, peak) (Nedwell *et al.*, 2003).

There is very little information available for lamprey of any species with respect to hearing, and no audiograms are understood to exist that would provide an indication as to their sensitivity to noise, or indeed a confirmation as to whether they are able to detect sound at all (Popper, 2005). In common with cephalopods (squids and octopuses), lamprey have statolith organs, and so it is thought that they may also have a sensitivity to low frequency sound (Lenhardt and Sismour, 1995) or particle velocity, rather than sound pressure. Therefore, behavioural or physiological effects on lamprey are usually considered likely to occur only when the organism is very close to a powerful noise source (Popper, 2005). However, this assumption is based on the use of very limited morphological data.

There is a high degree of variability in predictions relating to the behavioural impact threshold distances in fish species. As a result of the uncertainty surrounding the way in which fish will react to sound, Popper *et al.* (2014) do not provide criteria for behavioural responses. No studies have been found to provide data on how sound and pressure waves would dissipate through the ground before reaching the water, and how effectively these waves would then be transmitted to the water.

Disturbance of QI fish species as a result of the transfer of noise from air into water is not considered to be likely for the reasons set out above. The primary concern is therefore ground-borne noise, i.e. vibration. However, no studies have been found to provide data on how sound and pressure waves dissipate through the ground before reaching water, and how effectively these waves would then be transmitted to the water.

While vibrations arising from piling depend on numerous factors, such as the energy used for piling, ground composition, and distance, vibrations attenuate rapidly and vibrations from hammer piling are very much reduced at distances of even up to 20m, and negligible at 50m (BS5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' (BS5228)). The same guidance provides piling vibration prediction methodologies up to a maximum of 110m, meaning that construction activities do not produce large enough vibrations to warrant concern beyond this range. At its closest point, piling is anticipated to occur approximately 20m from the Site boundary and 25m from

the SAC boundary. Vibrations from land-based piling are likely to attenuate within the Site itself but there is potential for some transmission of vibration from piling to the estuarine water column but this is expected to be minimal. Very low intensity of sound or vibration propagating into the estuary, combined with the extensive width of the estuary at this location allowing fish migration to continue away from such a small Zol, means that significant effects on migratory QI fish are considered unlikely.

Bottlenose dolphin

The area of the Shannon Estuary immediately adjacent to the Proposed Development is identified in the Conservation Objectives Supporting Document as one of two areas of 'critical habitat' for bottlenose dolphin within the SAC. Sound from anthropogenic activities can negatively impact marine mammals such as bottlenose dolphin as it influences their ability to echolocate, communicate and it can cause physical harm (Southall *et al.*, 2007). However, these anthropogenic activities generally originate within the water column and may propagate over great distances. As described above, noise from terrestrial sources does not transmit well into the water column, and therefore noise arising from construction is unlikely to impact bottlenose dolphin.

As described in the preceding paragraph, vibrations do not propagate well through the ground and are generally attenuated quickly, typically within 20-50m from the vibration source. Furthermore, while the SAC begins approximately 25m from the closest anticipated piling works, habitats immediately inside of the SAC at this location are mudflats which, at low tide, extend approximately 120m from the closest piling work. Therefore, at low tide, dolphin will not be within 100m of the piling works. At high tide, water depth above the mudflats at this location is unlikely to be greater than 3m, and at this shallow depth it is unlikely that bottlenose dolphin will spend significant time at this depth in proximity to the piling works and are rather to be found in deeper waters of the Shannon Estuary further from the Site. Given the proximity of the Site to critical dolphin habitat within the SAC, it may be the case that an animal very close to the shore may be able to detect land-based piling noise but it is unlikely this would cause any significant disturbance. As highly mobile animals, any dolphin in the vicinity can easily move away. Therefore, construction works are not anticipated to have significant effects on this species.

Otter

Guidance published by Transport Infrastructure Ireland (TII, formerly the National Roads Authority (NRA)) recommends that a buffer of 150 m should be applied around piling works and otter breeding holts (NRA, 2008). It is therefore taken that this is the maximum distance at which the noisiest works associated with the Proposed Development could cause disturbance of this species.

Otter are very unlikely to be as sensitive to underwater noise as fish or dolphin because their hearing is air-adapted and not specialised for detecting underwater sounds (Ghoul and Reichmuth, 2016). There is consequently no expectation that otters foraging or commuting within the Shannon Estuary or the inlet to the south of the Proposed Development will be disturbed by noise or vibration.

No resting sites were found by targeted field survey within the Proposed Development or in the immediate area surrounding the Site. Although the habitats within 150m of the Proposed Development are suitable for foraging and commuting by otter, the majority of works will take place outside of the hours of darkness, when otter are generally active. Moreover, there is an extensive area of alternative suitable habitat in the surrounding area, in particular the Shannon Estuary, beyond 150m from the Site – the maximum distance at which any disturbance could be caused by works (NRA, 2008). It is therefore extremely unlikely that disturbance will be caused to any otter, and even if some minor disturbance to otter were to occur, the consequences would be negligible.

Visual disturbance – Lighting

Artificial light can interfere with the physiological function and behaviour of fish and can disrupt the spawning of migratory species (Brüning, 2016). Newman (2015) found in laboratory experiments that artificial light at night affected the activity levels of Atlantic salmon fry, disrupting the amount and timing of refuge behaviour, with individuals seeking refuge 28% more than those not subject to artificial lighting.

The same experiment found that this response was induced at a light intensity of only 1 lux and that even dim artificial lighting has the potential to cause effects. It was therefore concluded that reducing lamp brightness has little potential as a successful mitigation measure to reduce the impact of artificial lighting on freshwater ecosystems. Given the distance of the shoreline from the construction works area and the absence of salmon fry in the estuary (salmon require gravel beds in fast flowing streams and rivers to spawn), there are unlikely to be adverse impacts from illumination on QI fish species of the SAC.

Dolphins and otters, which are both predatory animals and may therefore receive some benefit from increased illumination, are not considered to be particularly sensitive to artificial illumination of watercourses or (in the case of otter) riparian habitat.

It is therefore concluded that there will be no adverse effect on any QI species of Lower River Shannon SAC during the construction, operation or decommissioning of the Proposed Development.

5.2.2.3 Blasket Islands SAC

Although grey seal is a mobile selection feature of Blasket Islands SAC, the Shannon Estuary does not appear to be regularly used by grey seal, and only several individuals have been recorded during the past three surveys (Cronin *et al.* 2003; Morris and Duck, 2019).

Therefore, any noise arising from the construction works will not have a significant effect on the SAC population of Blasket Islands SAC.

Vibrations do not propagate well through the ground and are generally attenuated quickly, typically within 20-50m from the vibration source. While grey seal could potentially be within the Shannon Estuary, they are unlikely to be within 100m of the piling works given the lack of records of grey seal haul-outs in the area and therefore construction works are not anticipated to have significant effects on this species.

Harbour porpoise is the other potential receptor for effects from the construction works. As described in Section 5.2.2.2 for bottlenose dolphin, similarly, vibrations from piling are likely to be attenuated within the Site itself and given the depth of water within the SAC within 100m of piling works, porpoise are not likely to spend significant time within this zone. On this basis, piling will be sufficiently distant from harbour porpoise that no significant impacts are likely to occur.

It is therefore concluded that there will be no adverse effect on grey seal or harbour porpoise during the construction or operation of the Proposed Development.

5.2.2.4 Kilkieran Bay and Islands SAC

Harbour seal is a mobile QI of Kilkieran Bay and Islands SAC, however, this species does not appear to regularly use the Shannon Estuary, and only several individuals have been recorded during the past three surveys (Cronin *et al.* 2003; Morris and Duck, 2019). It is unlikely these belong to the SAC population which is over 100km away. Therefore, any noise arising from the construction works will not have a significant effect on the harbour seal population of Blasket Islands SAC.

Vibrations do not propagate well through the ground and are generally attenuated quickly, typically within 20-50m from the vibration source. While harbour seal could potentially be within the Shannon Estuary, they are unlikely to be within 100m of the piling works given the lack of records of harbour seal haul-outs in the area and therefore construction works are not anticipated to have significant effects on this species.

It is therefore concluded that there will be no adverse effect on harbour seal during the construction or operation of the Proposed Development.

5.2.2.5 Slyne Head Islands SAC

Bottlenose dolphin and grey seal are mobile selection features of Slyne Head Islands SAC which is over 130km to the north-west of the Site. Given this separation distance, bottlenose dolphins from the

SAC are unlikely to be present adjacent to the Site. As per Section 5.2.2.2, construction noise is not expected to readily transfer to the water and vibrations from piling are not expected to extend beyond the Site boundary. Bottlenose dolphins are not anticipated to spend significant amounts of time in close proximity to piling works given the low water depth within SAC adjacent to the works. Thus, no significant effects are likely to occur to any dolphin that may be in the water in the vicinity of the Site during construction works.

Grey seal is another mobile selection feature of Kilkieran Bay and Islands SAC, however, this species does not appear to regularly use the Shannon Estuary, as only several individuals have been recorded during the past three surveys (Cronin *et al.* 2003; Morris and Duck, 2019). It is unlikely these belong to the SAC population which is almost 135km away (by hydrological connection). Therefore, any noise or vibration arising from the construction works will not have a significant effect on the grey seal population of the SAC.

It is therefore concluded that there will be no adverse effect on bottlenose dolphin or grey seal during the construction or operation of the Proposed Development.

5.3 Mitigation

A range of mitigation measures will be implemented by the Proposed Development, the majority of which are embedded mitigation as part of the project design. These measures include:

- a Construction Environmental Management Plan (CEMP) which has been prepared and relevant mitigation measures are included in Appendix 5A (EIAR Volume II). This will be implemented by the construction contractor and will ensure all of the measures are implemented in full to ensure there is no pollution of watercourses, waterbodies or terrestrial habitats, in accordance with the following guidelines; CIRIA's *Control of water pollution from construction sites* (CIRIA, 2001) and *Environmental good practice on site guide* (CIRIA, 2015), and the EPA's *Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects* (EPA, 2021). The following pollution prevention measures will be implemented:
 - controls and contingency measures to manage run-off from works areas and to manage sediment, including the use of settlement ponds, outfalls and interceptors / separators.
 - all oils, lubricants or other chemicals will be stored in an appropriate secure container in a suitable storage area within one of the construction compounds within the Site, with spill kits provided at the storage location and at suitable places across the Proposed Development;
 - in order to avoid potential pollution impacts to soils, vegetation and watercourses / waterbodies, all refuelling and servicing of vehicles and plant will be carried out in a designated area which is bunded and has an impermeable base, situated at least 50m from any watercourse and the boundary of any European site. This will also apply at the operational phase, when deliveries of liquid fuel will be carried out in a specific location, which is impermeable and bunded, and located at least 50m from any watercourse and the boundary of any European site. The bund will be sufficient to contain at least 110% of the total volume of a delivery lorry;
 - as part of the CEMP (Appendix 5A, EIAR Volume II) any spillages of fuel during delivery / transfer will be managed. It includes provision for a licensed contractor to respond to any emergency and with capabilities to collect and safely dispose of any spilled fuel;
 - dust suppression techniques will be adopted during construction and decommissioning works to prevent emissions of dust from the movement of vehicles / plant, or from other construction / demolition activities. This will involve spraying access tracks and other areas of hard-standing (as required) with clean water;
 - as described in the CEMP, there will be no wash-down or wash-out of ready-mix concrete vehicles during the construction works within 20m of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface.

No concrete will be laid during wet weather, and mixing and pouring of concrete will take place within a designated impermeable area, at least 10m away from a water body or surface water drain.

- all personnel and staff involved in the construction, operation and decommissioning of the Proposed Development will be made aware of the presence of ecological features (including the QI / SCI features of European sites) in the vicinity of the Proposed Development and the mitigation measures and working procedures which must be adopted. This will be achieved as part of the induction process through the delivery of a Toolbox Talk. In addition, as required, briefings will also be provided in advance of works which are considered to present an increased risk of impacting ecological features;
- construction works will take place only within the red line boundary of the Proposed Development;
- construction compounds will be fenced to prevent encroachment of personnel, machinery and materials onto adjacent habitats. The temporary stockpiling of materials will be restricted to designated locations on Site, away from undisturbed adjacent habitats and any waterbody;
- a pre-works confirmatory survey for otter will be carried out prior to the commencement of construction or decommissioning works. If any holts or resting places are found, these can be removed under licence from NPWS;
- any excavations will be left with a method of escape (ramps) for any animal that may enter overnight, and will be checked at the start of each working day to ensure no animals are trapped within them;
- any pipes will be capped or otherwise blocked at the end of each working day to ensure no animals become trapped;
- within the Site, all vehicles will be restricted to Site speed limits. This will help to minimise the risk of collision with mammals, including otter; and,
- no invasive non-native plant species were found during initial Site surveys, however if any are found during the construction phase, the implemented biosecurity measures will ensure that these are managed.

6. Natura Impact Statement Conclusion

Noise and visual disturbance to SCI bird species of River Shannon and River Fergus Estuaries SPA and QI Annex II species of Lower River Shannon SAC, Blasket Islands SAC, Kilkieran Bay and Islands SAC, and Slyne Head SAC were identified within the Screening as potential impacts causing likely significant effects on these European sites. However, following assessment of the Proposed Development considering the impact pathways between construction works and QI / SCI, no significant effects are considered likely, and thus no specific mitigation measures to protect European sites is considered necessary. General mitigation measures employed as industry standard best practice have been outlined.

There will be no direct or indirect impacts of the project on European sites, or their mobile selection features, due to the following:

- The impacts from the construction of the Proposed Development will be of a temporary nature, and on a small scale in comparison with the size of the European sites.
- No resources will be required from within the European sites.
- No excavation of resources will be required from the European sites.
- Transportation of materials will be delivered to the site on the normal road network.
- Any emissions from construction will be managed through mitigation.

Provided the general mitigation measures are implemented, it is considered that the Proposed Development will have no adverse effects on the integrity of any European site, either alone or in combination with other plans or projects.

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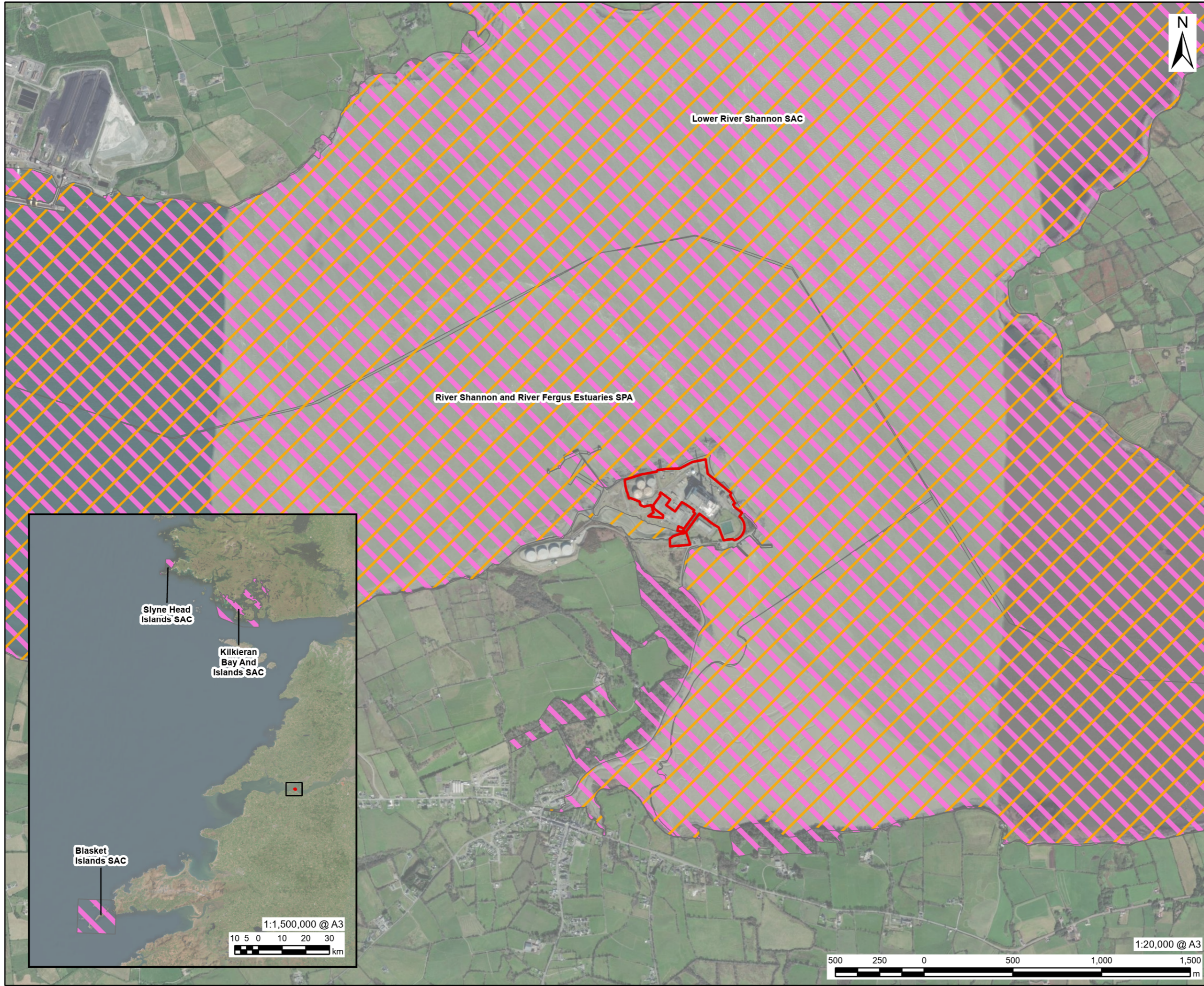
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8. Figures

Figure 1 – European sites within the ZoI of the Proposed Development



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9. Appendix A

Selected relevant mitigation measures from the CEMP:

9.1 Dust Mitigation

- The IAQM guidance relevant to the construction dust assessment lists measures that should be applied, if practical, relative to the risk identified. In this instance, a low risk of dust impacts was identified. Therefore, the list of IAQM recommended mitigation measures provided below is proportionate to the risk identified.
- This CEMP will be further refined and expanded into a Contractor's CEMP, prior to the main construction works.
- Of the recommended IAQM dust (and particulate matter) mitigation measures for low-risk sites, those to be implemented during the works are as follows:
 - Inclusion of a comprehensive list of dust control measures within the CEMP.
 - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
 - Make the complaints log available to the local authority when asked.
 - Record any exceptional incidents that cause dust and / or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook.
 - Undertake daily onsite and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked.
 - Avoid site runoff of water or mud.
 - Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site. If they are being re-used on-site cover as described below.
 - Cover, seed or fence long-term stockpiles to prevent wind whipping.
 - Ensure all vehicles switch off engines when stationary - no idling vehicles.
 - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.
 - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.

Additional site-specific measures include:

- Cutting and grinding operations, if required, will be conducted using equipment and techniques that reduce emissions and incorporate appropriate dust suppression measures;
- Damping down of dust-generating equipment and vehicles within the Site and the provision of dust suppression in all areas of the Site that are likely to generate dust;
- Use water suppression and regular cleaning during earth moving activities;
- Materials stockpiles likely to generate dust enclosed or securely sheeted, damped down or stabilized as appropriate;
- Covering materials, deliveries or loads entering and leaving the construction site;
- Mixing of grout or cement-based materials will be undertaken using appropriate techniques / mitigation;
- Measures will be taken to keep roads and accesses clean; and
- Vehicle, plant and equipment maintenance records will be kept on-site and reviewed regularly.

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). Ensuring that there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

9.2 Biodiversity

The Proposed Development will comply with the requirements of the EU (Large Combustion Plants) Regulations 2012, S.I. No. 566 of 2012, under an Industrial Emissions (IE) Licence, issued by the EPA.

The SSE Tarbert Environment Management System (EMS) will be amended to include the Proposed Development.

Sediment contamination / Contaminated run-off

- Excavations will only remain open for the shortest possible time to reduce groundwater ingress. Silt traps will be placed around the Site to reduce silt loss, and these will be inspected and cleaned or replaced regularly.
- Run-off from spoil heaps will be prevented from entering watercourses by diverting it through settlement ponds and removing material off-site as soon as possible to designated storage areas.
- Silt traps will be placed at any crossing points to avoid siltation of drainage channels and, if the need arises, silt fences will be used during the course of works in order to reduce the potential for pollution of watercourses. These will be maintained and cleaned regularly throughout the construction phase.
- Good construction practices will also be used during the construction phase, such as wheel washers and dust suppression on-site roads and at the Site access points.
- Surface water run-off from working areas will not be allowed to discharge directly to Lower Shannon Estuary. To achieve this, the drainage system will be constructed prior to the commencement of major site works. All design and construction will be carried out in accordance with CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors.

Accidental Spills and Leaks

- Designate a bunded storage area at the Contractor's compound(s) and away from surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks will be bunded to a volume of 110% of the capacity of the largest tank / container within the bunded area.
- Drainage from the bunded area will be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the Site, a suitably sized spill pallet will be used for containing any spillages during transit.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains. Spill kit facilities will be provided at the fuelling area in order to provide for any accidental releases or spillages in and around the area. Any used spill kit materials should be disposed of via a hazardous waste contractor.
- Where mobile fuel bowsers are used on the Site in the event of a machine requiring refuelling outside of the designated area, fuel will be transported in a mobile double skinned tank. Any flexible pipe, tap or valve must be fitted with a safety lock where it leaves the container and locked shut when not in use. Each bowser should carry a spill kit and each bowser operator must have spill response training. No refuelling will be allowed within 50m of Lower Shannon Estuary.
- Adequate stocks of hydrocarbon absorbent materials (e.g., spill-kits and / or booms) will be held on-site in order to facilitate response to accidental spills. Spill response materials will also be stored on all construction vehicles.

Environmental Clerk of Works

- An Ecological / Environmental Clerk of Works (ECoW) will be employed for the duration of the construction of the Proposed Development. The ECoW will advise on and monitor implementation of ecological mitigation measures and compliance with legislative requirements in relation to ecological features.
- The ECoW will also carry out pre-works checks for protected and / or notable species and provide other ecological advice as necessary.

Training

- All personnel involved in the construction and decommissioning of the Proposed Development will be made aware of the ecological features (including the SCI species of River Shannon SAC and River Shannon and River Fergus Estuaries SPA) within the zone of influence (Zol) of the Proposed Development and the mitigation measures and working procedures that must be adopted.
- This will be achieved as part of the induction process and through the delivery of Toolbox Talks, where required.
- In addition, as required, briefings will also be provided in advance of works which are considered to present an increased risk of impacting ecological features.

Construction Compounds

- Construction compounds will be fenced to prevent encroachment of personnel, machinery and materials onto adjacent habitats.
- The temporary stockpiling of materials will be restricted to predetermined locations, such as compounds, and will not be done on undisturbed adjacent habitats.
- Construction works will take place only within the Site boundary.

Air Quality

- Measures to minimise dust will be implemented during the construction and decommissioning phases.

Noise and Vibration

- Measures to minimise noise generated during the construction and decommissioning phases of the Proposed Development will be implemented to minimise potential disturbance of SCI species.

The following 'best practice measures' (BPM) will be adopted as standard working practice:

- plant will be maintained in good working order so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum;
- vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, maintained in good and efficient working order, and operated in such a manner as to minimise noise emissions;
- machines in intermittent use will be shut down or throttled down to a minimum when not in use. Vehicles shall not remain stationary on the site with engines running;
- pneumatic percussive tools will be fitted with mufflers or silencers; and
- all compressors and generators shall be 'sound reduced' models fitted with properly lined and sealed acoustic covers or enclosures, which shall remain closed whenever the machines are in use.

All construction and decommissioning personnel will be instructed on BPM measures to limit noise and vibration as part of their induction training and as required prior to specific work activities. The Environmental Clerk of Works (ECow) will carry out regular inspections to ensure that BPM measures are being adopted and that noise levels are being minimised as far as possible. The ECoW will report any non-compliance to the contractor(s) and ensure that corrective actions are taken immediately.

Other Mitigation

- Prior to the commencement of construction, a survey for protected or notable species will be carried out to check for any changes to the baseline conditions described in this chapter, in particular with regard to the locations of resting sites used by protected species such as badger.
- This will be completed not more than six months prior to the commencement of construction. The results will be reported and communicated to the appointed Contractor and appropriate avoidance / mitigation measures implemented, as required.

Construction Environmental Management Plan (CEMP)

- A Contractor's CEMP will be prepared prior to commencement of construction.
- During all phases of the Proposed Development (construction and decommissioning), pollution prevention measures will be adopted including the following:
 - controls and contingency measures will be provided to manage run-off from construction areas and to manage sediment;
 - all oils, lubricants or other chemicals will be stored in an appropriate secure container in a suitable storage area, with spill kits provided at the storage location and at places across the Site; and
 - in order to avoid pollution impacts to soils and vegetation during construction, all refuelling and servicing of vehicles and plant will be carried out in a designated area which is bunded and has an impermeable base.

Lighting

- Any artificial lighting required for construction works will be directional or minimise light spill.

Habitats / Fauna

- Sightings of protected or notable species within the Site during the construction phase will be recorded. If any evidence or sightings of protected species is found within 30m of works, then works in that area will stop immediately and the ECoW will be contacted for further advice.

- Any excavations will be left with a method of escape for any animals that may enter overnight and will be checked at the start of each working day to ensure no animals are trapped within them.
- Any pipes will be capped or otherwise blocked at the end of each working day, or if left for extended periods of time, to ensure no animals become trapped.
- As far as possible, works will be carried out in daylight to minimise the risk of disturbing protected species such as foraging / commuting bats and badger.
- Any artificial lighting required for construction works will be directional to avoid or minimise light spill.

Birds

- As far as possible, works that will directly impact upon areas of vegetation that could be used by nesting birds will be undertaken outside of the breeding season, this being taken to be between March and August, inclusive.
- Should vegetation clearance works be required during the breeding season, a pre-works check for active nests will be carried out by the ECoW or other suitably experienced ornithologist.
- Such checks will be completed no more than 72 hours in advance of clearance works taking place as nests can be quickly established.
- Where any active nests are identified, suitable species-specific exclusion zones will be implemented and maintained until the breeding attempt has concluded.

Protected Species Licensing

- No licensing is currently considered necessary as there will be no impacts on the resting sites of protected species. However, if the ECoW should subsequently find new resting places of protected species (such as bat roosts) during pre-commencement surveys, that will be damaged, destroyed or disturbed by works, then derogation licence (s) may be required for those works to proceed. The ECoW will advise accordingly if this situation arises.

Precautionary Methods of Working for Protection of Reptiles

- There is considered to the potential for common lizard to occur on-site. Scrub vegetation to be removed will be inspected by the ECoW to check for the presence of common lizard before removal.
- If any common lizards are found by the ECoW, they will be returned to sections of similar retained habitat.

9.3 Water Quality

General Surface Water Management

- The existing surface water management system, such as drains, settlement ponds, outfalls and interceptors / separators, will be inspected and confirmed to be in suitable working order prior to any development associated with the Proposed Development commencing on the Site.
- Additional new drainage installations will be installed in early stages of construction, alongside the remaining existing drainage facilities, can be used to treat runoff for silt and hydrocarbons early on in the programme. Daily weather forecasting will also be used to inform the works schedule, ensuring excavation works do not coincide with high intensity or extreme rainfall events.
- The proposed surface water management system, including existing and proposed infrastructure, will be inspected and confirmed to be sufficient capacity to treat any additional water generated by the Proposed Development, including runoff from dust suppression, prior to discharge.
- Washout from power cleaning of drainage lines, oil interceptors or any other pipework which may contain pollutant will be collected and treated. No contaminated washout will all be allowed enter any water body or be discharged to ground.
- There will be regular monitoring and prompt maintenance of the overall surface water management system throughout the construction works for the Proposed Development. This will ensure that the drainage system continues to function as designed.
- There will be no direct discharge to any water body at any time during the demolition, construction or decommissioning phases. All surface water run-off within the Site will be directed to this drainage system.

Sedimentation of Surface Waters

- Excavations will only remain open for the shortest possible time to reduce groundwater ingress.

- Silt traps will be placed around the Site to reduce silt loss, and these will be inspected and cleaned or replaced regularly.
- Run-off from spoil heaps will be prevented from entering watercourses by diverting it through settlement ponds and removing material off-site as soon as possible to designated storage areas.
- Silt traps will be placed at any crossing points to avoid siltation of drainage channels and, if the need arises, silt fences will be used during the course of works in order to reduce the potential for pollution of watercourses. These will be maintained and cleaned regularly throughout the construction phase.
- Good construction practices will also be used during the construction phase, such as wheel washers and dust suppression on-site roads and at the Site access points.
- Surface water run-off from working areas will not be allowed to discharge directly to Cork Harbour. To achieve this, the drainage system will be constructed prior to the commencement of major site works.
- All design and construction will be carried out in accordance with *CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors*.
- Dewatering fluids will be pumped via settlement tanks or collection basins where any solids in the water will settle out.

Fuel and Chemical Handling

- Designate a bunded storage area at the Contractor's compound(s) and away from surface water gullies or drains for oils, solvents and paints used during construction. The fuel storage tanks will be bunded to a volume of 110% of the capacity of the largest tank / container within the bunded area.
- The fuel storage tanks will be bunded to a volume of 110% of the capacity of the largest tank / container within the bunded area.
- Drainage from the bunded area will be diverted for collection and safe disposal.
- All containers within the storage area will be clearly labelled so that appropriate remedial action can be taken in the event of a spillage.
- When moving drums from the bunded storage area to locations within the Site, a suitably sized spill pallet will be used for containing any spillages during transit.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains.
- Spill kit facilities will be provided at the fuelling area in order to provide for any accidental releases or spillages in and around the area.
- Any used spill kit materials should be disposed of via a hazardous waste contractor.
- All equipment and machinery will be checked for leaks and other potential sources of contaminants before arriving on-site and on a daily basis. Any equipment or machinery likely to introduce to contaminants will not be brought on-site or will be removed from the Site immediately if any leak is discovered. Spill kits will be available to machine operators, and they will be trained in their use.
- The storage of hazardous substances will be necessary during construction and a number of considerations will need to be made to reduce the potential for pollution from these sources.
- No refuelling will be allowed within 50m of a waterbody and will only take place in designated areas, on hardstanding by appropriately trained personnel.
- Adequate stocks of hydrocarbon absorbent materials (e.g., spill-kits and / or booms) will be held on-site in order to facilitate response to accidental spills. Spill response materials will also be stored on all construction vehicles.

Resource and Waste Management Plan (ORWMP)

- An RWMP has been prepared, which sets out measures relating to waste management that will be implemented during construction of the Proposed Development, refer to Appendix 18A, Volume II of the EIAR.
- It includes details of proposed environmental monitoring for the duration of the construction works.

Control of Concrete and Lime

- No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the Site within 20m of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface.
- The principal Contractor will be required to manage and mitigate concrete works ensuring that no concrete is laid during wet weather, so to reduce the risk of concrete being washed off Site and into the surface water drains or water bodies.

- The mixing and pouring of concrete will take place within a designated impermeable area, at least 10m away from a water body or surface water drain to reduce the risk of runoff entering a water body, or the sub-surface, or groundwater environment.

Accidental Spillage, Flooding or Other Emergencies:

- Leaking or empty oil drums will be removed from the Site immediately and disposed of by an appropriately licensed waste disposal contractor.
- Spill kits and oil absorbent material will be carried by mobile plant and located at vulnerable locations (e.g., near oil filled equipment). Booms will be held on-site for works near water body / drains. Spill kits will contain a breakable tie to show use and indicates whether it needs to be replenished. The Site Manager and Environmental Site Representative (ESR) will be responsible for replenishing spill kits.
- An Emergency Response Plan will be prepared by the appointed Contractor and included in the CEMP and construction workers trained to respond to spillages.
- A copy of the Emergency Response Plan will be kept in the Site Emergency Information File (along with other safety emergency preparedness plans) together with the results of any test of the plan.
- Oil interceptors will be required for refuelling areas; runoff from washing area that contains detergents which may prevent interceptors from working correctly will be prevented from entering oil separators by providing separate designated areas for washing and refuelling.
- Discharge with oils and chemicals from vehicle washing areas will be considered as trade effluent and therefore will be disposed off-site.
- The installation of protective bunds along all water body boundaries and drains during construction will filter contaminants and prevent adverse runoff.
- Any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use.
- Any site welfare facilities will be appropriately managed, and all foul waste disposed of by a licenced contractor to a suitably permitted facility.

During the construction phase, the Contractor will monitor weather forecasts on a monthly, weekly, and daily basis, and plan works accordingly. The Contractor will describe in the Emergency Response Plan the actions it will take in the event of a possible flood event. These actions will be hierarchical meaning that as the risk increases the Contractor will implement more stringent protection measures. This is important to ensure all workers, the construction site and third-party land, property and people are adequately protected from flooding during the construction phase.

9.4 Soils and Geology

Fuel and Chemical Handling, Transport and Storage

The following mitigation measures will be taken to prevent any spillages to ground of fuels and prevent any resulting soil and / or groundwater quality impacts:

- designation of bunded re-fueling areas on the Site (if required);
- provision of spill kit facilities across the Site;
- where mobile fuel bowzers are used the following measures will be taken:
 - any flexible pipe, pump, tap or valve will be fitted with a lock and will be secured when not in use;
 - all bowser units to carry a spill kit and operatives must have spill response training; and
 - portable generators or similar static operation fuel containing equipment will be placed on suitable drip trays.

Excavation and Infilling

- The Proposed Development will incorporate the; reduce, reuse and recycle approach in terms of soil excavations on-site.
- The construction will be carefully planned to ensure only material required to be excavated will be excavated, with as much material left in-situ as possible.
- All excavation arisings will be reused on-site where possible / if suitable.
- The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during construction.

- It is anticipated that only local / low level of stockpiling will occur as the bulk of the material will be excavated either straight into trucks for transport off site or will be reused in other areas of the Site as fill.
- Dust suppression measures (e.g., damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.

Export of Surplus Material from Site

- Where material cannot be reused offsite, it will be sent for recovery / disposal at an appropriately permitted / licenced site however, as indicated in EIAR Chapter 18 (Waste Management). Provisions of possible off-site management of excavation waste will be outlined in a CEMP and Resource Waste Management Plan (RWMP) to be finalised by the appointed Contractor prior to works starting on-site.

Control of Water during Construction

- Earthwork operations will be carried out such that surfaces, as they are being raised, will be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing.
- Care will be taken to ensure that exposed soil surfaces are stable in order to minimise erosion.
- All exposed soil surfaces will be within the main excavation site, which limits the potential for any offsite impacts.
- Any run-off will be prevented from directly entering into any watercourses.
- Should any discharge of construction water be required during the construction phase, discharge to foul sewer will be regulated under a Discharge Licence obtained from the Regulator (Irish Water) issued under the Water Pollution Act.
- Attenuation, pre-treatment and monitoring of discharge water will likely be required under any Discharge Licence (Section 16 Licence).
- Pre-treatment and silt reduction measures on-site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks) and hydrocarbon interceptors.
- Active treatment systems such as Siltbusters or similar may be required depending on turbidity levels and discharge limits. Qualitative and quantitative monitoring will be implemented as per the Conditions of any Discharge Licence.
- The Applicant's environmental consultant will audit the sampling and analysis results as required to ensure conformance to the discharge licence limits and testing frequency requirements.

Control of Concrete and Lime

- Ready-mixed concrete will be brought to the Site by truck.
- A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated water to the underlying subsoil and groundwater.

The pouring of concrete will take place within a designated area protected to prevent concrete runoff into the soil / groundwater media. Washout of concrete transporting vehicles will take place at an appropriate facility, offsite where possible. Alternatively, where wash out takes place on-site, it will be carried out in carefully managed designated on-site wash out areas.

