ARUP

ESB

Green Atlantic @ Moneypoint

Natura Impact Statement

Reference: ARP-NIS-I01

Issue 1 | 30 June 2025

Job number 298122-00

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1. Introduction

1.1 Overview

The Electricity Supply Board (ESB) is currently preparing the draft Green Atlantic @ Moneypoint Concept 2025 (hereafter referred to as the 'draft GA Concept'). Arup has been appointed by the ESB to prepare a Screening for Appropriate Assessment (AA) and Natura Impact Statement of the draft GA Concept.

Article 6(3) of the Habitats Directive requires that any plan or project[1], which is not directly connected with, or necessary to the management of a European site, but would be likely to have a significant effect, either alone or in-combination with other plans or projects, should be subject to an AA.

The draft GA Concept, which covers the current site owned and operated at Moneypoint by the ESB, is subject to such an assessment. This means that the draft GA Concept can only be approved once it has been determined, following an assessment that it will not result in the potential for likely significant effects and consequently not adversely affect the integrity of a European site.

1.2 Report Aim

This combined AA Screening and Natura Impact Statement has been prepared to provide information for the 'competent authority[2]' regarding the potential for 'Likely Significant Effects' (LSE) of the elements of the draft GA Concept on European sites within the Zone of Influence (ZoI) of the draft GA Concept elements.

The Natura Impact Statement section of the report provides information for the competent authority regarding the potential for adverse effects on the integrity of European sites, resulting from the implementation of the draft GA Concept.

1.3 Basis for Appropriate Assessment

The Habitats Directive on the conservation of natural habitats and wild fauna and flora (92/43/EEC) (the 'Habitats Directive' provides the legal protection for habitats and species, with Articles 3 to 9 providing legislation protection to the EU wide network of sites known as the Natura 2000 site network. Natura 2000 is a network of protected sites which comprises Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (referred to as European sites within this report). The definitions of both SACs and SPAs are provided in Section 3.2.1.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites. Article 6(3) establishes the requirement for AA whilst Article 6(4) sets out the Alternative Solutions, Imperative Reasons of Overriding Public Interest (IROPI) and compensatory measures where Adverse Effects on the Integrity (AEoI) on European sites cannot be excluded.

The Habitats Directive has been transposed in Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended), and by Part XAB of the Planning and Development Act, 2000 (as amended). In the context of the draft GA Concept, due to its nature as a land-use plan, the governing legislation is principally the Planning and Development Act, 2000 (as amended).

Under the Planning & Development Act, prior to submitting for approval a plan that is not directly connected with or necessary to the management of either a SPA or SAC, competent authorities are required to consider whether the plan may have a significant effect on such a site; and where this is the case, that an AA of the implications of the draft must be carried out.

[1] Note: Any further reference made to 'plans or projects' in this report includes Strategies.

[2] Per the Planning & Development Act 2000 (as amended) the competent authority is defined as "A competent authority, in performing the functions conferred on it by or under this Part, shall take appropriate steps to avoid in a European site the deterioration of natural habitats and the habitats of species as well as the disturbance of the species for which the site has been designated, insofar as such disturbance could be significant in relation to the objectives of the Habitats Directive"

1.4 Statement of Competency

The statements of competencies for the contributing authors to this AA report are provided below:

Donncha Madden has a BSc in Applied Ecology and a PGEDip in Restoration Ecology and is a Chartered Ecologist and Full Member of CIEEM. Donncha has over 20 years' experience in the environment and ecology sector and has prepared numerous AA Screening and full AA reports for a variety of plans and projects in both Ireland and the UK.

Samuel O'Hara has a BSc (Hons) in Ecology and is a full member of CIEEM. Samuel has ten years of experience working as an ecological consultant in public and private sectors and has prepared Screening for AAs, Natura Impact Statements/Reports and biodiversity chapters for EIARs across a large number of projects and plans in the Republic of Ireland and Northern Ireland.

Hannah Sheridan has a BSc (Hons) in Marine Science and an MSc in Marine Planning for Sustainable Development and is a Qualifying Member of CIEEM. Hannah has four years of experience working as an ecologist in public and private sectors and has prepared Screening for AAs, Natura Impact Statements/Reports and biodiversity chapters for EIARs across a number of projects and plans in the Republic of Ireland and Northern Ireland.

1.5 Layout of Report

This report is structured as follows:

- Section 2 provides an overview of the draft Green Atlantic @ Moneypoint Concept
- Section 3 outlines the AA process, and provides important definitions
- Section 4 outlines the guidance, data and methodology used to inform the assessment
- Section 5 provides the impact prediction, focussed on the Source-Pathway-Receptor methodology
- Section 6 provides an Assessment of Effects including an in-combination assessment and mitigation
- Section 7 provides the Mitigation; and
- Section 8 provides the summary and conclusion.

2. Green Atlantic @ Moneypoint Concept

2.1 Overview

The ESB is a corporate body, established in 1927 to control and develop Ireland's electricity network and was established in accordance with the Electricity Supply Board Act 1927. The ESB site at Moneypoint, County Clare was developed in the 1970s and operates as a 900 Megawatt (MW) coal-fired generating station. Additionally, the site produces electricity from a 17.25MW windfarm on site and from thermal generation.

The draft GA Concept sets forward the concept for transforming the Moneypoint site into a renewable energy hub and a strategic resource for the Offshore Renewable Energy (ORE) sector. A series of strategic objectives and land use zonings with principles guiding their development are contained within the draft GA Concept. A number of projects, to be delivered under a phased transition are set forward within the draft GA Concept including the development of grid services, the construction and operation of a facility to support development of offshore windfarms and the development of lower and zero carbon generation capability and alternative fuel facilities.

Future phased delivery will be by means of a series of individual planning and environmental consents and acknowledged as such within the draft GA Concept. Where the plans and intentions for the site change, ESB may update its site strategy as required. All development proposals on the Moneypoint site, arising from the draft GA Concept, will need to be evaluated at project level stage to consider combined risks and potential consequences to the environment, as required by the associated relevant planning and environmental consents in addition to the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

2.2 Transition to Lower Carbon Generation

As set out below, one of the principal objectives of the draft GA Concept (Objective 2) is the transitioning of the site from a high-carbon coal-fired power generating facility to a lower carbon generating facility. To this end, ESB investigated alternative fuelling options including the use of Heavy Fuel Oil (HFO), to enable Moneypoint to operate as an on-demand facility. Having determined the HFO option best supports reduced running at the Station, in May 2023 ESB formally started the process of seeking permission for the conversion of the Station from coal to HFO. The application for this conversion was lodged with An Bord Pleanála in February 2024 and subsequently granted in September 2024 (Case 319080).

This proposal provides a firm date for the cessation of coal fired generation at the site (2025) and will see it switch to an on-demand lower carbon operating profile, operating until late 2029 under a 'generator of last resort' agreement. This will ensure Moneypoint supports security of supply for Ireland, pending the development of new low and zero carbon dispatchable generation and large-scale renewables and as such represents an interim measure.

For the purposes of the below documented Screening for AA and AA processes, the consented capital works for the conversion of the site from a coal-fired facility to a HFO-fired facility is not considered as forming part of the draft GA Concept, given its prior approval. This project has been assessed, as documented within the application documents inclusive of an Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (Mott Macdonald 2024[3]). Likely significant effects upon Natura 2000 sites associated with this project and identified within the associated NIS in addition to conditioned mitigation measures, have been included for consideration in-combination with the draft GA Concept at Section 4.7.

It is noted however that the ongoing use of HFO for electricity generation at the Moneypoint site forms a part of the draft GA Concept, as part of a broader transition to lower carbon energy, and as such, and in order to demonstrate a comprehensive approach to assessment, the aspects relating to the ongoing use of HFO including delivery of the material to the site are assessed within this document.

[3] AA Screening and NIS - Moneypoint Security of Supply.pdf (pleanala.ie)

2.3 Draft GA Concept Objectives

Four strategic objectives are contained within the draft GA Concept:

- Objective 1 - To ensure Moneypoint continues to support economic development and activity in the Shannon Estuary, County Clare, the broader Region and State by providing a reliable source of electricity while ensuring the site is developed and operated to the highest environmental standards, in-line with ESB's Environmental Management Systems
- Objective 2 - To transition the site to a new, lower carbon operating profile, moving progressively towards zero carbon generation with Moneypoint providing dispatchable electricity and energy storage to support an increasingly renewable energy sector
- Objective 3 - To develop Moneypoint as a base for the offshore renewable energy (ORE) sector, acting as a construction and deployment base, and a manufacturing location for zero carbon fuels; and
- Objective 4 - To develop and operate Moneypoint so it supports Ireland's ambitions to become a net exporter of zero carbon energy.

Further to the objectives, there are 44 'principles guiding development' which are associated with 9 land-use zones within the Moneypoint site. The 9 land-use zones are listed below and displayed in Figure 1:

- Coastal Infrastructure Zone
- Marine Energy Zone
- Industrial Energy Zone
- Transmission Asset Zone
- General Development Zone
- Buffer Zone
- Ash Management Zone
- Screening Zone; and
- Woodland Zone.

The principles are associated with potential future projects that aim to transition the Moneypoint site from its current use to a renewable energy hub and resource for the ORE sector. Land-use changes, management actions, alignment with values such as the circular economy, adherence with national legislation and operational activities are outlined within these principles.

The draft GA Concept objectives and the principles shall be assessed for the potential for LSE as part of this AA Screening and where likely significant effects are identified, these shall be assessed within the Natura Impact Statement. Where adverse effects on a European site are identified, these shall be assessed, and mitigation shall be recommended, as relevant.

2.3.1 Constraints Analysis

Section 4 of the draft GA Concept contains a constraints analysis pertaining to the future project proposals that align with the 9 land use zones. A high-level analysis regarding planning and land use; landscape and setting; biodiversity and ecology; land and water; and cultural heritage has been provided. Characteristics of future development and their scenarios are outlined and in regard to biodiversity and ecology, the draft GA Concept accounts for proximity to European sites and the potential pathways that exist between the land-use zones and European sites. The draft GA Concept also provides text pertaining the development potential of each of the land-use zones, identifying in-design mitigation[4] in regard to the constraints analysis. That in-design mitigation is provided for each respective land use zone below in Table 1.

[4] The draft GA Concept included these measures proposed by the ESB, prior to the Screening for AA and AA process.

Table 1 In-design mitigation identified within the draft GA Concept for constraints within land-use zones.

Land Use Zone	Mitigation Constraints identified within the draft GA Concept	Reference location within draft GA Concept
Ash Management Zone (AMZ)	Where ash remains in situ, any works must demonstrably not impact on the integrity of the capped cells. Development requiring minimal groundworks may be acceptable – but only where that risk can be shown to be avoided or mitigated. Any such development proposal would require a detailed Hydrogeological Risk Assessment and design and method statement which would need to be submitted to the EPA for approval in order to proceed with further planning. It would be challenging to provide a definitive assessment that shows that the integrity of the ASA cap will not be impacted as monitoring (water levels, material permeability, drainage flow, compaction) could only occur during and after the piling/construction phase, whereas the EPA and Planning Authorities would require certainty of impacts in advance. Where, as part of the broader remediation strategy removal of ash for reuse in the circular economy is feasible, additional development potential could be realised. Such works would be carried out in-line with Waste Management Regulations. Where ash is removed, additional fill material will likely be needed to level the affected areas. All such proposals would require full environmental assessment – particularly to ensure that any potential groundwater or surface water pathways are identified so impacts and effects on the estuarine habitats could be understood; and be carried out in accordance with any consent and licence issued	AMZ1 – AMZ9 Page 22-23
Marine Energy Zone (MEZ)	Given the potential for development of additional port infrastructure along the coastline, visual and ecological impacts will need to be carefully managed – particularly given the designated status of the coastline. The lands immediately adjoin the Shannon Estuary shoreline along the southern boundary of the site. The estuary and shoreline habitat forms part of designated European Sites - the Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA (site code 004077). Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives for these sites. It is noted that the local sensitivity of the site, including the presence of bats in the vicinity, may require the adoption of appropriate mitigation measures. The development potential is significant on the assumption that: • ESB intends not to develop the FGD landfill Area B at this location; and • ESB may consider relocation of the existing wind turbines and met mast, in order to significantly enhance the contribution of this plot to the redevelopment of Moneypoint.	MEZ1 – MEZ9 Page 19-20
	The FGD landfill Area A is expected to reach capacity in late 2024. At this point it will be capped and reinstated in line with the DMP and CRAMP. As part of a broader remediation strategy, the potential for the removal of the material in the FGD is being explored by ESB. Where this is feasible additional development potential of this site could be realised. The lands towards the coast are of higher sensitivity for ecological and visual reasons. Any infrastructure that interacts with the estuary e.g. the jetty, will be subject of appropriate environmental assessment to determine any impacts that may arise.	MEZ1 – MEZ9 Page 19-20
	Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives for the designated sites along the coast including the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. Similarly – notwithstanding its designation as a working landscape, visual impact of any development on the coastline will be a consideration.	MEZ1 – MEZ9 Page 19-20
Coastal Infrastructure Zone (CIZ)	Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives for the designated sites along the coast including the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. Similarly – notwithstanding its designation as a working	CIZ1 – CIZ8 Page 20-21

Land Use Zone	Mitigation Constraints identified within the draft GA Concept	Reference location within draft GA Concept
	landscape, visual impact of any development on the coastline will be a consideration.	
Industrial Energy Zone (IEZ)	This site interacts with the Shannon Estuary shoreline along the southern boundary of the site. The estuary and shoreline habitat forms part of designated European Sites - the Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA (site code 004077). Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives for these sites.	IEZ1 – IEZ7 Page 21-22
General Development Zone (GDZ)	All such proposals would require full environmental assessment – particularly to ensure that any potential groundwater or surface water pathways are identified so impacts and effects on the estuarine habitats could be understood; and be carried out in accordance with any consent and licence issued	GDZ1 – GDZ3 Page 24
Buffer Zone (BZ)	All such proposals would require full environmental assessment – particularly to ensure that any potential groundwater or surface water pathways are identified so impacts and effects on the estuarine habitats could be understood; and be carried out in accordance with any consent and licence issued	BZ1-BZ4 Page 24-25
Transmission Asset Zone (TAZ)	Protected woodlands will not be affected by new development. It is noted that the level of the ground falls away from the N67, with existing vegetation screening the site from the public road. There will be limited scope for new development in this area where it can be demonstrated that it will not impact negatively on the ecological value of the woodlands, or the visual integrity of the boundary planting. The networks assets – substations, will remain in situ. It is understood that the route of underground cables across this site will need to be maintained free from development. Similarly, development under existing overhead lines will be affected by the need to maintain safe clearance zones. It is likely that new energy generation projects (developed by both ESB and third parties) will give rise to a requirement for new underground services e.g. electrical cables, gas pipes, etc. across the site.	TAZ1 -TAZ2 Page 25
Screening Zone (SZ)	Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives for the designated sites along the coast. Similarly – notwithstanding its designation as a working landscape, visual impact of any development on the coastline will be a consideration	SZ1 – SZ2 Page 25
The Woodland Zone (WZ)	Protected woodlands will not be affected by new development. It is noted that the level of the ground falls away from the N67, with existing vegetation screening the site from the public road. There will be limited scope for new development in this area where it can be demonstrated that it will not impact negatively on the ecological value of the woodlands, or the visual integrity of the boundary planting. The networks assets – substations, will remain in situ. It is understood that the route of underground cables across this site will need to be maintained free from development. Similarly, development under existing overhead lines will be affected by the need to maintain safe clearance zones.	WZ1 – WZ2 Page 25

2.4 Timeframe

The ESB has prepared the draft GA Concept to cover the next ten to fifteen year period. The likely landmark phases of development are:

- **From 2024 to early 2030s** – initiation of site remediation and phased development of energy storage and additional dispatchable low carbon generation infrastructure at Moneypoint;

- **2025** – cessation of coal fuelled generation with the conversion of Moneypoint Generating Station site to a lower carbon generating facility;
- **From late 2020s** – continued site remediation and initiation of port upgrade works; establishment of Moneypoint Hub as a construction and operations base for the ORE sector; and
- **Post 2035** – ESB ORE projects on the west coast become operational; Moneypoint transitions over time to alternative low and zero carbon fuels, such as green hydrogen and ammonia.

It is anticipated that the draft GA Concept will be subject to periodic reviews, particularly in the context of any significant changes to ESB Strategy; changes in the receiving environment as may arise from new developments; or changes to land-use policies as may arise from a review of the Clare County Development Plan (CDP) or other spatial strategies. The timeframe for delivery for the draft GA Concept is to 2050 with the transition to be phased and delivered through a number of projects.

2.5 Geographic Area

The Moneypoint site is located on the northern shore of the Shannon Estuary in Co. Clare, approximately 3km west of Killimer and 6 km south-east of Kilrush. The extent of the ESB's current landholding in the area comprises 180 Hectares (Ha) of onshore landbank and 65.24 Ha of foreshore area.

The draft GA Concept area and associated zones is illustrated in below in in Figure 1.

Figure 1 The draft Green Atlantic @ Moneypoint Concept Area

2.6 Elements of the Green Atlantic @ Moneypoint Concept

2.6.1 Moneypoint Synchronous Compensator

ESB has recently completed the development of a Synchronous Compensator - a key grid support, on the Moneypoint site. This is an electrical device that is used to manage the stability of the national grid. Though a Synchronous Compensator does not generate electricity, it is essentially a large electric motor that is connected in a particular manner to allow it to act as a support to the system when required.

With an electrical rating of 400 MVA, this is currently the largest such operational facility in the world.

2.6.2 Land Remediation

As an industrial landbank, the transformation of Moneypoint will require the remediation of brownfield lands – including the coal storage area, the FGD landfill area and the ASA. Existing large-scale coal handling infrastructure will also be removed from the site, on a phased basis.

It is anticipated that these development works will be actioned at an enabling stage for larger redevelopment projects i.e. in preparing a specific site for future development. As such they will be phased, with consents and associated environmental assessment undertaken in the context of consenting new development as set out in the Concept.

2.6.3 Long Duration Energy Storage

The development of adequate long- and short-term energy storage is essential to supporting an energy system that is increasingly reliant on renewable energy generators, which are, by their very nature, intermittent in nature.

ESB continues to identify suitable sites for the siting of energy storage systems – and it is anticipated that energy storage will be accommodated within the Moneypoint site, subject to the availability of a suitable grid connection. Storage will be an ancillary land-use, relative to the primary functions of the site – namely energy generation and infrastructure to support ORE developments.

2.6.4 Future Thermal Generation and Alternative Fuels

Moneypoint will continue to act as a dispatchable thermal generation site ensuring energy security for the State in the context of an increasingly renewable energy system.

ESB continues to carry out feasibility studies to determine the fuel, operating parameters and scale of any new thermal generation that may be developed at the site; and it is currently envisaged that, in-line with prevailing energy policies and national and EU level, the next generation facility at the site facilitate will be capable of converting to low and zero carbon fuels as technology develops. The physical characteristics of a new thermal facility will be similar to the existing generating station i.e. a large-scale industrial facility characterised by a tall stack, ancillary plant and equipment etc.

While it is currently unknown what potential fuel or technology will be utilised, subject to the availability of surplus renewable energy from offshore generators and the emergence of suitable technologies, ESB plans to develop a zero carbon fuels production, storage and dispatchable generation facility at Moneypoint from the middle of the next decade and in line with the availability of surplus ORE. Likely this facility will utilise green hydrogen – producing a clean, zero-carbon fuel, from renewable energy and using it for power generation, heavy goods vehicles in the transport sector and to support decarbonisation of a wide range of industries such as pharmaceuticals, electronics and cement manufacturing. This facility will potentially enable the export of hydrogen fuel for use overseas, retention of the fuel in Ireland for domestic use, and ancillary distribution such as ship refuelling.

This future development may include the development of an ammonia production plant to support additional low carbon / carbon neutral thermal generation. Powered by curtailed renewable electricity from either ORE or onshore sources, a production facility will produce the ammonia. This would be stored on-site and utilised, as needed, to power a gas fired thermal facility (likely a combined cycle gas turbine) which would be available to support the grid as a dispatchable source of electricity. Any surplus ammonia could be exported from the site to industrial hubs or for agricultural use.All such projects will be subject of full environmental assessment as part of any new consenting and licensing process.

2.6.5 The Moneypoint Hub Project

ORE development along the West coast will present a significant opportunity and requirement for the development of regional support facilities – including an ORE hub. Such a development will need a local deep-water port to act as a staging point for turbine deployment. The need for this type of facility is reflected in a 2020 Carbon Trust report on the potential for investment and employment in Ireland's offshore wind industry, which recommends that the Irish Government should consider a strategic investment in a port on

the west coast. As envisaged in the National Hydrogen Strategy, such a facility also has the potential to facilitate production of green fuels to decarbonise other industrial sectors.

The Shannon Estuary is emerging as being key to meeting the ORE sector's requirements, given the deep water channels and proximity to development sites. Given Moneypoint was originally developed at this location to take advantage of the natural deep waters of the Estuary, ESB now proposes to utilise this natural advantage to develop the Moneypoint Hub Project and deliver a facility for the deployment of ORE infrastructure.

The location of the site is significant to ORE developers, reducing complexity of transporting parts - which can often be complicated by weather windows in addition to facilitating reduced transportation times and minimise delays and downtime.

In line with the national plan-led approach, it is envisaged that the south and west coasts of Ireland will be the focus for the deployment of at-scale offshore renewable energy projects from the late 2020's. It is therefore envisaged that Moneypoint will be developed to serve both the fixed and floating turbine industries. It will act as a dedicated land and marine facility for staging, fabrication and deployment of offshore wind foundations. It will comprise three key activity zones:

- Turbine Laydown**:** A dedicated area primarily used for the storage of Wind Turbine Generator (WTG) elements (blades, nacelle, tower, mooring lines / anchors etc).
- Construction Yard**:** An area of hardstanding used for the landside fabrication, assembly and storage of floating platforms and fixed foundation elements.
- Quayside Infrastructure: dedicated infrastructure will be provided to ensure access to deepwater to serve the floating offshore wind industry and allow safe passage for all vessels and units likely to operate at the facility.

The Hub will act as a construction site for the fabrication/assembly/storage of the foundations. It will further act as a staging point for the mating of wind turbines onto floating foundations, facilitating the storage of these elements, prior to their tow-out to offshore wind farm sites.

The existing jetty facilities were developed for the transport and handling of coal and oil. The requirements for this industry are significantly different than existing port facilities at Moneypoint can accommodate. It is known that new quay infrastructure will be required for the delivery of WTG elements, deployment of WTG substructures and mating of WTG to the floating offshore wind substructure at the quayside. As foundation substructures become ready for WTG mating, they will be moored along the quay wall and heavy lift location ready for receipt of the WTG components. Facilities to accommodate this will be developed.

ESB is currently undertaking studies and assessments to look at options and alternatives for the location, layout and orientation of any new structure(s) proposed to cater for the construction and deployment of these structures; the requirements of operational vessels and the characteristics of the receiving environment. A wide range of alternative design approaches are under consideration – ranging from upgrade of the existing jetty, to dredging, land reclamation and the construction of a new, purpose-built port facility; having regard to the ecological sensitivity of the Shannon Estuary.

It is anticipated that limited wet storage of units would be facilitated close to the port, but that the Moneypoint site will not accommodate a dedicated wet storage facility.

The site will also facilitate operations and maintenance (O&M) capacity and host depots for the servicing and maintenance of offshore windfarms. The port provides a sheltered, deep-water area for turbines to be towed back to for major repair works – something that is vital for the maintenance of floating turbines. The availability of the Hub will provide cost savings for individual developers, facilitating faster response times from a permanent base close to the coast. The advantage of having readily accessible O&M facilities, will make a contribution to reduce energy costs, to the benefit of both operators and the consumer.

2.6.6 Offshore Renewable Projects

ESB and a joint venture partner propose to develop offshore wind projects off the coasts of Counties Clare and Kerry subject to the identification of Designated Maritime Area Plans by central government and the award of Maritime Area Consents for offshore wind development within these areas. It is envisaged that the

projects will utilise floating foundation turbines and will initially be developed at less than 500MW scale but later projects will increase to GW scale. It is envisaged that the first projects will be in production post 2035.

It is anticipated that the export cables for these projects, connecting the offshore substation and the electricity grid, will come onshore and then be routed underground to a new onshore substation located at, or close to, the Moneypoint station site. Where feasible this will be a hybrid connection, thereby maximising efficient use of the grid. The onshore substation will in turn be connected to the EirGrid operated 400 kV transmission substation at Moneypoint or may utilise a private wire to supply a non-grid off-taker. The onshore substation may be located within the Moneypoint lands and will include a host of equipment including compensation equipment, transformers and switchgear.

2.7 Development and Activity Zones: Principles Guiding Development

The above elements of the draft GA Concept will be delivered in respect of the Activity Zones identified for the site, as discussed above. Each of these Activity Zones is set out with an accompanying set of 'Principles Guiding Development' within the draft GA Concept. A summary for each zone is provided below however consideration of each of the principles ascribed to each zone is discussed further with respect to their potential to give rise to likely significant effects, at Section 4.6.

- **Marine Energy Zone -** It is proposed that the Marine Energy Zone will be developed to facilitate onshore development associated with marine-related industries, the Moneypoint Hub Project and ORE developments in the wider maritime area.
- **Coastal Infrastructure Zone** – It is proposed that the Coastal Infrastructure Zone will be managed and developed to maintain operations at the existing generating station and facilitate offshore development associated with the Moneypoint Hub Project.
- **Industrial Energy Zone** – It is proposed that the Industrial Energy Zone will be developed to facilitate continued large scale electricity generation.
- **Ash Management Zone** – It is proposed that the Ash Management Zone will be developed having regard to the sensitivities of the area.
- **General Development Zone** – It is proposed that the General Development Zone will accommodate general development, of a relatively small scale.
- **Buffer Zone** – It is proposed that the Buffer Zone shall accommodate small-scale, low-level development to manage the transition between industrial and greenfield lands.
- **Transmission Asset Zone** – It is proposed that the Transmission Asset Zone will be maintained and developed to protect and enhance electricity transmission assets.
- **Screening Zone** – It is proposed that the Screening Zone will be maintained and developed to protect underground services and provide visual screening.
- **Woodland Zone** – It is proposed that the woodland zone will protect existing woodland and to provide a visual buffer between the site and the N67.

2.8 Legislation and Policy

The operation of the Moneypoint lands as an electricity generation station is regulated by legislative instruments and is dependent on consents and licences issued by the EPA. The legislative instruments are listed below:

- Electricity (Supply) Acts (1927-2004) (as amended)
- The Electricity Regulation Act 1999 (revised)
- The Electricity and Gas Regulation Acts (As amended)
- The Environmental Protection Agency Act 1992 (as amended)

- The Environmental Protection Agency (Emergency Electricity Generation)(Amendment) Act 2023 SI 136/2023
- The Planning and Development and Foreshore Act 2022 (as amended)
- The Waste Management (Certification of Historic, Unlicensed Water Disposal and Recovery Activity) Regulations 2008 (SJ. No 524 of 2008)
- The Control of Major Accident Hazard Regulations (COMAH) Regulations, 2015.

The consents and licences required at Moneypoint are as follows:

- Industrial Emissions (IE) licence issued by the EPA under the Environmental Protection Agency Act (as amended) which places strict conditions on how an activity must operate so as to protect the environment from pollution that might otherwise arise. The IE licence authorises for the combustion of fuels and the use and management of landfills for waste management and includes a Decommissioning Management Plan (DMP) and Closure, Restoration and Aftercare Management Plan (CRAMP) for the disposal and storage areas
- Greenhouse gas emissions permit under Annex 1 of the Directive 2003/87/EC.

3. Methodology, Guidance and Data Sources

3.1 Appropriate Assessment Stages

The AA process involves a number of steps and tests that need to be applied in sequential order.

An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. First of all, a plan or project must be screened to identify whether the potential for likely significant effects on a European site(s) exists. If that possibility cannot be excluded, an AA is to be undertaken prior to any consent being granted. Consent shall not be granted if it cannot be

concluded that there will be no adverse effects on the integrity of European sites. Article 6(4) allows for consent to be granted in particular and exceptional circumstances, even if adverse effects may arise.

The AA Screening (and where applicable, NIS) must include a final determination by the competent authority as to whether or not a proposed plan or project would adversely affect the integrity of a European site. In order to reach a final determination, the competent authority must undertake examination, analysis and evaluation, followed by findings, conclusions and a final determination.

3.2 Definitions

3.2.1 European Sites

European sites, as defined under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011)(as amended) are part of the Natura 2000 network and include those designated as SACs, candidate SACs (cSACs), SPAs or proposed SPAs (pSPAs).

SACs are selected for the conservation of Annex I habitats[5] (including priority types which are in danger of disappearance) and Annex II species[6] (other than birds) as defined by the respective annexes of the Habitats Directive.

SPAs are selected for the conservation of Annex I birds and all migratory birds and their habitats as defined by the respective annexes of the Birds Directive.

The Annex habitats and species, for which each site is selected, are termed the Qualifying Interests (QI) for SACs and termed Special Conservation Interests (SCI) for SPAs.

3.2.2 Conservation Objective

Conservation Objectives (COs) for European sites are defined for the relevant QIs and SCIs. In its most general sense, a CO is the specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status[7].

3.2.3 Source-Pathway-Receptor Model

The Source-Pathway-Receptor (SPR) model is used to assess where a potential effect may result by examining the source, its pathway and the receptor. As per guidance from the OPR[8] these can be defined as follows:

- **Source**: The origin of a potential effect which may include characteristics of a plan or project that have the potential to result in effects e.g. direct impacts such as loss of habitat
- **Pathway**: How the potential effect may occur on the source. These are identifiable through linkages that may occur through the plan or project and European sites e.g. direct pathways such as physical proximity, hydrological connections or indirect pathways such as disturbance to migrating species; and
- **Receptor**: The European site network and respective QIs/SCIs, their ecological condition and sensitivities e.g. freshwater pearl mussel is sensitive to siltation in water.

3.2.4 Zone of Influence

A Zone of Influence (ZoI) within any assessment of projects and/or plans considers the area over which ecological features may be affected by biophysical changes as a result of the proposed plan/project and associated activities.

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[5] Annex I habitats are habitats shoes conservation requires the designation of Special Areas of Conservation
[6] Annex II species are animal and plant species whose conservation requires the designation of Special Areas of Conservation
[7] Commission Note on Setting Conservation Objectives for Natura 2000 Sites (November 2012) European Commission, Doc. Hab.12-04/06. Accessed at: http://ec.europa.eu/environment/nature/natura2000/management/docs/commission_note/commission_note2_EN.pdf
[8] OPR (2021) Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. Accessed at .ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf November 2023.

3.3 Relevant Guidance

The following guidance was used in carrying out the Assessment:

- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision)
- Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular National Parks and Wildlife Service (NPWS) 1/10 and PSSP 2/10
- Assessment of plans and projects in relation to Natura 2000 Sites: Methodical guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate-General, 2021)
- Communication from the Commission on the precautionary principle. European Commission (2000)
- Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC (European Commission, 2007)
- Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011)
- Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC (EC Environment Directorate-General, 2019); and
- Office of the Planning Regulator Practice Note PN01 - Appropriate Assessment Screening for Development Management (OPR, 2021).

The requirements for Screening for AA, and NIS, for European sites, are set out in Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011) with numerous relevant rulings and opinions issues in both Irish and EU courts. AA is a process required under Article 6(3) of the EU Habitats Directive as transposed by the aforementioned Regulations and the Planning and Development Act 2000 (as amended).

3.4 Data Sources

The ecological data reviewed to inform this report comprises:

- Environmental Protection Agency (EPA) Map Viewer[9]
- Birds Directive Article 12 web tool[10]
- MERC Consultants (2022) Moneypoint Hub Dropdown Video Survey Report[11]
- IWDG Consulting (2022) Marine Mammal and Seabird Surveys off Moneypoint Power Station[12]
- NPWS (2024) Conservation Objectives Series[13]
- NPWS (2024) SAC and SPA Datasheets[14]
- National Parks and Wildlife Service (NPWS) Designations web viewer[15]

[9] EPA Map Viewer accessed at https://gis.epa.ie/EPAMaps/ accessed January 2024
[10] Article 12 of the Birds Directive Web tool accessed at https://nature-art12.eionet.europa.eu/article12/ accessed January 2024
[11] Merc Consultants (2022) Moneypoint Hub Dropdown Video Survey Report. Provided by ESB
[12] IWDG Consulting (2022) Marine Mammal and Seabird Surveys off Moneypoint Power Station. Reports for Quarters 1,2,3 and 4.
[13] NPWS Conservation objectives accessed at https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives accessed January 2024
[14] NPWS SAC and SPA Datasheets accessed at https://www.npws.ie/maps-and-data/designated-site-data/sac-and-spa-datasheets-downloads accessed January 2024
[15] NPWS Designations web viewer accessed at https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba accessed January 2024

- NPWS Protected Sites in Ireland[16]
- NPWS The Status of EU Protected Habitats and Species in Ireland Web Viewer[17]
- RPS (2023) ESB Moneypoint OWF Hub Ecology Baseline Report[18]
- RPS (2023) ESB Moneypoint OWF Hub Project. Ecological Survey for Birds Report[19]
- RPS (2023) ESB Moneypoint OWF Project SI Works – Supporting Information for Screening for Appropriate Assessment[20]
- RPS (2023) ESB Moneypoint OWF Project SI Works – Risk Assessment for Annex IV Species[21]
- The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report[22]. NPWS (2019)
- The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report[23]. Edited by: Deirdre Lynn and Fionnuala O'Neil. NPWS (2019); and
- The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report[24] (2019). Edited by: Deirdre Lynn and Fionnuala O'Neill (2020).

3.5 Methodology

In line with the relevant guidance and case law, the AA consists of the following steps, which are iterative in nature:

1. **Impact Prediction:** Identify the aspects of the draft GA Concept likely to affect the COs of European Sites. The more general classification of impacts can include direct and indirect effects; short and long-term effects; construction, operational and decommissioning effects; and isolated, interactive and cumulative effects. A SPR model has been used to identify the zone of influence
2. **Assessment of Effects:** The potential impacts of the draft GA Concept are assessed as to whether they are likely to result in adverse effects on the integrity of European sites. This requires understanding of relevant QIs/SCIs and associated COs; and
3. **Mitigation Measures:** Mitigation measures are identified to avoid or reduce any adverse effects on the integrity of any European site. Pre-existing embedded mitigation measures pertaining to any aspect of the draft GA Concept process, including the planning process where safeguards are already in place in existing legislation and policy, or within the draft GA Concept. Any additional, outstanding mitigation that is still required is also considered.

3.5.1 Impact Prediction: Identifying the Zone of Influence

The ZoI is established using the SPR method and takes into consideration the scale of the elements of the draft GA Concept. There is no recommended ZoI, and guidance from the National Parks and Wildlife Service (NPWS) recommends that the distance should be evaluated on a case-by- case basis with reference

[16] NPWS Protected sites accessed at https://www.npws.ie/protected-sites accessed January 2024
[17] NPWS The Status of EU Protected Habitats and Species in Ireland web viewer accessed at https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a accessed January 2024
[18] RPS (2023) ESB Moneypoint OWF Hub. Ecology Baseline Report. IE00210RP0030. A01. Provided by ESB.
[19] RPS (2023) ESB Moneypoint OWF Hub Project. Ecological Survey for Birds Report. IE000210RP0029. Provided by ESB.
[20] RPS (2023) ESB Moneypoint OWF Project SI Works – Supporting Information for Screening for Appropriate Assessment. IE000210RP0026 F01. Provided by ESB
[21] RPS (2023) ESB Moneypoint OWF Project SI Works – Risk Assessment for Annex IV Species. IE000210RP0025 F01. Provided by ESB.
[22] The Status of EU Protected Habitats and Species in Ireland: Volume 1 Summary Overview accessed at https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol1_Summary_Article17.pdf January 2024
[23] The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol2_Habitats_Article17.pdf January 2024
[24] The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report accessed at https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf January 2024

to the nature, size and location of the plan/project, the sensitivities of the ecological receptors, and the potential for in-combination effects (cumulative).

For an effect to occur there must be a risk enabled by having a source (e.g. construction works at a proposed development site), a 'receptor' (e.g. QI or SCI of a European site), and a pathway between the source and the receptor (e.g. a watercourse which connects a plan area to an SAC, ex situ foraging habitat for SCI birds). The principle for establishing ZoI, as outlined in the 2021 OPR Practice Note PN01[8], applies equally to a plan level AA and so the SPR method has been used in this report.

The identification of the European sites within the ZoI has been carried out by utilising GIS datasets from NPWS and of the European site network. The sites have been determined through the identification of the potential sources of the impacts of the draft GA Concept and their pathways for effect to European sites.

3.5.2 Assessment of Effects

3.5.2.1 Understanding the Conservation Objectives of European Sites

The COs of European sites are focused primarily on maintaining or restoring the favourable conservation status of the habitats and species of interest (i.e. the QIs and SCIs). European sites have Site-Specific Conservation Objectives (SSCOs), which focus on the specific populations of the qualifying habitat or species at that site by setting targets for appropriate attributes. The detailed SSCOs area available from the NPWS website[25] and outline the attributes and targets for respective QIs and SCIs of European sites.

3.5.2.2 Assessment of Effects of the draft GA Concept

Guidance documents (see Section 3.3) provide proposed criteria to determine if a proposal is likely to have adverse effects. These criteria are particularly suited to AA of individual projects, as detail on the receiving environment will be available for analysis when project locations are known.

3.5.2.3 In-Combination Assessment of Effects

The assessment of in-combination effects is difficult, as effects on particular European sites are expected, in particular with large scale projects and/or plans. The consideration of in-combination effects discusses the potential for other projects and/or plans that may spatially or temporally overlap with the draft GA Concept.

3.5.3 Mitigation Measures

After establishing the elements of the draft GA Concept which could result in likely significant effects to a European site, mitigation measures are proposed to avoid or reduce such harmful effects. This NIS outlines the relevant measures which have been included in the draft GA Concept to mitigate the potential adverse effects on the integrity of European sites identified and provides an assessment of whether with such mitigation, implementation of the draft GA Concept elements has the potential to result in adverse effects on the integrity of European sites.

4. Screening Assessment

4.1 Overview

As per the methodology stated in Section 3.5, the potential connectivity between the implementation of the draft GA Concept and European sites and their respective QIs/SCIs is identified via the SPR method. This identifies the potential impact pathways such as land, air, hydrological pathways etc which may support direct or indirect connectivity. Where connectivity exists between the draft GA Concept and receptors, these receptors are taken forward to the assessment of likely significant effects. This section of the report

[25] NPWS Conservation Objectives. Accessed at https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives March 2024.

establishes the ZoI of the draft GA Concept, the potential effects of its implementation and the identification of European sites at risk of adverse effects.

4.2 Identification of Potential Sources of Impacts

In identifying the potential impacts of the implementation of the draft GA Concept, it is important to note that this risk is an estimation based on scientific evidence and best practice. It does not constitute that an impact will occur or that it will result in ecological or environmental damage resulting in significant effects on European sites within the ZoI. The significance of the effect is dependent upon factors such as duration, magnitude and intensity of the project/plan in question and the existence of a credible SPR link. It is also determined by the extent of the exposure to the risk and the characteristics of the receptor.

By establishing a credible source and pathway, the receptors i.e. the QI habitats and QI/SCI species, are only considered where links are identified to be credible. Factors include distance between receptors and sources and the means by which the pathway through air, water, ground etc., occurs.

The objectives and principles of the draft GA Concept are examined in this scenario to account for any potential for impacts that may arise following their implementation. Certain activities such as construction, operation and decommissioning may arise from the implementation of the draft GA Concept objectives and principles and could give rise to the impacts identified further in this section. The wording of the draft GA Concept objectives and principles was examined for the purposes of this assessment to ascertain whether the potential for such activities could exist. In the scenario where no potential impact may arise from implementation, e.g. feasibility studies, these are considered to not result in LSE and not considered further within the screening assessment.

Identified impacts are incorporated within the screening assessment to determine whether they result in a LSE upon identified receptors (i.e. European sites), wherein there exists the possibility that the COs of those receptors may be undermined[8]. This factors in the viability of pathways for effect (Section 4.3). The impacts are identified following the methodology presented in Section 3.5 and the guidance referenced in Section 3.3.

The assessment of the draft objectives and principles concluded that future infrastructure development and related construction works and associated operation and decommissioning is likely to occur within the draft GA Concept period. As the draft GA Concept is designed to guide the development of the site through phased projects, exact details regarding construction and operation are yet undecided. Each of the draft GA Concept objectives and principles have been assessed for potential impacts which can be found in Appendix A1. A summary of those impacts is provided below.

As a result, and following the precautionary principle, the potential direct and indirect impacts as a result of its implementation have been identified as follows:

- Accidental pollution event;
- Underwater noise and vibration;
- Habitat fragmentation or degradation;
- Habitat loss (direct habitat loss and loss of functionally linked land);
- Aerial noise, lighting and human presence-related habitat and species disturbance;
- Surface water run-off/dust carrying suspended silt or contaminants to the marine environment;
- Species mortality or injury (direct and/or indirect);
- Spread of invasive species; and
- Temporary species disturbance and displacement.

This report provides an analysis using the SPR method to determine the relationship between each source of impact, pathway for effect and receptor. Further information relating to the potential impacts can be found in Appendix A.

4.3 Identification of Potential Pathways

Establishing the potential pathways involves considering the geographical and topographical elements of the site at Moneypoint in addition to any in-situ features which may act as a barrier between the potential sources of impact and potential receptor European sites.

4.3.1 Characteristics of the Moneypoint Site

A full description of the habitats and land use types is provided in Section 2 of the draft GA Concept but a summary is presented here to inform the identification of potential pathways between the Moneypoint site and potential European site receptors.

Moneypoint is a man-made site, levelled to facilitate the development of the infrastructure on site with the landscape naturally rising northwards from the coastline. The built environment of the Moneypoint site encompasses a large industrial facility including a power station and substations as well as overhead powerlines and towers, wind turbines and ash storage areas. A 380m long jetty structure which facilitates marine operations limited to coal and Heavy Fuel Oil (HFO) importation. The jetty is connected on the landward edge via a 105m approach equipped with a roadway, conveyor housing, oil and water pipeline and electrical cabling.

The site is bounded by the Shannon Estuary to the south and east and banked by upward sloping ground to the north and the west. The immediate shoreline along the site boundary is protected by a (approx.) 10m high line of rock armour with a small area of low rocky cliff at the eastern end of the site. Ballymacrinan Bay, a portion of which sits within the boundary of draft GA Concept, is a short shoreline characterised by cobble and gravel beach sloping upwards to the N67 road.

The west of the site is immediately bounded by an area of dense scrub backed onto areas of agricultural land and residential properties. An established woodland spans a significant portion of the site's northern boundary, extending in an east-west direction and extends north along the upward terrain. The Ash Management Zone, which covers the majority of the western land-use is bounded by soil berms and screened via planting, boundary fencing and the sloping of the site southwards to the coast.

4.3.2 Pathway: Hydrological Connectivity

Surface water runoff from some of the terrestrial areas of the Moneypoint site discharges directly into the Shannon Estuary and indirectly via the Ballymacrinan stream. Furthermore, the draft GA Concept Coastal Infrastructure Zone lies within the aquatic environment of the Shannon Estuary and is inclusive of existing estuarine infrastructure including the jetty.

Surface water runoff from the site has the potential to enter into the Shannon Estuary given it immediately bounds the Moneypoint site. The Ballymacrinan stream flows in a north-east to south-west direction through the Ash Management Zone and discharges into the Lower Shannon after being culverted under the N67. There are no other known watercourses within the Moneypoint site.

Surface water runoff within the site is intercepted via a series of drainage channels which feed into settlement tanks capturing run off from the existing coal storage and processing grounds. All emissions to water are managed under licence from the EPA and can be found in full detail in Appendix A2 of the draft GA Concept.

As discussed above at Section 2.2, the use of HFO at the site until 2029 as part of a broader transition of the site to lower carbon energy, remains a part of the draft GA Concept. The use of the HFO at the Moneypoint site, including the transportation and delivery of HFO, poses the risk of oil spill from tankers transporting HFO to the Moneypoint Site. While such risks are deemed to be mitigated through the measures which are conditioned in association with the approval of that specific and consented project, any residual risk remaining is considered relevant to the draft GA Concept.

All areas of the Shannon Estuary which are subject to surface water discharge from the Moneypoint site (directly or indirectly) or are subject to the movement and delivery of HFO (at Moneypoint Jetty) lie within the boundary of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. The existence of a hydrological linkage, and associated impact pathway for surface water runoff, sedimentation and pollution effects including oil spills, between the site and these European sites is therefore established.

The Lower Shannon is a highly dynamic tidal environment and is subject to significant inputs of sediments in addition to background levels of pollutants which are contributed across a catchment of approximately 17,800 km^2. It is anticipated therefore that any inadvertent inputs to the marine environment would be readily diluted and dispersed within the immediate vicinity and therefore the potential for LSE upon further, more distantly situated European sites, outside of the Shannon Estuary, is negligible. It is considered however that there is an exception to this, namely the potential for LSEs arising as a result of a large-scale (catastrophic) oil spill associated with the transportation and delivery of HFO to the site. Such an event would have potential to act over a relatively greater area and as such a ZoI of 120 km for marine SACs and SPAs has been chosen to accord with that applied in respect of the assessment undertaken of the consented project for transition of the Moneypoint site from coal to HFO[3].

In addition to the potential for impacts associated with the inadvertent release of hydrocarbon pollutants, sediments and other materials into the Shannon Estuary, the extent and location of the draft GA Concept Coastal Infrastructure Zone, within the estuarine environment itself, also raises the potential for underwater noise and vibrational effects upon a number of European sites which are more widely linked to the site via marine waters. This is inclusive of a large number of sites designated on account of the supported populations of Annex I marine mammal species.

The established ZoI for underwater noise and vibration effects is considered to be inclusive of the entirety of the respective Management Units for the relevant Annex I marine mammal species, namely harbour porpoise *Phocena phocoena* and common bottlenose dolphin *Tursiops truncatus* which overlap with the proposed Coastal Infrastructure Zone [26] in addition to SACs within the known typical foraging ranges of grey seal *Halichoerus grypus* and harbour seal *Phoca vitulina*[27].

Therefore it is considered that hydrological connections exists between the draft GA Concept and the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA in addition to a range of further European sites, included at Table 2.

4.3.3 Pathway: Functionally linked land

Survey records from 2022 and 2023 from in-situ surveys at Moneypoint were obtained and reviewed[28] to establish the potential of the Moneypoint site to serve as functionally linked to QIs/SCIs.

Survey data notes 37 breeding bird species and 18 wintering bird species were observed within the terrestrial footprint of the site. Annex I bird species including black-headed gull (*Chroicocephalus ridibundus)*, common gull (*Larus canus)*, herring gull (*Larus argentatus)*, mallard (*Anas platyrhynchos)*, ringed plover (*Charadrius hiaticula)*, teal (*Anas crecca)*, kestrel (*Falco tinnunculus)*, kittiwake (*Rissa tridactyla)*, lapwing (*Vanellus vanellus)*, redshank (*Tringa totanus)* and snipe (*Gallinago gallinago)* were all observed within four zones of the site (Ash Management Zone, Marine Energy Zone and Buffer Zone). Ringed plover were observed foraging within the Ash Management Zone during habitat mapping surveys in 2022[29].

Bird surveys undertaken of the Shannon Estuary by the Irish Whale and Dolphin Group (IWDG) on behalf of ESB, from October 2021 to February 2023 and set out within quarterly reports, recorded a range of further bird species populations within the wider estuary which, while inclusive of a range of SCI species of the River Shannon and River Fergus Estuaries SPA are also included as SCIs of a range of more distantly situated SPAs. This includes a number which are within the 120 km ZoI applied to the draft GA Concept in respect of potential HFO spills, as discussed above.

[26] IAMMWG. 2023. Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091.

[27] Carter, M. I. D. et al. (2020) Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles. Sea Mammal Research Unit, University of St Andrews, Report to BEIS, OESEA-16-76/OESEA-17-78.

[28] RPS (2023) ESB Moneypoint OWF Hub Project. Ecological Survey for Birds Report. IE000210RP0029.
[29] RPS (2023) ESB Moneypoint OWF Hub. Ecology Baseline Report. IE00210RP0030. A01

Foraging distances were examined for each species[30] identified on-site to ascertain which European sites may be within the ZoI. European sites which have the SCI species observed during site surveys includes the River Shannon and River Fergus Estuaries SPA; Mid-Clare Coast SPA (15km from site boundary); Illaunonearuan SPA (20km from site boundary) and Loop Head SPA (25km from site boundary).

Based on the survey data collected over a two-year period for terrestrial habitats within the Moneypoint site, it remains inconclusive to definitively establish that any terrestrial areas of the site comprise functionally linked land for any particular SCI bird populations associated with any nearby SPAs. However, the potential for such a functional linkage cannot be entirely dismissed.

Given that more distantly situated SPAs (than the River Shannon and River Fergus Estuaries SPA) are located at least 15 km from the Moneypoint site, and given the range of bird species recorded to utilise terrestrial areas of the Moneypoint site, it is considered unlikely that the SCIs of these sites are at risk of direct or indirect impacts resulting from impacts to the terrestrial areas of the Moneypoint site, as there exists an abundance of alternative and similar habitat for the SCIs that is more proximate to their respective SPA boundaries.

It is noted however that the Shannon Estuary itself, within which the proposed Coastal Infrastructure Zone is proposed, is inclusive of estuarine portions of the River Shannon and River Fergus Estuaries SPA. These areas of the estuary are known to be used on at least a sporadic basis for foraging, wintering and during migration for a range of SCI bird populations likely to be associated with more distantly situated SPAs. It is considered likely that these SPAs have been captured within the assessment, within the 120km ZoI for HFO spill effects, as discussed above.

In addition to consideration of potential functional linkage for SCI bird populations, the possibility that areas of terrestrial and estuarine habitat within the Moneypoint site have functional linkages to the Lower River Shannon SAC and further SACs respectively is also considered.

The vast majority of the Annex II QI species of the Lower River Shannon SAC are aquatic species which are either present within the estuary or within upstream freshwater areas of the SAC. In the case of the latter (including freshwater pearl mussel *Margaritifera margaritifera* and brook lamprey *Lampetra planeri*) it is considered that there is no potential for functional linkage. In the case of QI species which occur within the estuary there is no potential for terrestrial habitats within the Moneypoint site (lying outside of the SAC boundary) to offer suitable functionally linked habitat with the exception of otter *Lutra lutra*.

QI otter populations associated with the Lower River Shannon SAC have potential to use areas of the terrestrial Moneypoint site for the construction of holts/dens, however it is noted that this would be limited to areas which are not subject to regular disturbance, inclusive of areas within the Woodland Zone. However, it is noted that such areas of the site offer poor connectivity to aquatic habitats within the Shannon Estuary and are separated from the estuary by areas of significantly disturbed industrial land. In the context of the wider areas of habitat available to the species throughout the Shannon Estuary and its environs, it is considered highly unlikely that habitats within the Moneypoint site constitute functionally linked land for QI otter populations of the Lower River Shannon SAC.

As the River Shannon and River Fergus Estuaries SPA is immediately adjacent to the draft GA Concept boundary, and SCIs have been recorded onsite, it is plausible to infer that the SCIs of this SPA site are functionally linked to the Moneypoint site. Areas of the Shannon Estuary within the proposed Coastal Infrastructure Zone are likely to comprise habitat used by SCI populations of more distantly situated SPAs, within 120km of the draft GA Concept area.

It is considered that areas of the Moneypoint site, outside of the Lower River Shannon SAC boundary are highly unlikely to offer functionally linked habitat for mobile Annex II QI features of the SAC.

4.3.4 Pathway: Aerial Connectivity

Aerial connectivity relates to potential impacts arising through dust, aerial noise and visual disturbance.

[30] Foraging distances for species observed during 2022/23 are: Black-headed gull (18.5km); common gull (23km), herring gull (23km), mallard (), ringed plover (30m from shorelines), teal (23km), kestrel (23km), kittiwake (23km), lapwing, redshank, snipe.

Emissions from proposals arising from the implementation of the draft GA Concept (which can include construction, operation and decommissioning activities) may have the potential of settling on or dispersing to relevant European sites. Emissions may include, but are not limited to, dust, construction material, oxides, greenhouse gases such as methane and particulate matter. Depending on the distances between the source and the receptor, and in consideration of the prevailing wind conditions, aerial connectivity may serve as a pathway for effect.

Prevailing wind direction dominates from the south and west, blowing in a north and easterly direction. Potential aerial emissions from the draft GA Concept's implementation could spread fairly widely as a result but would depend directly upon the source's size. It is not possible at this stage, given the lack of detail on the proposed extent and nature of construction works, to ascertain how far potential emissions associated with construction works or management of ash as set out within the draft GA Concept could spread.

However, previous studies on quarrying activities[31] [32], including practices such as crushing, blasting and drilling of aggregate which are known to create large quantities of fine particulate dust, have been recorded, in a worst-case scenario, to give rise to dust emissions which dispersed or settled to background levels within a distance of 1.2 km and with the vast majority of material deposited within 400m of the works location. It is not envisaged that the general works proposed under the draft GA Concept, within the various relevant activity zones, are likely to give rise to dust generating activities analogous to quarrying activities, with predicted effects considered likely to be minor by comparison. The site already operates under licence issued by the Environmental Protection Agency (EPA) which requires adherence to a number of conditions including that regarding the operation of the site in line with strict limits on dust emissions.

In consideration of previous studies on dust dispersion, the probable extent and nature of the works which will arise from the draft GA Concept and the distance between Moneypoint and various nearby European sites, it is considered that the potential for aerial connectivity is limited to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

In addition to potential aerial borne particulate matter, the proximity of the Moneypoint site to the Shannon Estuary also raises the possibility of aerial borne noise and visual disturbance associated with any proposed works occurring in proximity to or within the Lower River Shannon SAC and River Shannon and Fergus Estuaries SPA. Such effects are expected to vary from small-scale temporary and short-term disturbance effects associated with terrestrial construction works arising from the draft GA Concept and longer-term and potential larger-scale disturbance effects arising from the ongoing use of the Moneypoint Hub for the purposes of ORE construction and maintenance.

It is considered that such aerial noise and visual disturbance effects are likely to be limited to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. This conclusion is drawn in light of the probable transitory nature of the use of the Shannon Estuary by SCI bird populations originating within or otherwise associated with further, more distantly situated SPAs. Such populations are unlikely to be present on a regular or long-term basis and are highly unlikely to be reliant on the relatively small area to be potentially affected by aerial noise or visual disturbance effects in significant numbers, given their lack of inclusion within the qualifying SCI species of the River Shannon and River Fergus Estuaries SPA.

It is therefore considered that the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA share direct aerial connectivity to the draft GA Concept boundary.

4.3.5 Pathway: Habitat Loss

The draft GA Concept is inclusive of an area of privately owned foreshore encompassing the Coastal Infrastructure Zone. This area is inclusive of the existing Moneypoint jetty in addition to areas of the Shannon Estuary to the south of the existing Moneypoint site. The draft GA Concept includes for a range of principles guiding development including for the Coastal Infrastructure Zone. These principles also include

[31] Sairanen, M., Rinne, M. and Selonen, O., 2018. A review of dust emission dispersions in rock aggregate and natural stone quarries. *International Journal of Mining, reclamation and environment*, *32*(3), pp.196-220.

[32] Silvester, S., Lowndes, I., Docx, J. and Kingman, S., 2006, December. The application of computational fluid dynamics to the improved prediction of dust emissions from surface quarrying operations. In *Proceedings of the Fifth International Conference on CFD in the Process Industries, CSIRO, Melbourne, Australia* (pp. 1-6).

the potential for development of the Coastal Infrastructure Zone in the future to facilitate ORE industry use of the site.

The areas of the Shannon Estuary which lie within the draft GA Concept Coastal Infrastructure Zone are located entirely within the boundary of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

The formal conservation objectives for the Lower River Shannon SAC illustrate the distribution of the QI Annex I habitats within the SAC boundary. The draft GA Concept Coastal Infrastructure Zone is inclusive of areas which have been identified as either Annex I reef [1170] or estuaries [1130] habitat. In addition, an area of the Annex I QI habitat perennial vegetation of stony banks [1220]is present outside of, but adjacent to, the westernmost extent of the Coastal Infrastructure Zone.

In regard to Annex II QI species of the Lower River Shannon SAC, areas of the Shannon Estuary within the Coastal Infrastructure Zone are also noted as being within the known 250m commuting buffer for the otter; are likely to support migrating Annex II fish species including salmon *Salmo salar,* sea lamprey *Petromyzon marinus* and river lamprey *Lampetra fluviatilis* and are known to be of critical importance for common bottlenose dolphin populations within the Lower River Shannon SAC.

As such it is considered that there is potential for the provisions of the draft GA Concept to give rise to the loss of areas of Annex I QI habitat within the Lower River Shannon SAC in addition to areas of habitat of importance for a range of Annex II QI species of the SAC.

The areas of the draft GA Concept Coastal Infrastructure Zone which lie within the River Shannon and River Fergus Estuaries SPA are noted as comprising largely open waters of the Shannon Estuary. The Shannon Estuary shoreline along the southern boundary of the Moneypoint site comprises steep rock armour and consequently a relatively narrow intertidal zone comprising mostly fucoid seaweeds. As such, it is considered that the Moneypoint site offers relatively limited intertidal habitat for foraging waders and waterbirds of the SPA. Open water estuary habitat is however considered to represent important wetland habitat for a range of SCI bird species associated with the SPA and representative of the SCI Wetland and Waterbirds[A999].

It is therefore considered that there is potential for the provisions of the draft GA Concept to give rise to the loss of areas of SCI wetland habitat of the River Shannon and River Fergus Estuaries SPA.

On the basis of the above it is considered that the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA lie within the draft GA Concept area boundary and as such there is potential for direct habitat loss effects upon each of these European sites.

4.4 Identification of Potential Receptors

The potential impacts of the draft GA Concept are broad, given the lack of detail regarding the extent and nature of infrastructure development, construction, operation and decommissioning information likely to arise as a result of the adoption of the draft GA Concept. The potential pathways have been identified in Section 4.3, thus focusing the list of potential receptors that may be impacted. Given their proximity to the Moneypoint site the primary European sites of relevance are determined to be the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA given that the proposed Coastal Infrastructure Zone overlaps the boundary of both of these European sites. In addition, hydrological and aerial connectivity is supported between Moneypoint and the SAC and SPA and areas of land within the Moneypoint site may serve as functionally linked land to the SPA.

In addition to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA the draft GA Concept has potential to result in impacts to a range of more distantly situated SACs and SPAs, primarily through the identified pathways of underwater noise and vibration (all SACs within the marine mammal management units within the which the Moneypoint site lies) and the potential for large-scale oil spill associated with ongoing use of HFO at the Moneypoint site (marine or coastal SACs and SPAS within 120km of the site by hydrological connection).

The relevant designated QIs and SCIs of the respective sites can be found in Table 2.

4.5 European Sites Under Consideration

In establishing the ZoI of the draft GA Concept, consideration has been given to those European sites with direct and indirect connectivity to the site at Moneypoint and the associated aspirations for each of the relevant activity zones identified within the draft GA Concept. The topography of the Moneypoint site and any geographical and anthropogenic barriers have been identified and considered in the assessment.

Establishing the pathways for effect has led to the identification of the following sites and their respective QIs and SCIs, within the ZoI of the draft GA Concept, as set out in Table 2.

As discussed above, this is inclusive of all SACs and SPAs with coastal or marine QI features within 120km of the Moneypoint site by hydrological connection, which is considered to be the zone of influence for a large-scale spill of HFO in addition to a range of SACs designated for marine mammal QI species for which the known management units overlap with the Moneypoint site.

Table 2 European sites within the Zone of Influence of the draft Concept.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
IE0002165	Lower River Shannon SAC	Within the draft GA Concept boundary – Coastal Infrastructure Zone	1110	Sandbanks which are slightly covered by sea water all the time	Yes. Direct and indirect pathways through habitat loss, hydrological and aerial connectivity. The NPWS status of protected habitats and species viewer[17] was used to identify the locations of habitats and species within the ZoI of the draft GA Concept area. The following QI receptors have been identified: Sandbanks which are slightly covered by sea water all the time Estuaries Mudflats and sandflats not covered by seawater at low tide Coastal lagoons Large shallow inlets and bays Reefs Perennial vegetation of stony banks Freshwater pearl mussel Sea lamprey River lamprey Brook lamprey Atlantic salmon Common bottlenose dolphin Otter All other QI features within the SAC exist outside the ZoI of the draft GA Concept.
			1130	Estuaries	
			1140	Mudflats and sandflats not covered by seawater at low tide	
			1150	Coastal lagoons	
			1160	Large shallow inlets and bays	
			1170	Reefs	
			1220	Perennial vegetation of stony banks	
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			1310	Salicornia and other annuals colonizing mud and sand	
			1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	
			1410	Mediterranean salt meadows (Juncetalia maritimi)	
			3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	
			6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	
			91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	
			1029	Margaritifera margaritifera Freshwater Pearl Mussel	
			1095	Petromyzon marinus Sea lamprey	
			1096	Lampetra planeri River lamprey	
			1099	Lampetra fluviatilis Brook lamprey	
			1106	Salmo salar Atlantic salmon	
			1349	Tursiops truncatus Common dolphin	
			1355	Lutra lutra Otter	
IE0004077	River Shannon and River	Within the draft GA Concept boundary –	A054	Anas acuta Northern pintail	Yes.
			A056	Anas clypeata Northern shoveler	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
	Fergus Estuaries SPA	Coastal Infrastructure Zone	A052	Anas crecca Teal	Direct and indirect pathways through habitat loss, hydrological and aerial connectivity. SCIs of the site were observed within the Moneypoint site providing evidence of potential functional linkage.
			A050	Anas penelope Wigeon	
			A062	Aythya marila Greater scaup	
			A046	Branta bernicla hrota Brent goose	
			A149	Calidris alpina Dunlin	
			A143	Calidris canutus Knot	
			A137	Charadrius hiaticula Ringed plover	
			A179	Chroicocephalus ridibundus Black headed gull	
			A038	Cygnus cygnus Whooper swan	
			A157	Limosa lapponica Bar-tailed godwit	
			A156	Limosa limosa Black-tailed godwit	
			A160	Numenius arquata Curlew	
			A017	Phalacrocorax carbo Cormorant	
			A140	Pluvialis apricaria Golden plover	
			A141	Pluvialis squatarola Grey plover	
			A048	Tadorna tadorna Shelduck	
			A164	Tringa nebularia Greenshank	
			A162	Tringa totanus Redshank	
			A142	Vanellus vanellus Lapwing	
			A017	Phalacrocorax carbo Cormorant	
			A999	Wetland and Waterbirds	
IE004161	Stacks to Mullaghaerik Mountains, West Limerick Hills and Mount Eagle SPA	10km south-east of draft GA Concept boundary	A082	Circus cyaneus Hen harrier	No. No direct pathway to SPA. No suitable hen harrier habitat within the draft GA Concept site that would give rise to ex-situ effects and distance between sites does not suggest that hen harrier would be affected.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
IE002343	Tullaher Lough and Bog SAC	10km north-west of draft GA Concept boundary	7110	Active raised bogs	No No direct or indirect pathway to SAC.
			7120	Degraded raised bogs still capable of natural regeneration	
			7140	Transition mires and quaking bogs	
			7150	Depressions on peat substrates of the Rhynchosporion	
IE004182	Mid-Clare Coast SPA	15km north-west of the draft GA Concept boundary	A017	Phalacrocorax carbo Cormorant	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to all SCIs of the SPA.
			A045	Branta leucopsis Barnacle goose	
			A137	Charadrius hiaticula Ringed plover	
			A144	Calidris alba Sanderling	
			A148	Calidris maritima Purple sandpiper	
			A149	Calidris alpina Dunlin	
			A169	Arenaria interpres Turnstone	
			A999	Wetland and Waterbirds	
IE004114	Illaunonearuan SPA	20km west of the draft GA Concept boundary	A045	Branta leucopsis Barnacle goose	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to all SCIs of the SPA.
IE004189	Kerry Head SPA	25km south of draft GA Concept boundary	A009	Fulmarus glacialis Fulmar	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that fulmar is the only relevant SCI species, as chough is a terrestrial species which does not utilise marine habitats.
			A346	Pyrrhocorax pyrrhocorax Chough	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
IE004 119	Loop Head SPA	33km west of draft GA Concept boundary	A188	Rissa tridactyla Kittiwake	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to all SCIs of the SPA.
			A199	Uria aalge Guillemot	
IE002 263	Kerry Head Shoal SAC	38km west of draft GA Concept boundary	1170	Reefs	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to the only QI (reefs) of the SAC.
IE002 261	Magharee Islands SAC	48km south-west of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to the only QI (reefs) of the SAC
IE004 125	Magharee Islands SPA	50km south-west of the draft GA Concept boundary by closest hydrological connection	A014	Hydrobates pelagicus Storm petrel	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to all SCIs of the SPA.
			A018	Phalacrocorax aristotelis Shag	
			A045	Branta leucopsis Barnacle goose	
			A182	Larus canus Common gull	
			A193	Sterna hirundo Common tern	
			A194	Sterna paradisaea Arctic tern	
			A195	Sterna albifrons Little tern	
IE000 332	Akeragh, Banna and Barrow Harbour SAC	60km south-west of the draft draft GA Concept boundary by closest hydrological connection	1210	Annual vegetation of drift lines	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated
			1310	Salicornia and other annuals colonising mud and sand	
			1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			1410	Mediterranean salt meadows (Juncetalia maritimi)	with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Annual vegetation of drift lines Salicornia and other annuals colonising mud and sand Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Mediterranean salt meadows (Juncetalia maritimi) Other coastal or terrestrial QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
			2110	Embryonic shifting dunes	
			2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	
			2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	
			2190	Humid dune slacks	
			4030	European dry heaths	
IE004153	Dingle Peninsula SPA	62km south-west of the draft GA Concept boundary by closest hydrological connection	A009	Fulmarus glacialis Fulmar	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that fulmar is the only relevant SCI species, as chough and peregrine are terrestrial species which do not utilise marine habitats.
			A103	Falco peregrinus Peregrine	
			A346	Pyrrhocorax pyrrhocorax Chough	
IE002264	Kilkee Reefs SAC	63km north-west of the draft draft GA Concept boundary by closest hydrological connection	1160	Large shallow inlets and bays	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies to all marine QI habitats of the SAC.
			1170	Reefs	
			8330	Submerged or partially submerged sea caves	
IE004188	Tralee Bay Complex SPA	64km south-west of the draft GA Concept boundary by closest hydrological connection	A038	Cygnus cygnus Whooper swan	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to all SCIs of the SPA.
			A046	Branta bernicla hrota Brent goose	
			A048	Tadorna tadorna Shelduck	
			A050	Anas Penelope Wigeon	
			A052	Anas crecca Teal	
			A053	Anas platyrhynchos Mallard	
			A054	Anas acuta Pintail	
			A062	Aythya marila Scaup	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			A130	Haemotopus ostralegus Oystercatcher	
			A137	Charadrius hiaticula Ringed plover	
			A140	Pluvialis apricaria Golden plover	
			A141	Pluvialis squatarola Grey plover	
			A142	Vanellus vanellus Lapwing	
			A144	Calidris alba Sanderling	
			A149	Calidris alpina Dunlin	
			A156	Limosa limosa Black-tailed godwit	
			A157	Limosa lapponica Bar-tailed godwit	
			A160	Numenius arquata Curlew	
			A162	Tringa totanus Redshank	
			A169	Arenaria interpres Turnstone	
			A179	Chroicocephalus ridibundus Black-headed gull	
			A182	Larus canus Common gull	
			A999	Wetland and waterbirds	
IE002070	Tralee Bay and Magharees Peninsula, West to Cloghane SAC	65km south-west of the draft GA Concept boundary by closest hydrological connection	1130	Estuaries	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Estuaries Mudflats and sandflats not covered by seawater at low tide Coastal lagoons Large shallow inlets and bays Reefs Annual vegetation of drift lines Perennial vegetation of stony banks
			1140	Mudflats and sandflats not covered by seawater at low tide	
			1150	Coastal lagoons	
			1160	Large shallow inlets and bays	
			1170	Reefs	
			1210	Annual vegetation of drift lines	
			1220	Perennial vegetation of stony banks	
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			1310	Salicornia and other annuals colonizing mud and sand	
			1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	
			1410	Mediterranean salt meadows (Juncetalia maritimi)	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			2110	Embryonic shifting dunes	Salicornia and other annuals colonising mud and sand Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Mediterranean salt meadows (Juncetalia maritimi) Otter Other coastal or terrestrial QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
			2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	
			2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	
			2170	Dunes with Salix repens ssp. Argentea (Salicion arenariae)	
			2190	Humid dune slacks	
			6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	
			91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	
			1355	Lutra lutra Otter	
			1395	Petalophyllum ralfsii Petalwort	
IE002250	Carrowmore Dunes SAC	71km north-west of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Reefs Other coastal QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
			2110	Embryonic shifting dunes	
			2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	
			2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	
			1014	Vertigo angustior Narrow-mouthed whorl snail	
IE001021	Carrowmore Point to Spanish Point and Islands SAC	72km north-west of the draft GA Concept boundary by closest hydrological connection	1150	Coastal lagoons	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Coastal lagoons Reefs Perennial vegetation of stony banks
			1170	Reefs	
			1220	Perennial vegetation of stony banks	
			7220	Petrifying springs with tufa formation (Cratoneurion)	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					Other QI habitats or species of the SAC do not lie within the ZoI of the draft draft GA Concept.
IE004005	Cliffs of Moher SPA	88km north of the draft GA Concept boundary by closest hydrological connection	A009	Fulmarus glacialis Fulmar	Yes. Hydrological pathway to SPA Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies to the following SCI species: Fulmar Kittiwake Guillemot Razorbill Puffin Chough is a terrestrial species which does not utilise marine habitats and as such the SPA population is not considered to lie within the ZoI of the draft GA Concept.
			A188	Rissa tridactyla Kittiwake	
			A199	Uria aalge Guillemot	
			A200	Alca torda Razorbill	
			A204	Fratercula arctica Puffin	
			A346	Pyrrhocorax pyrrhocorax Chough	
IE000212	Inishmaan Island SAC	94km north-west of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Reefs Perennial vegetation of stony banks Other QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
			1220	Perennial vegetation of stony banks	
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			2110	Embryonic shifting dunes	
			2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	
			21A0	Machairs	
			4030	European dry heaths	
			6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	
			6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	
			8240	Limestone pavements	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
IE001275	Inisheer Island SAC	95km north-west of the draft GA Concept boundary by closest hydrological connection	1150	Coastal lagoons	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Coastal lagoons Reefs Other QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
			1170	Reefs	
			4030	European dry heaths	
			6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	
			6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	
			8240	Limestone pavements	
IE000213	Inishmore Island SAC	96km north-west of the draft GA Concept boundary by closest hydrological connection	1150	Coastal lagoons	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Coastal lagoons Reefs Perennial vegetation of stony banks Submerged or partially submerged sea caves A hydrological pathway for underwater noise effects upon harbour porpoise is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. Other QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
			1170	Reefs	
			1220	Perennial vegetation of stony banks	
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			2110	Embryonic shifting dunes	
			2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	
			2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	
			2170	Dunes with Salix repens ssp. Argentea (Salicion arenariae)	
			2190	Humid dune slacks	
			21A0	Machairs	
			4030	European dry heaths	
			4060	Alpine and Boreal heaths	
			6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	
			6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	
			8240	Limestone pavements	
			8330	Submerged or partially submerged sea caves	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			1014	Vertigo angustior Narrow-mouthed whorl snail	
			1351	Phocoena phocoena Harbour porpoise	
IE000020	Black Head-Poulsallagh Complex SAC	97km north of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Reefs Perennial vegetation of stony banks Submerged or partially submerged sea caves Other QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept
			1220	Perennial vegetation of stony banks	
			2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	
			3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	
			4060	Alpine and Boreal heaths	
			5130	Juniperus communis formations on heaths or calcareous grasslands	
			6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	
			6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	
			7220	Petrifying springs with tufa formation (Cratoneurion)	
			8240	Limestone pavements	
			8330	Submerged or partially submerged sea caves	
			1395	Petalophyllum ralfsii Petalwort	
IE002172	Blasket Islands SAC	102km south-west of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats of the SAC including: Reefs Submerged or partially submerged sea caves
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			4030	European dry heaths	
			8330	Submerged or partially submerged sea caves	
			1351	Phocoena phocoena Harbour porpoise	
			1364	Halichoerus grypus Grey seal	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway for underwater noise effects upon QI harbour porpoise and grey seal populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit or known range for these species. Other QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
IE004008	Blasket Islands SPA	106km south-west of the draft GA Concept boundary by closest hydrological connection	A009	Fulmarus glacialis Fulmar	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies to the following SCI species: Fulmar Manx shearwater Storm petrel Shag Lesser black-backed gull Herring gull Kittiwake Arctic tern Razorbill Puffin Chough is a terrestrial species which does not utilise marine habitats and as such the SPA population is not considered to lie within the ZoI of the draft GA Concept.
			A013	Puffinus puffinus Manx shearwater	
			A014	Hydrobates pelagicus Storm petrel	
			A018	Phalacrocorax aristotelis Shag	
			A183	Larus fuscus Lesser black-backed gull	
			A184	Larus argentatus Herring gull	
			A188	Rissa tridactyla Kittiwake	
			A194	Sterna paradisaea Arctic tern	
			A200	Alca torda Razorbill	
			A204	Fratercula arctica Puffin	
			A346	Pyrrhocorax pyrrhocorax Chough	
IE002111	Kilkieran Bay and Islands SAC	110km north of the draft GA Concept boundary by closest hydrological connection	1140	Mudflats and sandflats not covered by seawater at low tide	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to marine and intertidal QI habitats or species of the SAC including: Mudflats and sandflats not covered by seawater at low tide
			1150	Coastal lagoons	
			1160	Large shallow inlets and bays	
			1170	Reefs	
			1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	
			1410	Mediterranean salt meadows (Juncetalia maritimi)	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			21A0	Machairs	Coastal lagoons Large shallow inlets and bays Reefs Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Mediterranean salt meadows (Juncetalia maritimi) Harbour porpoise Otter Harbour seal A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. Other QI habitats or species of the SAC do not lie within the ZoI of the draft GA Concept.
			3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea	
			6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	
			1351	Phocoena phocoena Harbour porpoise	
			1355	Lutra lutra Otter	
			1365	Phoca vitulina Harbour seal	
			1833	Najas flexilis Slender naiad	
IE004152	Inishmore SPA	113km north of the draft GA Concept boundary by closest hydrological connection	A188	Rissa tridactyla Kittiwake	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this applies to all SCIs of the SPA.
			A194	Sterna paradisaea Arctic tern	
			A195	Sterna albifrons Little tern	
			A199	Uria aalge Guillemot	
IE002262	Valencia Harbour/Portmagee Channel SAC	114km south-west of the draft GA Concept boundary by closest hydrological connection	1140	Mudflats and sandflats not covered by seawater at low tide	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies only to all marine and QI habitats or species of the SAC.
			1160	Large shallow inlets and bays	
			1170	Reefs	
IE000036	Inagh River Estuary SAC	116km north-west of the draft GA Concept boundary by closest hydrological connection	1310	Salicornia and other annuals colonizing mud and sand	Yes. Hydrological pathway to SAC Site which would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept.
			1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	
			1410	Mediterranean salt meadows (Juncetalia maritimi)	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	It is considered that this pathway applies only to marine and intertidal QI habitats or species of the SAC including: Salicornia and other annuals colonizing mud and sand Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Mediterranean salt meadows (Juncetalia maritimi) Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
			2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	
IE002998	West Connacht Coast SAC	135km north of the draft GA Concept boundary by closest hydrological connection	1349	Tursiops truncatus Common bottlenose dolphin	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise and bottlenose dolphin populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for these species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies to both the marine QI species of the SAC.
			1351	Phocoena phocoena Harbour porpoise	
IE002327	Belgica Mound Province SAC	196km south-west of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. It is considered that this pathway applies to both the marine QI species of the SAC.
			1349	Tursiops truncatus Common bottlenose dolphin	
			1351	Phocoena phocoena Harbour porpoise	
IE000101	Roaringwater Bay and Islands SAC	205km south of the draft GA Concept boundary by closest hydrological connection	1160	Large shallow inlets and bays	Yes.
			1170	Reefs	
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			4030	European dry heaths	A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept
			8330	Submerged or partially submerged sea caves	
			1351	Phocoena phocoena Harbour porpoise	
			1355	Lutra lutra Otter	
			1364	Halichoerus grypus Grey seal	
IE000764	Hook Head SAC	397km south-east of the draft GA Concept boundary by closest hydrological connection	1160	Large shallow inlets and bays	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise and bottlenose dolphin populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for these species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept
			1170	Reefs	
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			1349	Tursiops truncatus Common bottlenose dolphin	
			1351	Phocoena phocoena Harbour porpoise	
IE00229	Carnsore Point SAC	453km south-east of the draft GA Concept boundary by closest hydrological connection	1140	Mudflats and sandflats not covered by seawater at low tide	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept
			1170	Reefs	
			1351	Phocoena phocoena Harbour porpoise	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
IE002953	Blackwater Bank SAC	471km south-east of the draft GA Concept boundary by closest hydrological connection	1110	Sandbanks which are slightly covered by sea water all the time	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept.
			1351	Phocoena phocoena Harbour porpoise	
UK0030397	West Wales Marine / Gorllewin Cymru Forol SAC	486km east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept.
UK0030396	Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC	507km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept.
FR5302015	Mers Celtiques – Talus du Golfe de Gascogne SAC	567km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept.
IE003000	Rockabill to Dalkey Island SAC	584km east of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
			1351	Phocoena phocoena Harbour porpoise	
IE003015	Codling Fault Zone SAC	593km east of draft GA Concept boundary by closest hydrological connection	1180	Submarine structures made by leaking gases	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
			1351	Phocoena phocoena Harbour porpoise	
IE000204	Lambay Island SAC	609km east of the draft GA Concept boundary by closest hydrological connection	1170	Reefs	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.
			1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	
			1351	Phocoena phocoena Harbour porpoise	

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
			1364	Halichoerus grypus Grey seal	A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
			1365	Phoca vitulina Harbour seal	
UK0030398	North Anglesey Marine / Gogledd Môn Forol SAC	610km east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR2502022	Nord Bretagne DH SAC	637km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR5300018	Ouessant-Molène SAC	657km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept
FR53 00017	Abers – Côte des Légendes SAC	675km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
UK00 30399	North Channel SAC	693km north-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR53 00015	Baie de Morlaix SAC	696km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR53 02006	Côtes de Crozon SAC	693km north-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR53 02007	Chausée de Sein SAC	706km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft draft GA Concept.
FR25 00084	Tregor Goëlo SAC	724km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR53 00010	Récifs et lands de la Hague SAC	788km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR25 02019	Anse de Vauville SAC	789km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR25 02018	Banc et Récifs de Surtainville SAC	796km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR53 00066	Baie de Saint-Brieuc – Est SAC	796km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR25 00079	Chausey SAC	811km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR53 10095	Cap d'Erquy-Cap Fréhel SAC	820km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species.

Site code	Site name	Distance from draft GA Concept boundary	Code	Qualifying Interests/Special Conservation Interests	Considered further in Screening Assessment
					A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.
FR25 00077	Baie du Mont Saint-Michel SAC	841km south-east of the draft GA Concept boundary by closest hydrological connection	1351	Phocoena phocoena Harbour porpoise	Yes. A hydrological pathway for underwater noise effects upon QI harbour porpoise populations of the SAC is supported as the draft GA Concept Coastal Infrastructure Zone lies within the Celtic & Irish Seas management unit for the species. A hydrological pathway to the SAC Site for accidental pollution effects would be considered relevant only in the event of a large-scale oil spill associated with the ongoing transport and delivery of HFO to the Moneypoint site which forms a part of the draft GA Concept. Other QI habitats of the SAC do not lie within the ZoI of the draft GA Concept.

4.6 Screening Assessment

A screening assessment using the SPR method has been carried out, assessing the potential for likely significant effects based upon the draft objectives and principles for development, establishing a viable pathway for effect and the identified receptors of European sites. This assessment is provided below in Table 3. The full text for the objectives and principles can be found in Appendix A.1.

Table 3 Screening Assessment of the Draft GA Concept

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
Objective 1	A broad vision statement guiding the intention for Moneypoint to continue to support economic development and activity. No LSE anticipated.	No potential impacts identified.	No pathway for effect.	No receptors.
Objective 2	Construction/operation/decommissioning is likely as a result of this objective and due to proximity to SACs/SPAs it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; River Shannon and River Fergus Estuaries SPA SCIs; Marine and coastal SACs and SPAs within the ZoI for large-scale oil spill. QI marine mammal populations of relevant SACs within the ZoI.
Objective 3	Construction/operation/decommissioning is likely as a result of this objective and due to the Coastal Infrastructure Zones location within the SAC/SPA it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
Objective 4	Construction/operation/decommissioning is likely as a result of this objective and due to the Coastal Infrastructure Zones location within the SAC/SPA it is likely that	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance;	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; River Shannon and River Fergus Estuaries SPA SCIs;

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
	significant effects may occur as a result.	Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement		QI marine mammal populations of relevant SACs within the ZoI
MEZ1	Construction/operation/decommissioning is likely as a result of this objective and due to proximity to SAC/SPA it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
MEZ2	Principle accounts for having regard to sensitivities, it does not suggest what type of development, or when it may occur.	No potential impacts identified.	No pathway for effect	No receptors.
MEZ3	Construction/operation/decommissioning is likely as a result of this objective and due to proximity to SAC/SPA it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
MEZ4	Construction/operation/decommissioning is likely as a result of this objective and due to proximity to SAC/SPA it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
MEZ5	Principle gives regards to how sites will adhere to legislation, licences and consents.	No potential impacts identified.	No pathway for effect	No receptors.
MEZ6	Construction/operation/decommissioning is likely as a result of this objective and due to proximity to SAC/SPA it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
MEZ7	Construction/operation/decommissioning is likely as a result of this objective and due to proximity to SAC/SPA it is likely that significant effects may occur as a result.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
MEZ8	No Construction/operation/decommissioning suggested	No potential impacts identified.	No pathway for effect	No receptors.

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
MEZ9	Potential for Construction/operation/decommissioning is inferred in this principle for the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in Construction/operation/decommissioning.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
CIZ1	Development within the SAC. Direct impacts predicted.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
CIZ2	Proposed development suggests Construction/operation/decommissioning	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
CIZ3	Principle is surrounding collaboration with Shannon Estuary operators however, addition of the 'to develop additional support infrastructure' suggests construction/operation/decommissioning activities	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
CIZ4	Only pertains to electrical supply requirements.	No potential impacts identified.	No pathway for effect	No receptors.
CIZ5	Potential for Construction/operation/decommissioning is inferred in this principle for the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in Construction/operation/decommissioning.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
CIZ6	Potential for Construction/operation/decommissioning is inferred in this principle for the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in Construction/operation/decommissioning.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
CIZ7	Pertains to assessment criteria	No potential impacts identified.	No pathway for effect	No receptors.
CIZ8	Development within the SAC. Direct impacts predicted.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
CIZ9	Development within the SAC. Direct impacts predicted.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
IEZ1	Current operation would have been assessed within its own licencing procedures. On a precautionary basis impacts arising from ongoing use of HFO are deemed relevant.	Accidental pollution event.	Hydrological;	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; Marine and coastal SACs and SPAs within the ZoI for large-scale oil spill.

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
IEZ2	Phased development generates potential for cumulative impacts over time.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
IEZ3	Development options including above and below ground potential to result in LSE on QIs/SCIs.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
IEZ4	Pertains to feasibility studies and proposals, not likely to result in LSE.	No potential impacts identified.	No pathway for effect	No receptors.
IEZ5	Construction/operation/decommissioning elements relating to replacement includes removal and installation with potential for indirect effects.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
IEZ6	Principle outlines ESB position on giving regard to planning policy and ecological sensitivities.	No potential impacts identified.	No pathway for effect	No receptors.
IEZ7	Only pertains to electrical supply requirements.	No potential impacts identified.	No pathway for effect	No receptors.
AMZ1	ESB will manage this zone in accordance with the appropriate licences and consents.	No potential impacts identified.	No pathway for effect	No receptors.
AMZ2	Consideration for LSE captured at consent and license stage	No potential impacts identified.	No pathway for effect	No receptors.
AMZ3	Consideration for LSE should be captured at DMP and CRAMP stage	No potential impacts identified.	No pathway for effect	No receptors.
AMZ4	Construction/operation/decommissioning elements relating to replacement includes removal and installation with potential for indirect effects.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI.
AMZ5	Principle outlines ESB position on giving regard to hydrogeology and ecological sensitivities.	No potential impacts identified.	No pathway for effect	No receptors.
AMZ6	Assumed that any reuse of landfilled material would be subject to licensing and consenting procedures which would include consideration of environmental and ecological factors.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI.

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
AMZ7	Construction/operation of new development within ASA with potential for indirect effects.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI.
AMZ8	Potential for Construction/operation/decommissioning is inferred in this principle for the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in Construction/operation/decommissioning.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
AMZ9	Potential for Construction/operation/decommissioning is inferred in this principle for the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in Construction/operation/decommissioning.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
GDZ1	Development with potential construction/operation/decommissioning and operational issues	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
GDZ2	Pertains to considerations that will be made during project level. Consideration of appropriate design of new development that considers the landscape and visual aspects.	No potential impacts identified.	No pathway for effect	No receptors.
GDZ3	Precautionary approach to screen in - potential for development and construction/operation/decommissioning related activities	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
BZ1	Proximity to SAC has potential for effects, even if development is 'low level'	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality;	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
		Spread of invasive species; and Temporary species disturbance and displacement.		
BZ2	Pertains to having regard for ecological sensitivities. Not connected to construction/operation/decommissioning/operation.	No potential impacts identified.	No pathway for effect	No receptors.
BZ3	Pertains to having regard for archaeological sensitivities. Not connected to construction/operation/decommissioning/operation.	No potential impacts identified.	No pathway for effect	No receptors.
BZ4	Precautionary approach to screen in - potential for development and Construction/operation/decommissioning related activities	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
TAZ1	No new development proposed within this principle. New development is proposed in principle TAZ2 and mitigation shall be proposed within that objectives.	No potential impacts identified.	No pathway for effect	No receptors.

Code	Potential to act/give rise to a source of impact?	Source	Pathway	Receptor
TAZ2	Precautionary approach to screen in - potential for development and construction/operation/decommissioning related activities.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI
SZ1	Relates to existing infrastructure and relevance to landscape and visual impacts.	No potential impacts identified.	No pathway for effect	No receptors.
SZ2	Pertains to existing structure and relevance to landscape and visual impacts.	No potential impacts identified.	No pathway for effect	No receptors.
WZ1	No LSE anticipated	No potential impacts identified.	No pathway for effect	No receptors.
WZ2	Precautionary approach to screen in - potential for development and construction/operation/decommissioning related activities.	Accidental pollution event; Habitat fragmentation and degradation; Habitat loss; Aerial noise, vibration, lighting and human presence-related habitat and species disturbance; Underwater noise and vibration; Surface water run-off/dust carrying suspended silt or contaminants to the marine environment; Species mortality; Spread of invasive species; and Temporary species disturbance and displacement.	Land take; Hydrological; Aerial; Functionally linked land	Lower River Shannon SAC Marine habitats in direct proximity; QI species of Lower River Shannon SAC; River Shannon and River Fergus Estuaries SPA SCIs; QI marine mammal populations of relevant SACs within the ZoI

4.7 Assessment of In-Combination Effects with other Plans or Projects

The following approach has been adopted

- Identify plans/projects that might act in combination
- Identify types of impacts that might occur
- Define the boundaries of the assessment
- Identify pathways for impacts; and

- Impact prediction and assessment.

4.7.1 Identification of plans and project that have the potential to interact with the draft GA Concept

This section of the report identifies those plans and projects which exhibit the potential to interact with the draft GA Concept. A list of the relevant plans and projects, relevant to the draft GA Concept have been identified below in Table 4. This is inclusive of a range of projects and plans with potential to impacts upon the Shannon Estuary and subsequently the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. It is considered that plans or projects affecting areas outside of the Shannon Estuary are highly unlikely to act in-combination with the draft GA Concept.

Table 4 In-Combination Assessment of the draft GA Concept with other projects and plans

Title	Description	Distance (where applicable)	Decision	Potential for In-Combination Effects
Plans				
Clare County Development Plan 2023-2029	The Clare County Development Plan 2023-2029, adopted by the Elected Members of Clare County Council in March 2023, is a strategic blueprint for the sustainable development of the county over a six-year period. The plan aligns with national and regional strategies, policies, and guidelines. It was officially initiated in September 2020 and came into effect in April 2023. The plan outlines the overall strategy for planning and development in the county, with a focus on sustainable growth and development. It undergoes regular reviews to ensure it remains relevant and effective in the face of changing dynamics, including climate action and supply chain logistics.	Within	Adopted	The County Development Plan was subject to AA Screening and NIS. A suite of mitigation measures were provided within the NIS to conclude no adverse effects on the integrity of any European site. No potential in-combination effects anticipated.
Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary	The Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary is a marine based framework plan to guide future development and management of the Shannon Estuary. Recently the Plan was re-published with an updated term of 2023 – 2029 and it continues to form part of the statutory plan for the area. It is understood that the SIFP is under review. The SIFP forms part of the statutory land use plan – the County Development Plan. The SIFP sets a 30-year vision for the development of the Shannon Estuary. It seeks to support the multi-functional nature of the Shannon Estuary and identify opportunities to expand the existing economic base, including Port-related industry and other related activities; while safeguard the Estuary's sensitive environmental resources and natural heritage of national, European and International significance.	Within	Adopted	The SIFP was subject to AA Screening and NIS. A suite of mitigation measures were provided within the NIS to conclude no adverse effects on the integrity of any European site. No potential in-combination effects anticipated.
The Regional Spatial and Economic Strategy for the Southern Region (RSES)	The RSES provides the framework through which the NPF's disruptive vision and the related Government policies and objectives will be delivered for the Region. In line with international best practise, the RSES adopts a territorially differentiated and place-based approach to regional planning and economic development.	Within	Adopted	The RSES was subject to AA Screening and NIS. A suite of mitigation measures were provided within the NIS to conclude no adverse effects on the integrity of any European site. No potential in-combination effects anticipated.
Shannon Foynes Port Company Vision 2041	The Vision is a strategic plan launched in 2013 setting forward the 30 year strategy for future port operations and development along 100km of the Shannon Estuary. It emphasizes the unique position of the Port of Foynes, which can accommodate large vessels and has a dedicated rail line. The plan aims to drive growth across all sectors, enter new sectors like offshore renewables and biomass, and encourage more value-added business through initiatives like port-centric logistics hubs. The strategy also focuses on customer-centric operating practices. The Vision 2041 undergoes a review every 7 to 10 years to adapt to changing opportunities and obligations around climate action and supply chain logistics.	Within	Adopted	The Vision and its 2022 review was subject to AA Screening and NIS. A suite of mitigation measures were provided within the NIS to conclude no adverse effects on the integrity of any European site. No potential in-combination effects anticipated.

Title	Description	Distance (where applicable)	Decision	Potential for In-Combination Effects
Projects				
Planning Application 2360393 (Clare)	For development which will consist of: 1 No. enclosed battery energy storage system compound on a total of c. 6.2 hectare site, to include: 1 no. 220kv GIS electrical substation building and 1 no. single storey customer substation building, control and switch room, 220kv transformer and four no. auxiliary transformers, up to 192 battery storage blocks on concrete support structures including heating, ventilation and air conditioning unit (HVAC units), 16 transformer and 32 inverter units. Including access tracks and site entrance, associated electrical cabling and ducting, security gates, perimeter security fencing, CCTV system, landscaping works and all associated ancillary infrastructure. The proposed development will have a projected life span of 35 years. A Screening for AA report has been prepared to accompany this application.	10.8km north east	Further Information Stage	This planning application is currently under review for 'further information'. This development has been subject to a Screening for AA which concluded the potential for likely significant effects upon the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. The requirement for full AA has been identified as part of a request for further submission on 14/11/2023 and is awaiting submission. It is anticipated that the requested AA shall account for the potential for In-Combination Effects as a result of other projects and/or plans within the ZoI. No potential in-combination effects anticipated.
Planning Application 23195 (Clare)	Prospect Tarbert 220kV Cable Replacement Project For development in the townlands of Ballyartney, Ballygeery East, Ballygeery West, Cloonkerry West, Cullenagh, KilKerin, Killofin, Knockphutteen and Lakyle North, Co Clare. The proposed development will include; (1) An extension of the existing Kilkerin Point 220 kV Line Cable Interface Mast (LCIM) compound, to facilitate new electrical equipment for the connection of two new 220 kV cable circuits, including: (a) A new control cabin (approximately 13.4sqm floor area by 3.5m high, which includes 0.85m ground clearance) and 2 no. parking spaces; (b) Associated 220 kV electrical equipment including, cable sealing ends, insulators, overhead conductors, surge arrestors and lightning masts measuring 15m high (tallest compound structure); (c) 220 kV underground cabling from the associated underground transition pits to the cable sealing end equipment; palisade fencing (approximately 2.6m in height, up to 3.5m in height, including anti-climb device) and gates; and associated landscaping. The development will also comprise; (2) A new fibre optic cable measuring an approximate length of 8.9km routed between Kilkerin Point LCIM compound (townland of Lakyle North) and Prospect 220 kV substation (townland of Ballygeery West); (3) Decommissioning of existing 220 kV electrical equipment, security fencing and gate at Kilkerin Point 220 kV compound; and (4) All ancillary site development works including site preparation works, site clearance and levelling, hardstanding, internal access tracks and temporary construction compound.	5km east	Conditional planning granted 13/12/2023	The development was subject to a Screening for AA and a NIS. A suite of mitigation measures were provided within the NIS to conclude no adverse effects on the integrity of any European site.

Title	Description	Distance (where applicable)	Decision	Potential for In-Combination Effects
	This planning application is accompanied by a Natura Impact Assessment (NIS)			
Planning Application 23284 (Kerry)	Application for a 10 year permission and 40 year operation for a solar farm of 146.6 hectares, on 3 no. land parcels consisting as described Herin: west parcel(Ballymacasy, Ballyline East and Ballyline West townlands) c 58.48 hectares, central parcel (Coolnagraigue townland) c. 53.8 hectares and east parcel (Leanamore and Dromalivaun townlands) c 34.32 hectares, a route corridor for an underground internal electrical cable connecting the west and central parcels to the east parcel consisting of c 3772 meters in length. The total site area for the proposed development is c. 146.6 hectares and consists of the following: 794,430 sq meters of solar photovoltaic panels on ground mounted steel frames, inverter/transformer stations, underground power and communication cables and ducts, boundary security fencing, 2 no.medium voltage (mv) control buildings, new internal access tracks and associated drainage infrastructure, upagerade of 1 no. site entrance off the lio12 local road and 1 no. new site entrance off the l 6021 local road, cctv/lighting posts, 5 no. culvert crossings, biodiversity enhancement, landscaping and all associated site services and works. Installations of an internal network cable comprise trenching for an underground medium voltage electrical cable and associated joint bays and infrastructure, for a distance of approximately 35 metres in length along the l6021 and approximately 3,737 metres within the solar farm lands.as part of a separate strategic infrastructure development (sid) planning application , provision of a 110kv electrical substation with electrical control building, associated compound with palisade fence and 2 no. overhead line masts, will be lodged with An Bord Pleanála in due course. The proposed substation is to be located in the east parcel in the townland of Dromalivaun with connection to the existing overhead lines in either the east parcel in the townland of Dromalivaun or the central parcel in the townland of Lenamore. A Natura Impact Statement (NIS) has been prepared in relation to the project and accompanies this planning application .	8km north east	Conditional planning granted 13/09/2023	Conditional permission has been granted. The development was subject to an AA Screening and NIS. A suite of mitigation measures have been proposed as part of the development and has concluded no potential for adverse effects on the integrity of any European site. Due to the provision of mitigation measures, no potential in-combination effects are anticipated.
n/a	SSE Generation Ireland Limited Application to the Minister for Environment, Climate and Communications under Section 4 of the Development (Emergency Electricity Generation) Act 2022 of the Emergency Generation; Temporary emergency electricity generating plan comprising 3 no. 50 MW gas turbine generators	Tarbert 3km east	TBC	The Screening for AA report identified the potential for likely significant effects upon the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. The AA report provided mitigation for both impacts found acting alone or in-combination concluding that the development would not give rise to adverse effects on the integrity of any European site, alone or in-combination.

Title	Description	Distance (where applicable)	Decision	Potential for In-Combination Effects
21/459	10 year planning permission for a high inertia synchronous compensator compound containing electrical equipment containers including a 220 kV high voltage gas insulated switchgear (GIS) Substation compound containing a GIS substation building, a battery storage compound containing 5 no. battery storage containers, enclosed in steel containers, associated elements comprising various underground cables and ducts, and all necessary works. The planning application is on lands where grid stabilisation facility was previously permitted under planning register no 19/115.	Within	Granted 20/08/2021	The development was subject to a Screening for AA and NIS. The NIS identified the following impacts on European sites: degradation in water quality with potential to cause impacts to the River Shannon and River Fergus Estuaries SPA and Lower River Shannon SAC. Mitigation recommended within the NIS to avoid or reduce such adverse effects on the integrity of any European site. Given these mitigation measures, no potential for in-combination effects is identified.
21/305 and ABP 310521	Retain an existing telecommunications support structure (previously granted under local authority ref no. 11/969) (An Bord Pleanala reference pl 08.240232) together with associated ground equipment, security fence, and access track	3.5km south east	Granted 29/11/2021	No potential for in-combination effects anticipated due to the nature of the application and the location of the development relative to the draft GA Concept area.
19/115	The development will consist of a grid stabilisation facility comprising of: the construction up to 4 no. Rotating stabilisers, 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 are also proposed. The battery containers will house individual battery components with 2 no. Fitted external hvac system for each. 13 no. Inverter 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, 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 (NIS) accompanies this application	Within	Granted 12/03/2020	The development was subject to a Screening for AA and a NIS. The NIS identified the potential for impacts to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA through degradation in water quality. Mitigation recommended within the NIS to avoid or reduce such adverse effects on the integrity of any European site. Given these mitigation measures, no potential for in-combination effects is identified.

Title	Description	Distance (where applicable)	Decision	Potential for In-Combination Effects
18/878 and ABP appeal Ref. 305739	10-year permission for the construction of a Battery Energy Storage System (BESS) Facility in the townland of Kilpaddoge, Tarbert, Co.Kerry .		Granted 10/02/2020	The development was subject to a Screening for AA and a NIS. The NIS identified the potential for impacts to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA through degradation in water quality. Mitigation recommended within the NIS to avoid or reduce such adverse effects on the integrity of any European site. Given these mitigation measures, no potential for in-combination effects is identified.
ABP 319080	Proposed transition and conversion of the existing 900MW electricity generating station from coal to heavy fuel oil and associated ancillary development at Moneypoint Generating Station, Moneypoint, Co. Clare.	Within	Granted 25/09/2024	The development was subject to a Screening for AA and a NIS. The NIS identified the potential for impacts to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA in addition to further more distant SACs and SPAs, through construction phase disturbance, discharges to the aquatic environment, degradation in water quality through oil spill at operational stage, air pollution and deposition of NOx and SO2, lighting and spread of invasive species. Mitigation measures have been recommended within the NIS to avoid or reduce such adverse effects on the integrity of any European site. Given these mitigation measures, it is not considered that there is no potential for in-combination effects. Furthermore, aspects of this project have also been assessed as comprising a part of the draft GA Concept including the ongoing use of HFO at the site.

4.8 Summary

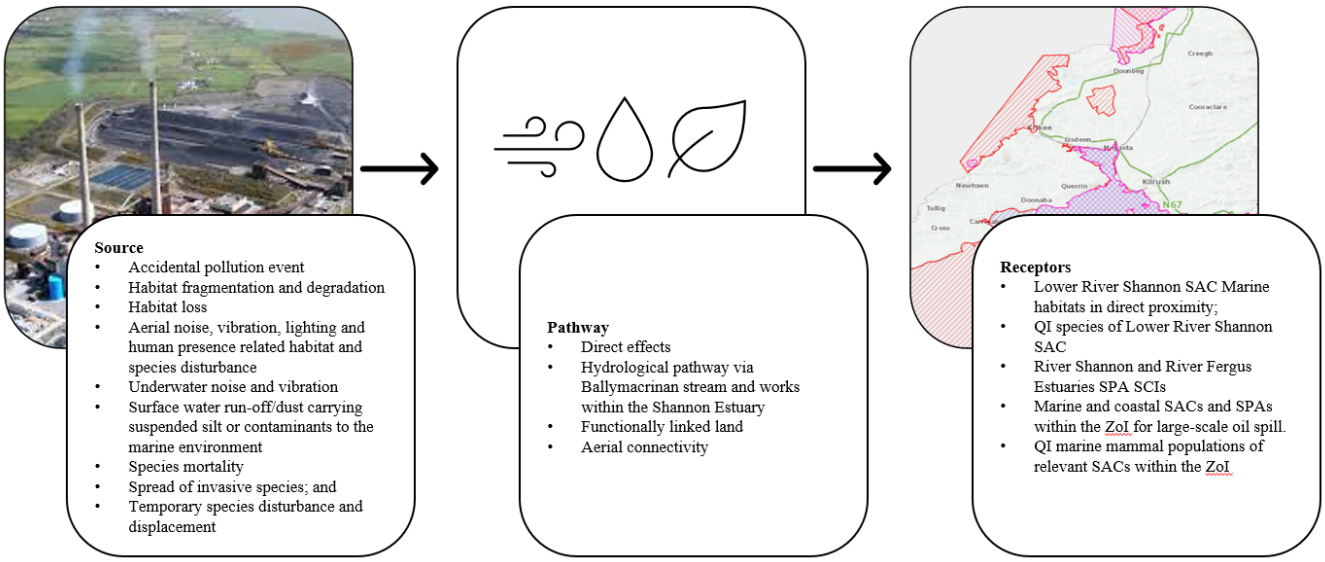

Figure 2 Summary of Source-Pathway-Receptor model for AA of the draft GA Concept

The SPR method has been used to define the ZoI of the draft GA Concept and a screening exercise (Appendix A.1) has been carried out to delineate which of the draft GA Concept objectives and principles have the potential to result in LSE to the following European sites:

- Lower River Shannon SAC
- Mid-Clare Coast SPA
- River Shannon and River Fergus Estuaries SPA
- Illaunonearaun SPA
- Kerry Head SPA
- Loop Head SPA
- Kerry Head Shoal SAC
- Magharee Islands SPA
- Magharee Islands SAC
- Akeragh, Banna and Barrow Harbour SAC
- Dingle Peninsula SPA
- Kilkee Reefs SAC
- Tralee Bay Complex SPA
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC
- Carrowmore Dunes SAC
- Carrowmore Point to Spanish Point and Islands SAC
- Cliffs of Moher SPA
- Inishmaan Island SAC
- Inisheer Island SAC
- Inishmore Island SAC
- Black Head-Poulsallagh Complex SAC
- Blasket Islands SAC
- Blasket Islands SPA
- Kilkieran Bay and Islands SAC
- Inishmore SPA
- Valencia Harbour/Portmagee Channel SAC
- Inagh River Estuary SAC
- West Connacht Coast SAC
- Belgica Mound Province SAC
- Roaringwater bay and Islands SAC
- Hook Head SAC
- Carnsore Point SAC
- Blackwater Bank SAC
- West Wales Marine / Gorllewin Cymru Forol SAC
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC
- Mers Celtiques – Talus du Golfe de Gascogne SAC

- Rockabill to Dalkey Island SAC
- Codling Fault Zone SAC
- Lambay Island SAC
- North Anglesey Marine / Gogledd Môn Forol SAC
- Nord Bretagne DH SAC
- Ouessant Molène SAC
- Abers-Côte des Légendes SAC
- North Channel SAC
- Baie de Morlaix SAC
- Côtes de Crozon SAC
- Chausée de Sein SAC
- Tregor Goëlo SAC
- Récifs et landes de la Hague SAC
- Anse de Vauville SAC
- Banc et Récifs de Surtainville SAC
- Baie de Saint Brieuc – Est SAC
- Chausey SAC
- Cap d'Erquy-Cap Fréhel SAC
- Baie du Mont Saint-Michel SAC.

The objectives identified as giving rise to LSEs are Objective 2, Objective 3 and Objective 4.

The principles identified (26 in total) are:

- MEZ1; MEZ3, MEZ4, MEZ6, MEZ7, MEZ9
- CIZ1, CIZ2, CIZ3, CIZ5, CIZ6, CIZ8, CIZ9
- IEZ1, IEZ2, IEZ3, IEZ5
- AMZ4; AMZ6, AMZ7, AMZ8
- GDZ1, GDZ3
- BZ1, BZ4
- TAZ2
- WZ2.

No in-combination effects are anticipated, however impacts associated with the granted ABP case 319080 (the conversion of the Moneypoint power station from coal to HFO) are also considered in respect of the draft GA Concept, inclusive of the ongoing transport and delivery of HFO to the site.

As potential likely significant effects have been identified, the draft GA Concept must proceed to stage 2 AA. This is set out within the below Natura Impact Statement (Section 5), with mitigation recommended, where appropriate, in Section 6.

5. Natura Impact Statement

5.1 Overview

This assessment considers the impacts that the 26 draft GA Concept objectives and principles, for which there is a pathway for effect, will have on the integrity of the sites below as they relate to their respective conservation objectives within the ZoI.

The potential effects have been assessed in the absence of any mitigation measures, and with consideration to the precautionary principle. Since the proposed objectives and principles are high-level and limited both in detail and in timeline, the discussion of the likelihood of any adverse effect is high-level.

The information provided within this document should be built on and used to guide and inform AA of future plans and projects arising from this draft GA Concept, where relevant. This would include an assessment of the QIs/SCIs, site specific conservation objectives, current condition of the relevant European sites (including supplementary advice if available) and potential effects on QIs/SCIs as a result of each proposed plan/project, to determine appropriate mitigation (if required) and any adverse effects on integrity of the site.

This section determines whether the impacts identified in Section 4.2 could have significant effects on the QIs and SCIs of the European sites identified in Section 4.4 in view of the COs of the sites. At this point in time, detail surrounding the magnitude, scale and duration of any future projects is lacking and as such this is a precautionary assessment.

As outlined in Section 4.2, the potential impacts arising from the draft GA Concept are as follows:

- Accidental pollution event;
- Habitat fragmentation or degradation;
- Habitat loss;
- Aerial noise, vibration, lighting and human presence-related habitat and species disturbance;
- Underwater noise and vibration;
- Surface water run-off/dust carrying suspended silt or contaminants to the marine environment;
- Species mortality;
- Spread of invasive species; and
- Temporary species disturbance and displacement.

The assessment of effects will focus first on the Lower River Shannon SAC, the River Shannon and River Fergus Estuaries SPA and then subsequent more distant European sites which have been screened in for impacts associated with large-scale oil spills associated with the use of HFO at the site only and those which have been screened in for impacts associated with underwater noise.

5.2 Lower River Shannon SAC

5.2.1 Overview

The Lower River Shannon SAC extends from Killaloe in Co. Clare to Loop Head / Kerry Head spanning a distance of 120km, with a maximum width of 15km and water depths of 40m at its mouth to less than 5m deep in the inner estuary[33]. The SAC is characterised by a multitude of estuaries that contribute to its unique

[33] Fouz, D.M., Carballo, R., López, I., & Iglesias, G. (2021). Tidal stream energy potential in the Shannon Estuary. Renewable Energy.

ecological diversity. These estuaries facilitate the convergence of freshwater and marine water, leading to brackish environments within the SAC. Tidal ranges can vary up to 5.5m during spring tides[33].

Consequently, this has led to the establishment of a variety of habitats, as listed in Table 2, that warrant protection due to their ecological significance. Such habitats support QI species of otter, common bottlenose dolphin, freshwater pearl mussel, sea lamprey, brook lamprey, river lamprey and Atlantic salmon. The COs for the Lower Shannon SAC can be accessed at the NPWS website[34].

Available datasets from NPWS[35], Inland Fisheries Ireland[36], and Irish Whale and Dolphin Group were reviewed for the distribution of QI habitats and species of the Lower Shannon SAC. Maps provided in Appendix B.1 and Appendix B.2 show the distribution of QI habitats and the supporting habitats of QI species respectively.

The QI habitat '1220 perennial vegetation of stony banks' is separated from the terrestrial boundary of the draft GA Concept area by the N67 road and associated road verge. However, the proposed Coastal Infrastructure Zone lies adjacent to a point location mapped as supporting this Annex I habitat which may extent to areas within the boundary of the Coastal Infrastructure Zone. A band of '1170 reefs' is located along the shoreline at Ballymacrinan, adjacent to the Ash Management Zone and a section of the Marine Energy Zone and within the Coastal Infrastructure Zone. '1130 Estuaries' habitat is located immediately adjacent to the entire terrestrial Moneypoint site and within all areas of the Coastal Infrastructure Zone. The remainder of the QI habitats designated under the SAC are located both upstream and downstream from the site. Given that the site is tidal in nature, limited potential effects on upstream habitats cannot be fully ruled out however, due to the significant dispersion and dilution that would occur through the movement of water within the Shannon, potential impacts would be extremely limited depending on the magnitude of the impact and the distance from the source.

Data records[29] highlight the presence of otter along the shoreline of the Moneypoint site with multiple spraints, couches and mammal trails identified within 2022/2023. Field survey results from the 2022/2023 survey effort identified possible holts located within the rock armour along the Coastal Infrastructure Zone. Bottlenose dolphin are present throughout the year within the River Shannon with the estuary an important calving area[21] (See Appendix B2). Bottlenose dolphins have been recorded in the estuary all year round with a peak from May to September with the presence of neo-natal calves from July to September as evidence of a well-defined breeding season in the Shannon Estuary[37].

The Cloon River, located approximately 10km upstream of the draft GA Concept, is known to support populations of the Atlantic salmon. Atlantic salmon travel upstream in the winter months to spawn, and as such the potential for Atlantic salmon to be present adjacent to the draft GA Concept area exists.

A catchment for the freshwater pearl mussel is located approximately 10km upstream from the Moneypoint site. The species requires clean, fast-flowing freshwater rivers to survive, burrowing between the boulders and pebbles present within. Given that the waterbody adjacent to Moneypoint is saline/brackish, and that freshwater pearl mussels exist > 10km upstream, the potential for direct effects to this species is negligible and not considered further in this report. Impacts upon salmon, given their ecological function as a host species for larval freshwater pearl mussel, particularly impacts leading to a reduction in the overall population of juvenile salmon within a freshwater pearl mussel breeding habitat have potential to give rise to indirect adverse effects upon freshwater pearl mussel. It is considered therefore that impacts discussed below with potential to impact upon salmon populations would also have potential to result in subsequent effects upon this species however these are not treated separately in the below discussion.

Brook lamprey are a freshwater species and would not be anticipated to be found within the ZoI of the draft GA Concept area due to its saline environment. There are no records of brook lamprey using the

[34] Lower River Shannon SAC Conservation Objectives. Accessed at https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf. April 2024.
[35] NPWS Article 17 Habitat and Species Data GIS and Metadata Downloads. Accessed at https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17 Accessed April 2024.
[36] Inland Fisheries Ireland Migratory Salmonid Habitat 2003 National Map https://opendata-ifigis.hub.arcgis.com/maps/IFIgis::migratory-salmonid-habitat-2003-national-map/explore?location=52.680522%2C-9.432550%2C10.35 Accessed April 2024.
[37] Rogan E., Ingram S., Holmes B., & O' Flanagan C. (2000) A Survey of Bottlenose Dolphins (Tursiops truncatus) in the Shannon Estuary; Marine Resource Series, Marine Institute 2000; Available: https://oar.marine.ie/handle/10793/208

Ballymacrinan stream nor are there records of brook lamprey within the 'Shannon Estuary North' catchment within which Ballymacrinan stream is located.

As the stream is culverted, it is considered that there would be a significant barrier to movement of brook lamprey and this species is not considered further within the assessment. Sea lamprey and river lamprey are migratory in nature, spawning in freshwater systems and found within coastal waters, estuaries and oceans. The Shannon estuary is both an important habitat and transit area for both sea and river lamprey and as such are considered to be within the ZoI.

5.3 Assessment of Effects on the Lower River Shannon SAC

5.3.1 Accidental Pollution Event

A number of objectives and principles of the draft GA Concept pertain to future development at the Moneypoint site and as such the potential for an accidental pollution event exists. An accidental pollution event during construction is an unforeseen incident that could lead to the discharge of harmful substances. This could be due to the disturbance of buried waste, accidental leaks and spills of hazardous materials, or the unintentional spread of existing pollution. Accidental leaks and spills of hazardous materials from machinery in operation onsite has the potential to enter the Lower Shannon SAC, whilst the disturbance of ground such as that within the Ash Management Zone and Marine Energy Zone (where the coal storage area is active) could indirectly introduce contaminants. Furthermore, the ongoing use of HFO as a fuel at the Moneypoint site, particularly during transport and delivery, raises the potential for a large-scale oil spill into the marine environment of the Shannon Estuary.

Water pollution or toxic effects associated with the release of contaminants, including HFO, can directly or indirectly affect the QI marine habitats and species outlined in Section 5.2.1. Owing to the close location of the marine QI habitats to Moneypoint, these habitats could be affected both directly and indirectly by the construction and operational activities at the project level. As fish species (Atlantic salmon, sea lamprey and river lamprey), otter and common bottlenose dolphin exist within the marine environment, an accidental pollution event may indirectly affect the species through water pollution.

5.3.2 Habitat Fragmentation and Degradation

Habitat fragmentation is defined as the process during which a large expanse of habitat is transformed into a number of smaller patches of smaller total area, isolated from each other by habitats which are unlike the original[38]. Owing to the potential for construction emanating from a range of objectives and principles of the draft GA Concept the potential for habitat fragmentation and/or degradation may occur to indirectly to marine QI habitats of the Lower Shannon SAC.

The SAC boundary extends from the high water mark out into the marine area, with annex habitats of perennial vegetation of stony banks, reefs and estuaries found immediately adjacent to the terrestrial Moneypoint site and within the boundary of the Coastal Infrastructure Zone. The potential for indirect habitat fragmentation and/or degradation has the potential to occur arising from land-based activities such as construction and/or operation of future infrastructure. Fragmentation and/or degradation may occur arising from land take within the boundary of the SAC, changes in water flow emanating from the site e.g. the Ballymacrinan stream, through the deposition of dust and or construction related material or through an accidental pollution event. Habitat within the foreshore environment may degrade to the point where fragmentation occurs or suffer changes in structure.

5.3.3 Habitat loss

The loss of habitat which is a QI of a European site or that supports a QI/SCI of a European site may occur where draft GA Concept objectives or principles result in direct or indirect habitat loss through construction and/or operation related activities. Objective 2, Objective 3, Objective 4, MEZ1, MEZ3, CIZ1, CIZ2, CIZ3, CIZ7, IEZ2, IEZ3, IEZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2, SZ1 all have the potential to indirectly result in habitat loss to the Lower Shannon SAC.

[38] Fahrig, L. (2003). Effects of Habitat Fragmentation on Biodiversity. Annual Review of Ecology, Evolution, and Systematics, 34, 487–515. http://www.jstor.org/stable/30033784

Furthermore CIZ1, CIZ2, CIZ3, CIZ5, CIZ7 and CIZ8 all involve the proposed development of areas within boundary of the Lower River Shannon SAC, inclusive of areas which have been mapped as comprising the Annex I QI habitats reef, estuaries and potentially perennial vegetation of stony banks.

Development within the terrestrial areas of the Moneypoint site is likely to involve construction and owing to the proximity of reefs, estuaries and perennial vegetation of stony banks to the boundary of the site, there is the possibility that habitat may be indirectly lost. Changes in water flowing into the site, through deposition of dust and or construction related material, through an accidental pollution event. Perennial vegetation of stony banks is currently under pressure from activities relating to the modification of coastline, estuary and coastal conditions for development[23].

Direct land-take within the SAC boundary may arise as a result of the proposed principles for the development of the Coastal Infrastructure Zone.

The COs for the habitat of perennial vegetation of stony banks stipulate that the area of this habitat should remain stable or exhibit an increasing trend. Furthermore, the distribution of this habitat should not undergo any decline or alteration. The physical structure, along with the structure and composition of the vegetation, should be preserved. Additionally, the presence of any species that serve as negative indicators should be absent. Similarly for reefs and estuaries, habitat area and community distribution should not decline and in particular for reefs, its habitat distribution should remain stable. These COs aim to ensure the conservation and sustainability of this unique habitat.

Owing to the potential for construction in the zones adjacent to these habitats, indirect and direct loss of Annex I QI habitat cannot be ruled out. Such effects would be considered likely to represent an adverse effect upon the integrity of the site.

5.3.4 Aerial noise, vibration, lighting and human presence-related habitat and species disturbance;

A number of objectives and principles of the draft GA Concept pertain to future development at the Moneypoint site and as such the potential for disturbance arising through aerial noise, vibration, lighting and human presence related disturbance exists.

The Moneypoint power station is in continuous operation, running 24 hours a day, seven days a week. This results in constant activity on the premises, including staff presence, vehicular traffic, deliveries, noise, and artificial lighting among other things. Given this scenario, it's reasonable to believe that any otters on the site would have adapted to the ongoing operations. The likelihood of the site works causing any substantial disruption to the otters is considered to be extremely low. However, as the magnitude and scale of future developments is as of yet unknown, there is potential that an increase above this baseline could result in direct disturbance to otter. In particular, where developments may occur within the Coastal Infrastructure Zone and Marine Energy Zone, direct disturbance to the species is possible.

The COs for otter within the Lower Shannon SAC are to preserve the current distribution of the species, the extent of terrestrial, freshwater and terrestrial habitats, the number of couching sites and holts and to avoid any declines in fish biomass or increases in barriers to connectivity. Due to the potential impacts arising from future construction activities, coupled with the presence of human activity and related infrastructure, there exists a potential risk of undermining the COs.

While there is a potential for visual disturbance to common bottlenose dolphin due to the presence of machinery and personnel within the Moneypoint site, this is considered to be negligible and not expecting to result in a level of impact that would adversely affect the bottlenose population at the site.

There is a lack of connectivity between land-based works and therefore effects arising from this impact are not anticipated for river lamprey or sea lamprey.

5.3.5 Underwater Noise and Vibration

A range of objectives and principles of the draft GA Concept, particularly those relating to the Coastal Infrastructure Zone including CIZ1, CIZ2, CIZ3, CIZ5, CIZ6, CIZ7, CIZ8 and CIZ9 in addition to further principles relating to zones adjacent to the marine environment are likely to involve development within or in proximity to the estuarine environment of the Shannon Estuary. Such development, in the absence of further detailed information on the extent and nature of the nature of the construction etc., is assumed to have potential to give rise to underwater noise and vibration effects within the Shannon Estuary.

Underwater noise and vibration arising from works within or adjacent to the aquatic environment is known to give rise to potential adverse effects upon aquatic species including auditory injury to marine mammals through temporary or permanent threshold shift (TTS or PTS) and/or associated disturbance and displacement associated with lower sound levels, in addition to injury to fish species including salmon[39].

Areas of the Shannon Estuary within the Coastal Infrastructure Zone and within the wider estuary environment in close proximity to the Moneypoint site are mapped as comprising critical habitat for common bottlenose dolphin populations within the Lower River Shannon SAC.

Common bottlenose dolphin has hearing in the high frequency range (150-160 kHz) and utilises these frequencies to communicate and navigate through echolocation. Auditory injury to the species can therefore interfere with the animals' essential systems for survival and communication. The National Oceanic and Atmospheric Administration (NOAA) publishes a technical guidance document for assessment of underwater criteria for auditory injury to marine mammals[40]. This document sets out that the auditory injury onset criteria for high-frequency cetaceans for impulsive noise is 193dB (cumulative sound exposure level) to 230dB (peak sound pressure level). For non-impulsive noise the onset criteria for auditory injury is 201dB.

Data published by Southall et al. (2019)[41], differs slightly from the NOAA Technical guidance, and is inclusive of a threshold for TTS for high frequency cetaceans at non-impulsive noise levels of 178dB and PTS at 198dB. This paper also discusses the propensity for marine mammals to avoid sources of underwater noise, including those which are below the thresholds for auditory injury which may also have potential to give rise to short to long term displacement effects upon the species.

Any works within or adjacent to the estuarine environment which arise as a result of the draft GA Concept with potential to give rise to underwater noise are, on a precautionary basis, assumed to give rise to potential underwater noise levels above the respective thresholds for TTS and PTS for common bottlenose dolphin and/or sufficient to result in non-auditory injury related disturbance and displacement of the QI species populations.

While it is known that underwater noise can give rise to injury and mortality of salmon[39], this principally relates to impacts arising from percussive piling, other studies associated with piling activities within the marine environment[42],[43] have recorded fairly minimal behavioural reactions or evidence of injury arising to salmon as a result of such works.

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[39] Halvorsen, M.B., Casper, B.M., Woodley, C.M., Carlson, T.J. and Popper, A.N., 2012. Threshold for onset of injury in Chinook salmon from exposure to impulsive pile driving sounds. *PLoS One*, *7*(6), p.e38968.

[40] National Marine Fisheries Service. 2024. Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and In Air Criteria for Onset of Auditory Injury and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR

[41] Southall, B.L., Finneran, J.J., Reichmuth, C., Nachtigall, P.E., Ketten, D.R., Bowles, A.E., Ellison, W.T., Nowacek, D.P. and Tyack, P.L., 2019. Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects. *Aquatic Mammals*, *45*(2), pp.125-232.

[42] Hawkins, A., 2005. Assessing the impact of pile driving upon fish.

[43] Nedwell, J.R., Turnpenny, A.W., Lovell, J.M. and Edwards, B., 2006. An investigation into the effects of underwater piling noise on salmonids. *The Journal of the Acoustical Society of America*, *120*(5), pp.2550-2554.

Where avoidance of a source of underwater noise by salmon is possible it is considered likely that the species will avoid such sources which would otherwise give rise to injury of the species. As such, the primary adverse effect arising upon QI populations of the species through underwater noise is considered likely to be disturbance and displacement over the short to long-term depending upon the nature of the proposed works. On a precautionary basis it is assumed that works would have potential to give rise to injury to the species, in addition to disturbance or displacement effects. As discussed above, impacts to salmon populations have potential to give rise to associated effects upon freshwater pearl mussel, river lamprey and sea lamprey.

5.3.6 Surface water run-off/dust carrying suspended silt or contaminants to the marine environment

Sedimentation is a naturally occurring event within freshwater and marine waterbodies, originating from the weathering and erosion of underlying bedrock, stream beds and tidal action. The Moneypoint site is crisscrossed by roads, and features numerous parking lots and other paved areas, all of which are integrated into the existing on-site surface water management system. To the east of the power station, there is a substantial coal storage area, as well as a Flue Gas Desulphurization (FGD) landfill area. Presently, the operations on the site do not result in any notable environmental impacts, as there is no evidence of surface water runoff or dust transporting suspended silt or pollutants into the marine environment.

However, as there is the potential for numerous developments to occur on-site within the draft GA Concept period, there is the potential for surface water run-off to carry dust or contaminants to the marine environment, thereby directly impacting the marine annex habitats located immediately adjacent. Where normal levels of sediment are increased, this can result in adverse effects on QI marine and coastal habitats and species through the deterioration of water quality, changes in turbidity etc. Objective 2, Objective 3, Objective 4 and principles MEZ1, MEZ3, MEZ4, MEZ6, MEZ7, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, AMZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2 and SZ1 all have the potential to result in increased sediment or contaminants entering the marine environment. Therefore annex habitats of perennial vegetation of stony banks, reefs and estuaries may be directly impacted by the aforementioned objectives and principles and indirectly affect the QI species (i.e. otter and bottlenose dolphin) which exist within this area.

5.3.7 Species mortality

The draft GA Concept, in its current form, carries an indirect risk of causing harm to QI species, specifically otter and common bottlenose dolphin. This risk is associated with the construction activities that may arise from the draft GA Concept objectives and principles. Should otters be present in the vicinity during these activities, they could potentially be harmed or even face mortality due to disturbances or habitat destruction. Similarly, the potential risk to dolphin species exists in the event of an accidental pollution incident. Dolphins are particularly vulnerable to changes in water quality. Therefore, if an unforeseen pollution event were to occur, such as a chemical spill or the release of harmful substances into the water bodies, it could have detrimental effects on the common bottlenose dolphin population, potentially leading to mortality.

In a similar vein, alterations in water quality or the occurrence of a pollution event, given the right magnitude, could potentially lead to fatalities among sea lamprey, river lamprey, and Atlantic salmon. However, the actual impact would largely depend on whether these fish species are present in the affected area at the time of the pollution event. This highlights the complex interplay between environmental factors and the presence of aquatic life in determining the ecological consequences of such incidents.

draft GA Concept principles of MEZ1, MEZ3, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3 and IEZ5 all have the potential to generate activities which may result in species mortality. Given that the COs for these Annex species relate to preservation of the population and avoidance of disturbance, and with the lack of detail within the draft GA Concept, the risk of mortality to the QI species of Lower Shannon SAC cannot be out ruled.

5.3.8 Spread of invasive species

Potential future construction activities could inadvertently lead to the introduction or proliferation of invasive species. This risk could stem from various sources such as machinery, plants, or personnel that are transported to the site from different locations. These elements could potentially carry seeds, spores, or even small plants that are not native to the site.

Furthermore, vessels and other marine construction operations will involve the potential for introduction of non-native invasive aquatic organisms including molluscs, crustaceans among others. Once introduced, these invasive species could gain a foothold and start to spread, causing a variety of impacts including degradation of habitat, loss of biodiversity, and even contamination of the site. Objective 2, Objective 3, Objective 4 and principles MEZ1, MEZ3, MEZ4, MEZ6, MEZ7, MEZ9, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, AMZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2 and SZ1 all have the potential to result in the introduction or spread of invasive species as a result of future construction activities.

5.3.9 Temporary species disturbance and displacement

Construction activities, particularly those that are large-scale or disruptive, can lead to temporary species disturbance and displacement. This is primarily due to the noise, vibration, and physical changes to the environment that these activities entail. Species, especially those that are sensitive to changes in their habitat, may be forced to leave their usual territories in search of quieter, safer areas. This displacement can disrupt feeding, breeding, and other essential behaviours, potentially impacting the overall health and survival of the species.

This would include noise and movement by both machinery and humans on-site at Moneypoint which could be resultant from construction and operation activities associated with future projects arising from the draft GA Concept. Machinery movement, construction and/or decommissioning activities and the presence of personnel can potentially disturb otter species from their resting places along the rock armour and foreshore area. As a result, the otter's range and habitat can be directly impacted due to disturbance upon or near to functionally linked land. Where otter are forced to escape disturbed sites, there is often the case where they are required to travel further resulting in increased energy expenditure. Further elements of the draft GA draft GA Concept, namely the proposals for the Coastal Infrastructure Zone, present a further mechanism for disturbance of marine species including bottlenose dolphin and salmon, with associated potential impacts upon river lamprey, sea lamprey and freshwater pearl mussel.

draft GA Concept Objective 2, Objective 3, Objective 4, MEZ1, MEZ3, MEZ4, MEZ6, MEZ9, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, AMZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2 and SZ1 all have the potential to generate activities which may result in the temporary disturbance and displacement of otter from their habitat.

5.4 River Shannon and River Fergus Estuaries SPA

5.4.1 Overview

The River Shannon and River Fergus Estuaries SPA is an internationally significant site located in Ireland spanning a surface area of approximately 322 km², with 95% of this area being marine. The SPA is recognized for its importance in supporting an assemblage of over 20,000 wintering waterbirds.

The SPA is home to internationally important populations of four species: the light-bellied brent goose, dunlin, black-tailed godwit, and redshank. In addition to these, the SPA protects cormorant, whooper swan, shelduck, wigeon, teal, pintail, shoveler, scaup, ringed plover, golden plover, grey plover, lapwing, knot, bar-tailed godwit, curlew, redshank, greenshank, and black-headed gull. COs have been set to maintain or restore the favourable conservation condition of the waterbird species. The COs targets for non-breeding SCIs are to maintain or increase the long-term population, no significant decrease in range timing or intensity of use of areas by SCIs and to maintain the wetland habitat designated within the site.

The ecology of the SCIs varies significantly due to adaptations and specialisations that dictate their use of different habitats, influencing their distribution across the SPA. The reliance on and usage of alternative habitats fluctuates among species, seasonally, daily, and even between day and night. When high tides cover tidal flats, waterbirds that forage intertidally are unable to do so and may relocate to nearby fields for feeding. Some species, like the black-tailed and bar-tailed godwits, curlew and redshank are generalists and utilise a variety of habitats, foraging across intertidal mudflats and also readily using grassland habitats. Light-bellied brent geese alter their habitat preference when food resources in one area become scarce, resorting to grasslands when intertidal seagrass and algae are depleted.

The extensive intertidal mudflats along the estuary provide an ideal food resource for wintering waterfowl. The SPA's designation is not only crucial for the protection of these species but also for the preservation of their habitats. The atypical foraging habitats for the respective SCIs is listed below[44]:

- Intertidal mud and sand flats (at low tide): Ringed plover, golden plover, grey plover, lapwing, knot, dunlin, black-tailed godwit, shelduck, light-bellied brent goose, whooper swan, teal, bar-tailed godwit, curlew, redshank and greenshank
- Sheltered and shallow subtidal over sand and mudflats: cormorant, black-headed gull, teal and wigeon
- Lagoon and associated habitats: whooper swan and shoveler
- Shallow subtidal: shelduck and pintail; and
- Subtidal: scaup.

Survey data from 2022/2023 confirms the presence of SCIs black-headed gull, lapwing, redshank, ringed plover and teal within the Moneypoint site[19]. According to data from NPWS, there are no roost locations within the draft GA Concept area, with the nearest roost locations found downstream at Rusheen (3.3km south) and Leadmore West (6.3km west). Given the Moneypoint site's status as an electricity generation location, its habitats have been significantly altered. The species for which the SPA is designated for associate with and depend on tidal, intertidal, and estuarine habitats. These habitats contrast starkly with those available within the draft GA Concept area, which are either entirely terrestrial and disturbed above the high-water mark, or heavily modified, such as the rock armour present within the Coastal Infrastructure Zone. These habitats do not resemble or provide the same ecological functions as those required by the SCIs. Behavioural limitations restrict the ability of the populations to utilise alternative locations. It is anticipated that these species will continue to favour the ecologically valuable habitats within the designated European site over any within or near the draft GA Concept location.

5.5 Assessment of Effects on the River Shannon and River Fergus Estuaries SPA

5.5.1 Accidental Pollution Event

The accidental and unintentional release of chemicals to the Lower Shannon from potential construction activities on-site could indirectly impact the SCIs of the SPA through changes to their food availability within the receiving estuarine habitats. A number of wading birds are designated as part of the SPA, which forage at low tide within the sediment immediately adjacent to the draft GA Concept boundary. An accidental release of chemicals and/or contaminants arising either from machinery leak or the disturbance of contaminated land (e.g. Ash Management Zone or coal storage area within the Marine Energy Zone) could contaminate the receiving environment and introduce such contaminants into the food chain of the dependent SCIs. Furthermore, the ongoing use of HFO as a fuel at the Moneypoint site, particularly during transport and delivery, raises the potential for a large-scale oil spill into the marine environment of the Shannon Estuary.

Additionally, should contaminants be released over an extended period of time, the cumulative build-up of contaminants could lengthen potential changes to dependent SCIs. It must be noted the worst-case scenario is dependent upon the magnitude and duration of the accidental pollution event and coincide with lower tide levels when there is an opportunity for contaminants to settle within the sediment. It is anticipated that should a pollution event occur during high tides or stormy conditions; the tidal power of the Lower Shannon would contribute to the dispersion and dilution of contaminants over the area and as such would have a negligible impact.

[44] NPWS (2012b). River Shannon & River Fergus Estuaries. Special Protection Area (Site Code 4077). Conservation Objectives Supporting Document. Version 1. National Parks & Wildlife Service

Given that the species records for the terrestrial areas of the site are limited to black-headed gull, lapwing, redshank, ringed plover and teal, it is anticipated that both redshank and ringed plover may be at the greatest risk of an indirect impact through an accidental pollution event as a result of contamination of functionally linked land. Objectives 2, 3 and 4 and principles CIZ8, IEZ2, IEZ3, IEZ5, AMZ5, GDZ3, BZ1, BZ4, TAZ2 and SZ1 of the draft GA Concept pertain to future development at the Moneypoint site and due to the potential for construction and new operation, the potential for an accidental pollution event exists.

In the event of a large-scale spill of HFO at the site, it is considered that all SCIs of the Lower River Shannon SPA would be highly likely to be significantly impacted through surface oiling effects, subsequent oiling of plumage and associated mortality, and temporary loss of foraging habitat within the estuary and adjacent areas of intertidal mud and sand.

5.5.2 Habitat Fragmentation and Degradation

Habitat fragmentation modifies the habitat and leads to the creation of isolated or loosely connected patches of the original habitat. The result is a disruption of habitat units that were once more continuous. This disruption diminishes or even eradicates connectivity, a crucial aspect of the conservation status of any natural or semi-natural habitat, irrespective of its legal status, and has a negative impact on biodiversity.

The adverse effects of habitat fragmentation can increase the isolation of species or populations, which can harm the resilience or robustness of these populations, thereby decreasing overall species diversity and changing species abundance. Although the direct impacts of fragmentation on mobile species are less apparent, the indirect effects on these species due to habitat fragmentation are indisputable.

SCIs recorded on site (Section 4.3.1) have established the precedent that the Moneypoint site serves as functionally linked land to the SPA. Owing to the potential that future construction may occur within draft GA Concept area, habitat fragmentation and/or degradation may arise as a result. Additionally impacts arising from potential future construction may result in degradation to dependent habitats of the SCIs, including lapwing, ringed plover, redshank and black-headed gull. Future development changes to the Marine Energy Zone, Coastal Infrastructure Zone and the Ash Management Zone (where species were recorded) may result in habitat fragmentation and/or degradation causing species to move further afield to forage, breed and rest thereby causing an indirect impact through excessive energy expenditure.

Owing to the potential for construction emanating from Objective 2, Objective 3, Objective 4, MEZ1, MEZ3, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2, SZ1 the potential for habitat fragmentation and/or degradation may occur to directly to the habitats within the Ash Management Zone, Marine Energy Zone and Coastal Infrastructure Zone.

5.5.3 Habitat loss

The loss or destruction of habitat occurs where there is a complete removal or conversion of a habitat type; for example, arising from future infrastructure development at the Moneypoint site. Changes to functionally linked habitat to the SCIs of the SPA could result in the direct loss of a particular habitat necessary for the functions of the species. Objective 2, Objective 3, Objective 4, MEZ1, MEZ3, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2, SZ1 all have the potential to result in habitat loss to functionally linked land on-site.

The draft GA Concept aims to transition the Moneypoint from a coal fired energy generation plan to renewable energy with the draft principles guiding development identifying elements of particular construction activities. These include the construction of infrastructure, structure replacement, ORE related infrastructure, the development and enhancement of coastal infrastructure and changes in land use. As a result, and with the lack of exact detail currently available over timelines and scale of construction and operation, at this stage of assessment, it is impossible to rule out the loss of functionally linked habitat on-site that supports SCIs of the SPA.

Furthermore, the objectives and principles within the draft GA Concept relating to the development of the Coastal Infrastructure Zone including CIZ1, CIZ2, CIZ3, CIZ5, CIZ8 and CIZ8, are likely to give rise to the loss of areas of estuarine habitat within the SPA which are likely to comprise wetlands inclusive of the SCI wetland and waterbirds of the SPA. The loss of these areas of habitat are assumed to represent an adverse effect upon the integrity of the site.

5.5.4 Aerial noise, vibration, lighting and human presence related disturbance to species

Wader and waterbird species are known to be highly sensitive to disturbances such as noise, vibration, lighting, and human activity. Noise and vibration, often resulting from construction or heavy machinery, can disrupt their natural behaviours, including feeding, breeding, and migration patterns. These disturbances can cause stress, leading to decreased health and reproductive success. Artificial lighting can disrupt the natural day-night cycle, affecting behaviours such as sleep and migration. It can also disorient birds, leading to collisions with artificially lit structures. Human activity, especially in or near their habitats, can lead to displacement and habitat loss. These species often perceive humans as predators, causing them to flee and abandon their nests. Over time, these disturbances can lead to population declines and changes in community structure.

A large range of objectives and principles of the draft GA Concept all have the potential to result in indirect disturbance to the SCIs of the SPA through future construction.

5.5.5 Surface water run-off/dust carrying silt or contaminants to the marine environment

Surface water runoff and airborne dust can have significant impacts on wader and waterbird species. Surface water runoff, particularly when contaminated with anthropogenic pollutants, can degrade the quality of aquatic habitats. This can lead to the proliferation of harmful algal blooms, which can reduce oxygen levels in the water and produce toxins detrimental to avian species. Furthermore, runoff can induce erosion and sedimentation, potentially leading to the destruction of physical habitats these species rely on.

Airborne dust can affect air quality and visibility, potentially disrupting the normal behaviours of these birds. Dust particles can settle on water bodies, altering their chemical composition and potentially impacting the availability of food resources for these species. Additionally, dust can adhere to the plumage of birds, affecting their insulation properties and flight capabilities.

Objective 2, Objective 3, Objective 4 and principles MEZ1, MEZ3, MEZ4, MEZ6, MEZ7, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, AMZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2 and SZ1 all have the potential to result in increased sediment or contaminants entering the marine environment as a result of future construction related activities. Species may be indirectly impacted where their habitats for foraging and resting are degraded through the release of contaminants.

5.5.6 Species mortality

Construction activities can indirectly contribute to mortality in wader and waterbird species through several mechanisms. Habitat loss is a significant concern as construction can lead to the destruction or alteration of habitats essential for feeding, breeding, and shelter. This can compel birds to relocate to less suitable areas, potentially leading to increased competition, predation, and consequently, higher mortality rates.

Additionally, the noise and activity associated with construction can disturb these species, causing stress and disrupting essential behaviours such as feeding and breeding. Over time, this can weaken the birds, making them more susceptible to disease and predation, thereby increasing mortality. Pollution from construction, including chemicals, waste materials, and sediment, can contaminate water and food sources, leading to illness or death. Construction activities often involve the use of large machinery and structures, which birds can collide with, leading to injury or death. Furthermore, construction can create physical barriers that disrupt the movement and migration of these birds, potentially leading to increased energy expenditure, collision and mortality. As discussed above, accidental pollution events, particularly in the case of a large-scale spillage of HFO, also have potential to give rise to mortality through oiling of surface waters.

Draft principles MEZ1, MEZ3, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3 and IEZ5 all have the potential to result in indirect species mortality arising from construction related activities.

5.5.7 Temporary species disturbance and displacement

Construction activities can precipitate temporary disturbances and displacement of SCIs through a variety of mechanisms. The noise and vibration produced by construction machinery can disrupt these SCIs, particularly during the critical breeding season, potentially leading to nest abandonment and diminished breeding success. Construction arising from the draft GA Concept objectives and/or principles can modify the physical landscape, potentially resulting in the destruction or degradation of foraging or resting habitats within the draft GA Concept area or nearby, thereby causing birds to relocate to further away areas.

The increased human presence associated with construction activities can also disturb these species, inducing stress and potential displacement. Noise can cause immediate physical stress responses in birds, similar to the 'fight or flight' response in mammals. This can lead to increased heart rate and stress hormone levels, which over time can weaken the birds and make them more susceptible to disease. Noise can interfere with the birds' communication. Many bird species rely on vocal signals for various behaviours such as attracting mates, defending territory, and warning of predators. Construction noise can mask these signals, leading to misunderstandings and conflicts among birds, and potentially reducing their breeding success. Additionally, noise can disrupt feeding behaviours. Many waders and waterbirds feed in synchrony with the tides, and sudden loud noises can scare them away from feeding grounds. This can lead to reduced food intake, affecting their energy levels and overall health. If the noise level is too high, birds may choose to leave the area and move to quieter but potentially less suitable habitats. This can lead to increased competition for resources and potentially higher mortality rates

Additionally, construction often necessitates the use of artificial lighting, which can disrupt the natural circadian rhythms and impact behaviours such as sleep and breeding. Dust and other forms of air pollution generated by construction can affect air quality and visibility, potentially impacting the health of these birds and their offspring. Draft GA Concept Objective 2, Objective 3, Objective 4, MEZ1, MEZ3, MEZ4, MEZ6, MEZ9, CIZ1, CIZ2, CIZ3, CIZ8, IEZ2, IEZ3, IEZ5, AMZ5, GDZ1, GDZ3, BZ1, BZ4, TAZ2 and SZ1 all have the potential to generate activities which may result in the temporary disturbance and displacement of SCIs.

5.6 Large-Scale Accidental Pollution Events

In addition to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA, which both lie within the boundary of the draft GA Concept area, a range of further, more distantly situated European sites are hydrologically connected to the site via the Shannon Estuary and intervening areas of the Atlantic. As set out above, at Section 4.3.2, the draft GA Concept will involve the ongoing use of HFO at the site, including the transport and delivery of HFO to the site via ocean-going tanker. While the potential adverse effects arising from the use of HFO at the site have already been subject to assessment within the Natura Impact Statement that informed the An Bord Pleanála consent of the scheme (319080) it is considered that a lack of consideration of this aspect of the draft GA Concept would represent an omission likely to be unacceptable in light of the provisions of the Habitats Directive.

The use of HFO and particularly the transport and delivery of the substance to the site has potential to give rise to a catastrophic and large-scale spillage of HFO into the Shannon Estuary in a worst-case scenario. While it is acknowledged that a strict range of procedures exist to control and mitigate the potential for such a spillage to occur such measures are considered to represent mitigation measures for the purposes of this assessment. Where such measures are not put in place large-scale oil spills can result. The large-scale spillage of HFO has potential to give rise to a range of adverse impacts upon European sites inclusive of short to medium term deterioration of QI Annex I marine habitats within SACs, surface water oiling resulting in mortality to Annex II marine species including otter with probable effects upon common bottlenose dolphin and harbour porpoise in addition to mortality of marine birds through surface water and subsequent plumage oiling effects and deterioration of important marine and intertidal foraging habitat.

As established above (Table 2), a large range of SACs and SPAs lie within the determined ZoI for a large-scale oil spill event, which was determined to be 120km for sites supporting coastal or marine Annex I QI habitats or fairly immobile coastal or marine Annex II QI species, such as otter or within the known typical foraging ranges for seal species (50km for grey seal and approximately 135km for grey seal) or the known marine mammal management unit areas for common bottlenose dolphin and harbour porpoise respectively. While the ZoI is inclusive of a large number of European sites situated beyond 120km from the Moneypoint site via the closest hydrological connection, impacts to such sites would be limited to ex-situ effects upon marine mammal populations which may be present within the proximity to the Moneypoint site.

This ZoI is considered to be inclusive of the following European sites (excluding the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, discussed above) which are all considered vulnerable to effects arising as a result of large-scale oil spill:

- Mid-Clare Coast SPA
- Illaunonearaun SPA
- Kerry Head SPA
- Loop Head SPA

- Kerry Head Shoal SAC
- Magharee Islands SPA
- Magharee Islands SAC
- Akeragh, Banna and Barrow Harbour SAC
- Dingle Peninsula SPA
- Kilkee Reefs SAC
- Tralee Bay Complex SPA
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC
- Carrowmore Dunes SAC
- Carrowmore Point to Spanish Point and Islands SAC
- Cliffs of Moher SPA
- Inishmaan Island SAC
- Inisheer Island SAC
- Inishmore Island SAC
- Black Head-Poulsallagh Complex SAC
- Blasket Islands SAC
- Blasket Islands SPA
- Kilkieran Bay and Islands SAC
- Inishmore SPA
- Valencia Harbour/Portmagee Channel SAC
- Inagh River Estuary SAC
- West Connacht Coast SAC
- Belgica Mound Province SAC
- Roaringwater bay and Islands SAC
- Hook Head SAC
- Carnsore Point SAC
- Blackwater Bank SAC
- West Wales Marine / Gorllewin Cymru Forol SAC
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC
- Mers Celtiques – Talus du Golfe de Gascogne SAC
- Rockabill to Dalkey Island SAC
- Codling Fault Zone SAC
- Lambay Island SAC
- North Anglesey Marine / Gogledd Môn Forol SAC
- Nord Bretagne DH SAC
- Ouessant Molène SAC
- Abers-Côte des Légendes SAC
- North Channel SAC
- Baie de Morlaix SAC
- Côtes de Crozon SAC
- Chausée de Sein SAC
- Tregor Goëlo SAC
- Récifs et landes de la Hague SAC
- Anse de Vauville SAC
- Banc et Récifs de Surtainville SAC
- Baie de Saint Brieuc – Est SAC
- Chausey SAC
- Cap d'Erquy-Cap Fréhel SAC
- Baie du Mont Saint-Michel SAC.

In the absence of the application of mitigation measures it is assumed that the draft GA Concept would have potential to give rise to adverse effects on the integrity of the above listed sites through effects associated with a large-scale spillage of HFO.

5.7 Underwater Noise and Vibration

The draft GA Concept objectives and principles, particularly those relating to proposed future development within the Marine Energy and Coastal Infrastructure Zones which lie adjacent to and within the Shannon Estuary respectively, would have potential to give rise to underwater noise and vibration within the marine environment of the Shannon Estuary. Such underwater noise effects would, in addition to affecting areas of critical habitat for bottlenose dolphin populations of the Lower River Shannon SAC, discussed above, also have potential to give rise to ex-situ effects upon QI Annex II marine mammal populations of other SACs within the known typical foraging ranges for seal species (50km for grey seal and approximately 135 km for grey seal) or the known marine mammal management unit areas for common bottlenose dolphin and harbour porpoise respectively.

This ZoI is considered to be inclusive of the following European sites (excluding the Lower River Shannon SAC, discussed above) and the relevant QIs which are all considered vulnerable to effects arising as a result of underwater noise and vibration:

- Inishmore Island SAC – Harbour porpoise
- Blasket Islands SAC – Harbour porpoise, grey seal
- Kilkieran Bay and Islands SAC – Habour porpoise
- West Connacht Coast SAC – Common bottlenose dolphin, harbour porpoise
- Belgica Mound Province SAC – Common bottlenose dolphin, harbour porpoise
- Roaringwater bay and Islands SAC – Harbour porpoise
- Hook Head SAC – Harbour porpoise
- Carnsore Point SAC – Harbour porpoise
- Blackwater Bank SAC – Harbour porpoise
- West Wales Marine / Gorllewin Cymru Forol SAC – Harbour porpoise
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC – Harbour porpoise
- Mers Celtiques – Talus du Golfe de Gascogne SAC – Harbour porpoise
- Rockabill to Dalkey Island SAC – Harbour porpoise
- Codling Fault Zone SAC – Harbour porpoise
- Lambay Island SAC – Harbour porpoise
- North Anglesey Marine / Gogledd Môn Forol SAC – Harbour porpoise
- Nord Bretagne DH SAC – Harbour porpoise
- Ouessant Molène SAC – Harbour porpoise
- Abers-Côte des Légendes SAC – Harbour porpoise
- North Channel SAC – Harbour porpoise
- Baie de Morlaix SAC – Harbour porpoise
- Côtes de Crozon SAC – Harbour porpoise
- Chausée de Sein SAC – Harbour porpoise
- Tregor Goëlo SAC – Harbour porpoise
- Récifs et landes de la Hague SAC – Harbour porpoise
- Anse de Vauville SAC – Harbour porpoise
- Banc et Récifs de Surtainville SAC – Harbour porpoise
- Baie de Saint Brieuc – Est SAC – Harbour porpoise
- Chausey SAC – Harbour porpoise
- Cap d'Erquy-Cap Fréhel SAC – Harbour porpoise
- Baie du Mont Saint-Michel SAC – Harbour porpoise.

In the absence of the application of mitigation measures it is assumed that the draft GA Concept would have potential to give rise to adverse effects on the integrity of the above listed sites through effects associated with underwater noise and vibration giving rise to potential auditory injury or other disturbance and displacement effects.

6. Mitigation

6.1 Overview

The purpose of mitigation in the AA process is to outline the strategies and measures to avoid, reduce or offset potential adverse effects on the integrity of European sites, their QIs and SCIs. Mitigation measures are designed to ensure, wherever possible, that the draft GA Concept will not adversely affect the integrity of the Lower Shannon SAC and the River Shannon and River Fergus Estuaries SPA or further more distantly situated European sites. The approach taken in this AA is to first identify the in-built mitigation measures outlined within the draft GA Concept and secondly, where adverse effects still exist, recommend mitigation measures to avoid any remaining adverse effects both alone and in-combination. Section 7.2 below outlines the in-design mitigation measures whilst Section 7.3 provides the additional recommended mitigation measures.

6.2 In Design Mitigation within the draft GA Concept

A number of the overarching policies of the draft GA Concept emphasise the protection of the natural environment. This includes OP1 which states:

"The Green Atlantic @ Moneypoint Concept will be implemented having due regard for the sensitivity of the local environment, including the adjoining coastline, which includes the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA."

OP2 states:

"As required under prevailing legislation, development proposals will be required to comply with the requirements of the Environmental Impact Assessment and Habitats Directives"

OP3 states:

"Mitigation measures identified by project specific environmental assessment and approved as part of the statutory consenting process, will be implemented to mitigate against impacts arising on the local environment."

OP10 states:

"Where appropriate, development proposals will be subject of design level modelling to determine any potential hydrological change that may arise and impact on the hydrology of sites within the zone of influence of the site, including European Sites designated for their international nature conservation importance. Such models will inform mitigation strategies and ensure that site infrastructure is appropriately designed."

Throughout the draft GA Concept, the importance of the Lower Shannon SAC and the River Shannon and River Fergus Estuaries SPA and the below mitigation measures have been identified.

Land Use Zone	Mitigation identified within the draft GA Concept – Principles	Reference location within draft GA Concept
Marine Energy Zone (MEZ)	All development proposals will have regard to the prevailing land use zoning of the site, and the visual and ecological sensitivity of the adjoining coastline, noting the proximity to a European site. As such, any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives of the adjoining Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.	MEZ2 Page 19
Coastal Infrastructure Zone (CIZ)	Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives of the adjoining Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA, or that circumstances prevail whereupon consent can be granted having regard to broader considerations.	CIZ2 Page 20

Land Use Zone	Mitigation identified within the draft GA Concept – Principles	Reference location within draft GA Concept
Industrial Energy Zone (IEZ)	All development proposals will be developed having regard to the prevailing land use zoning of the site, and the visual and ecological sensitivity of the adjoining coastline. Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives of the adjoining Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.	IEZ6 Page 22
Ash Management Zone (AMZ)	Any new development within this zone will be subject of robust environmental assessment to confirm that it does not impact on the on-going management of the capped ASA. Specifically a detailed Hydrogeological Risk Assessment will be prepared and a construction methodology submitted to the EPA for approval, in advance of works being permitted or commenced.	AMZ4 Page 23

6.3 Recommended Mitigation for the draft GA Concept

6.3.1 Overview

Mitigation measures are recommended in the following subsections. The mitigation measures are presented per the relevant QIs and SCIs that have been identified as at risk of adverse effects within this report.

It is noted that, given the nature of the draft GA Concept which is a relatively high-level plan document, identification of project specific mitigation measures is not always possible given the lack of detail on the extent and nature of development which is likely to arise as a result of the adoption of the draft GA Concept objectives and principles.

Mitigation measures required in respect of any project level development will be identified and implemented to ensure that the impacts at the project level are fully addressed wherever possible. Where mitigation is not possible, for example in the case of habitat loss effects arising from development of the Coastal Infrastructure Zone, there may be a requirement for the project to be considered in respect of Article 6(4) of the Habitats Directive. This is discussed further below.

Mitigation measures set out below should be viewed in context as overarching principles of mitigation which will be applied to individual projects arising from the draft GA Concept objectives and principles to mitigate impacts upon European sites.

Lower River Shannon SAC

6.3.2 Estuaries, Reefs, Perennial Vegetation of Stony Banks

The following mitigation is recommended for any future specific project proposals that may arise as a result of the draft GA Concept in regards to the QI marine habitats of the Lower Shannon SAC:

6.3.2.1 Estuaries

Any development associated with the Coastal Infrastructure or Marine Energy Zones will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below.

- Any project level development associated with the Coastal Infrastructure Zone and Marine Energy Zone shall be subject to a Screening for AA (and full AA where appropriate) and be carried out by a suitably qualified ecologist.
- Any future project proposals shall seek to avoid and minimise any impacts upon this habitat through careful selection of areas for development, type of infrastructure used and scale of project.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce any potential adverse effects on the COs of the habitat once the details of the type of development and the level of construction works and impacts are known; and

- Future project proposals shall seek to avoid development during sensitive seasons.

6.3.2.2 Reefs

Any development associated with the Coastal Infrastructure or Marine Energy Zones will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below.

- Any project level development associated with the Coastal Infrastructure Zone and Marine Energy Zone shall be subject to a Screening for AA (and full AA where appropriate) and be carried out by a suitably qualified ecologist.
- Any future project proposals shall seek to avoid any impacts upon this habitat through careful selection of areas for development, type of infrastructure used and scale of project.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce potential adverse effects on the COs of the habitat once the details of the type of development and the level of construction works and impacts are known; and
- Future project proposals shall seek to avoid development during sensitive seasons.

6.3.2.3 Perennial Vegetation of Stony Banks

Any development associated with Coastal Infrastructure Zone and Marine Energy Zone will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below:

- Any project level development associated with the Coastal Infrastructure Zone and Marine Energy Zone shall be subject to a Screening for AA and be carried out by a suitably qualified ecologist.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce potential adverse effects on the COs of the habitat once the details of the type of development and the level of construction works and impacts are known; and
- Any future project proposals shall seek to avoid any impacts upon this habitat through careful selection of areas for development, type of infrastructure used and scale of project.

6.3.3 Otter

- Any future project proposals associated with the draft GA Concept area will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined.
- Any project level development arising from the draft GA Concept shall be subject to a Screening for AA (and full AA where appropriate), informed by appropriately timed surveys for the species and be carried out by a suitably qualified ecologist.
- Any future project proposals shall aim to avoid construction in sensitive areas such as feeding and breeding areas, minimise the use of high noise emission activities such as impact piling and blasting.
- Any future project proposals shall aim to enforce speed limits for vehicles used in construction and establish a code of conduct to avoid disturbance to otters both during construction activities and in transit to construction area if entering areas of high abundance.
- Where piling methods are proposed as part of a project proposal, a noise and vibration assessment shall be carried out prior to any future works insofar as to avoid any potential impacts on the QI.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce potential adverse effects on the COs of the species once the details of the type of development and the level of construction works and impacts are known; and
- Any future project proposals shall aim to avoid construction during sensitive periods for otter, employ soft starting procedures for any piling activities and/or passive acoustics deterrents.

6.3.4 Common Bottlenose Dolphin

Any future project proposals associated with the draft GA Concept will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below.

- Any project level development arising from the draft GA Concept shall be subject to a Screening for AA (and full AA where appropriate) and be carried out by a suitably qualified ecologist.
- Any future project proposals that may interact with the marine environment shall adhere to the NPWS 2014 Guidance to Manage the risk to Marine Mammals from Man-Made Sound Sources in Irish Waters and subsequent future iterations of the guidance.
- Any future project proposals shall aim to minimise the use of any high noise emitting activities and/or machinery within the ZoI of the foreshore area so as to avoid indirect impacts to the species.
- Where piling methods are proposed as part of a project proposal, a noise and vibration assessment shall be carried out prior to any future works insofar as to avoid any potential impacts on the QI.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce potential adverse effects on the COs of the species once the details of the type of development and the level of construction works and impacts are known; and
- Any future project proposals arising from the draft GA Concept which has the potential to interact with common bottlenose dolphin shall consult with NPWS, IWDG and any other relevant organisations.

6.3.5 Fish species

6.3.5.1 Sea Lamprey and River Lamprey

Any future project proposals associated with the draft GA Concept will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below.

- Any project level development arising from the draft GA Concept shall be subject to a Screening for AA (and full AA where appropriate) and be carried out by a suitably qualified ecologist.
- Any future project proposals arising from the draft GA Concept which has the potential to interact with sea or river lamprey and their associated habitat shall consult with NPWS, Inland Fisheries Ireland and any other relevant organisations.
- Where piling methods are proposed as part of a project proposal, a noise and vibration assessment shall be carried out prior to any future works insofar as to avoid any potential impacts on the QI.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce potential adverse effects on the COs of the species once the details of the type of development and the level of construction works and impacts are known; and
- Any future project proposals affecting the estuarine environment shall aim to avoid construction at sensitive times for the species.

6.3.5.2 Atlantic Salmon

Any future project proposals associated with the draft GA Concept will ensure that the NPWS detailed COs for the Lower Shannon SAC are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below.

- Any project level development arising from the draft GA Concept shall be subject to a Screening for AA (and full AA where appropriate) and be carried out by a suitably qualified ecologist.
- Where piling methods are proposed as part of a project proposal, a noise and vibration assessment shall be carried out prior to any future works insofar as to avoid any potential impacts on the QI.

- Any future project proposals arising from the draft GA Concept which has the potential to interact with Atlantic Salmon and its associated habitat shall consult with NPWS, Inland Fisheries Ireland and any other relevant organisations.
- Suitable mitigation measures shall be required at project level stage to avoid or reduce potential adverse effects on the COs of the species once the details of the type of development and the level of construction works and impacts are known; and
- Any future project proposals affecting the estuarine environment shall aim to avoid construction at sensitive times for the species.

River Shannon and River Fergus Estuaries SPA

6.3.6 SCIs

Any future project proposals associated with the draft GA Concept area must ensure that the NPWS detailed COs for the River Shannon and River Fergus Estuaries SPA are not undermined. Any exceptions to this will be addressed through Article 6(4) procedures, as discussed below.

- Any project level development arising from the draft GA Concept shall be subject to a Screening for AA (and full AA where appropriate), informed by an appropriate suite of bird surveys and carried out by a suitably qualified ecologist.
- For the application of any future project level proposals, dedicated site counts throughout summer and winter months will be required for any application to establish the use, if any, of birds within the draft GA Concept area.
- Where piling methods are proposed as part of a project proposal, a noise and vibration assessment shall be carried out prior to any future works insofar as to avoid any potential impacts on the QI
- Future project proposals shall give regard to avoidance of siting structures within sensitive areas for SCIs, avoid installation/construction works during sensitive seasons (i.e. breeding), identify then avoid construction in resting and foraging areas, avoid large-scale continuous illuminations, minimise the use of high noise emission activities (e.g. piling or blasting), integrate noise suppression techniques when appropriate and use sound insulation on plant equipment and device design; and
- Any future project proposals arising from the draft GA Concept which has the potential to interact with the SCIs of the SPA and associated habitat shall consult with NPWS, Birdwatch Ireland and any other relevant organisations.

Operational Phase Management of Heavy Fuel Oil

Mitigation measures governing the use, including transport and delivery of HFO, at the site have been set out within the Natura Impact Statement which accompanied the consented scheme submissions (An Bord Pleanála case 319080). While such measures are considered as comprising a part of that application they also apply to the ongoing use of HFO at the Moneypoint site, with associated potential effects arising from large-scale spillage of HFO on a range of European sites, as discussed above.

The following measures are being and will continue to be implemented at the site for control of HFO.

6.3.7 Measures to Prevent an Oil Spill in Transit

Measures will be implemented during the transport of HFO to Moneypoint including that the vessels shipping the HFO will comply with the International Safety Guide for Oil Tankers and Terminals (ISGOTT 6) produced by Oil Companies International Marine Forum (OCIMF) and the International Chamber of Shipping (ICS). Furthermore, recommendations of the International Maritime Organization will be implemented, as necessary.

6.3.8 Measures to Address an Oil Spill within the Shannon Estuary

Moneypoint Generating Station is part of the Shannon Estuary Anti-Pollution Team (SEA-PT). SEA-PT has developed an Oil Spill Contingency Plan that covers the Shannon estuary from Limerick City to the mouth of the Shannon Estuary, at a notional line from Loop Head (County Clare) to Kerry Head (County Kerry).

The objectives of the plan are:

- To prevent further pollution/damage caused by the spill
- To contain and clean up a marine spill
- Cause no further damage to the marine environment or create unacceptable risk to those responding to or impacted by the incident.

More specifically, the plan will

- Mobilise appropriate personnel, equipment and other resources
- Make all necessary notification to relevant authorities and agencies
- Instigate appropriate containment, recovery and clean-up operations to control and mitigate the effects of the spill and contribute to the restoration of the environment
- Initiate, as appropriate, wildlife rescue and rehabilitation operations
- Gather evidence throughout the operation for possible legal action
- Maintain accurate records so that the cost of the response operation may be accurately assessed. The plan contains measures to be implemented in the event of an oil spill, including:
  - Discovery and notification of the appropriate personnel.
- Identification of a Tier 1, 2 or 3 incident:
  - Tier 1: a Tier 1 incident is one in which a small spill can be dealt with by personnel in the immediate vicinity and that has no external impact. Each installation / works area in the area of the plan has enough equipment to respond to a Tier 1 incident. In the event of a Tier 1 being activated, the spiller or installation personnel will respond in accordance with their local procedures and the Duty Harbour Master will monitor the response.
  - Tier 2: a Tier 2 incident is one that will require the combined resources of the organisations represented on the SEA-PT team. It will also require the involvement of regulatory bodies, local authorities, advisors and advisory bodies. In general, all spills in the Shannon Estuary, other than minor ones, will require a Tier 2 response. A Tier 2 response will require the activation of Shannon Foynes Port Company (SFPC) Incident Management Team and the SEA-PT. This will instigate notifications to the Coast Guard and Local Authorities and Tier 2 response specialists.
  - Tier 3: a Tier 3 incident is a major oil pollution event with potential for environmental, social and economic impacts that are beyond the capability of local resources. It will require local, national and probably international resources. A Tier 3 response is initiated by contacting the Coast Guard. A response at this level will be coordinated under the National Contingency Plan and within the Management of Major Emergencies Framework.
- Incident notification and response process is detailed
- Tier escalation matrix is provided
- An Incident Response and an Incident Action Plan are in place
- ESB has a supply of oil booms available, and this is also a requirement for the IE licence.

6.3.9 Measures for unloading of HFO

The following measures are in place and will continue to be implemented during HFO unloading:

- Oil unloading arm and valves on the jetty are manned at all times
- The full length of the HFO fuel line is inspected periodically (currently frequency, every 2 hours)
- Pressure and temperature is constantly checked and recorded
- Radio contact is maintained with the ship, the control room and persons involved in the procedure
- The oil sump located underneath the jetty is emptied prior to arrival of the oil ship
- Security is maintained on the jetty while unloading
- Firefighting equipment is positioned in place prior to arrival of the oil ship
- Oil spill containment equipment is located on the jetty
- Oil dry is positioned on the jetty (currently 2 tonne minimum)
- Jetty oil unloading arm area and the HFO. Tank head spaces are designated as Atmospheres Explosiibles (ATEX) Areas
- Hot work and smoking is prevented while unloading is taking place
- The pipework and valves are maintained as per oil tank and pipework technical standards.

Subject to the application of these mitigation measures it is envisaged that the risks associated with a large-scale oil spill at the site as a result of the ongoing use of HFO, would be fully mitigated.

6.4 Underwater Noise and Vibration

As set out above, in respect of the Lower River Shannon SAC and the associated QI populations of common bottlenose dolphin, projects arising from the draft GA Concept should be subject to their own project - specific AA, which should include an assessment of the potential underwater noise and vibrational effects arising upon marine mammals.

- Furthermore, projects arising from the draft GA Concept objectives and principles shall adhere to the NPWS 2014 Guidance to Manage the risk to Marine Mammals from Man-Made Sound Sources in Irish Waters and subsequent future iterations of the guidance
- Subject to the implementation of these mitigation measures it is envisaged that any likely significant underwater noise or vibrational effects upon marine mammal QI populations, including those of all SACs within the respective management units and those designated on account of seal populations within the known foraging ranges for the respective species will be fully mitigated.

6.5 Recommended Mitigation to Address In-Combination Effects

In-combination effects shall be addressed by the mitigation proposed above in the above sections. Projects and plans discussed within the in-combination assessment (Section 4.7) were assessed as incorporating their own measures, sufficient to fully mitigate any likely significant effects arising as a result of their construction or operation.

7. Requirement for Article 6(4) Assessment of Green Atlantic Concept Projects

7.1 Adverse Effect on Site Integrity

As discussed above, the draft GA draft GA Concept is inclusive of a number of objectives and principles, as discussed above, which are considered likely to give rise to development proposals within the identified Coastal Infrastructure Zone. This zone lies entirely within the Shannon Estuary to the south of the terrestrial Moneypoint site and is entirely within the boundary of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

These areas of the SAC are mapped as comprising the Annex I habitats reef [1170] or estuaries [1130] which represent QI features of the SAC, furthermore such areas are also considered to comprise areas of wetland included within the definition of the SCI feature Wetlands and Waterbirds [A999] of the River Shannon and River Fergus Estuaries SPA.

As such, and discussed above, it is considered that should future development within the Coastal Infrastructure Zone arising from the draft GA Concept objectives and principles proceed, such development would have potential to give rise to adverse effects on site integrity of both the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA through permanent loss of habitat.

Given the lack of currently available detail on the extent and nature of the development which is likely to take place within the Coastal Infrastructure Zone, it is not possible to accurately assess the potential impacts of such projects. Where such projects are proposed, project-specific AA will be required to be undertaken to demonstrate the potential for likely significant effects and then, if necessary, adverse effects upon European sites.

In the event that project specific AA cannot rule out the potential for adverse effects upon the integrity of any European sites it is envisaged that ESB will be required to demonstrate that no alternative exist and that the proposed development is necessary for imperative reasons of overriding public interest (IROPI), including those of a social or economic nature. Should it be deemed by the competent authority and European Commission that the project is representative of IROPI development, the project may be able to proceed however the development proposal will also be required to demonstrate that compensatory measures have been identified for consideration by the Irish government and subsequently the European Commission. It is envisaged that extensive consultation with NPWS would be required in formulating the compensation draft GA Concept proposed in the event that the Coastal Infrastructure Zone is to be developed.

It is further emphasised that it is not known, at this plan-level stage, whether proposed development within the Coastal Infrastructure Zone will give rise to an adverse effect on the integrity of a European site, these considerations are only possible within individual project-level assessments arising from the draft GA Concept given the lack of available detail on the extent and nature of the development proposed.

7.2 Consideration of Alternative Solutions

Where projects arising from the objectives and principles of the draft GA Concept are deemed to give rise to adverse effects upon the integrity of a European site, the competent authority must be satisfied that there are no suitable and less damaging alternative solutions.

The provisions of the draft GA Concept have fed from international, national and regional policies which have set out targets for delivery of renewable energy resources throughout the EU.

These include the National Energy and Climate Plan (NECP) 2021-2030, European Commission's Green and REPowerEU at the international level, Climate Act 2021, 2023 Climate Action Plan (CAP23), national Planning Framework and National Development Plan, at the national level.

The Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary is a marine based framework plan to guide future development and management of the Shannon Estuary. Recently the Plan was re-published with an updated term of 2023 – 2029 and it continues to form part of the statutory plan for the area.

It is understood that the SIFP is under review. The SIFP forms part of the statutory land use plan – the County Development Plan.

The SIFP sets a 30-year vision for the development of the Shannon Estuary. It seeks to support the multi-functional nature of the Shannon Estuary and identify opportunities to expand the existing economic base, including port-related industry and other related activities; while safeguarding the Estuary's sensitive environmental resources and natural heritage of national, European and International significance.

The SIFP identifies two Strategic Development Locations for the development of marine related industry in the Shannon Estuary. Moneypoint (and adjacent lands) are identified as Strategic Development Location B (SDL B). The SIFP aims to protect the strategic importance of these lands and encourage their sustainable growth, development and appropriate diversification for economic development in accordance with regional and national priorities and subject to the requirements of environmental objectives.

In relation to Moneypoint, the SIFP notes:

- Significant investment to date in maritime infrastructure i.e. the large commercial jetty which has a capacity to accommodate vessels up to 250,000 tonnes DWT and 600,000 tonnes storage capacity,
- Potential synergies for the development of marine related industry and renewable energy, with the potential to multi-use the existing infrastructure;
- The strategic importance in respect of security of energy supply;
- Limitations of the current site with expansion requiring the extension of the operational area and potential upgrade of jetty facilities.

Within the SIFP, the broader Shannon Estuary has been identified as an area of opportunity for tidal energy testing due to the presence of deep waters. Areas identified as 'Areas of Opportunity for Tidal Energy include an areas to the south-east of the Moneypoint ESB landholding.

The SIFP sets out Guiding Principles for the development of the SDL, *inter alia*:

- The location is identified for energy uses
- Alternative land use – particularly related industry on the greenfield areas compatible with the primary anticipated use may be acceptable, where they do not compromise the primary use
- The role of ESB Moneypoint is to be safeguarded ensuring that its power generation, transmission capability and distribution functions are protected, as well as those core assets required for their operations – including access to cooling water, marine waters and commercial shipping lane access
- Opportunities associated with the adjacent Area of Opportunity for Tidal Energy is recognised
- All proposals for development should provide a Concept Masterplan which includes:
  - Analysis of location features, opportunity and constraints
  - Explanation of the design, its component parts and how these are compatible and integrate with the location characteristics.
- All development proposals for marine related activity will need to be evaluated to consider combined risks and potential consequences to the environment, given its SEVESO status (subject to the Seveso III Directive 2012/18/EU).

The draft GA Concept has been strongly influenced by the final report (July 2023) of the independent Shannon Estuary Economic Taskforce, established in April 2022 to create a long-term vision for the estuarine region and to outline a practical action plan to realise it. The final report of the Taskforce (July 2023) was published in the context of:

- CAP23 commitments including the development of at least 7 GW of offshore under by 2030 – with 2 GW allocated for green hydrogen production
- The prevailing security of supply concerns

- The need to achieve significant renewable energy and decarbonisation targets; and
- The European Commission's Green Deal – which sought to accelerate the decarbonisation of the EU energy sector and ensure the Union becomes self-sufficient in energy as soon as possible.

The Taskforce Report concluded that the Shannon Estuary has an opportunity to accommodate one of the world's largest renewable energy hubs, built primarily around the harnessing of global scale offshore wind energy from the Shannon Estuary. It notes that the Estuary is - in an international context, uniquely primed to deliver this, with over 500km2 of deep sheltered water facing out into the Atlantic Ocean; proximity to some of the world's best wind resources; natural sheltered waters sufficiently deep to facilitate floating offshore wind installation at scale; and extensive land suitable for industrial development.

The Report envisages the development of an Atlantic Green Digital Corridor – starting in the Estuary and expanding along the entire Wild Atlantic Way. It identifies the potential for the creation of 50,000 high quality, green jobs through the utilisation of wind energy from the Atlantic - 10,000 of which will be delivered by 2035, by which time the Shannon Estuary Region can become carbon neutral. The document refers to the need for priority planning designation and accelerated delivery of strategic infrastructure.

In terms of energy, the draft GA Concept shows 70 GW of wind is within a 36-hour 'wet-tow' of the Estuary which also has significant potential to accommodate large areas of wet storage. The Report envisages the development of the Estuary as a major receiving node for offshore wind electricity generated off the west coast – through existing grid networks some of which will require enhancement, and the delivery of up to 30GW of Atlantic Offshore Wind through the Estuary by 2050. It sets out measures to maximise the industrial development opportunities arising from this to enhance the quality of life for the current workforce and population in the region.

As set out above, any future application for project development within the Coastal Infrastructure Zone, would be required to demonstrate at the time of submission and in light of the project-specific impacts of the development, that there remains no suitable, less damaging alternative to the project. The final determination of the outcome of such an assessment would need to be informed by the detailed information on the proposed developments impacts upon the European sites, the potential for mitigation of potential impacts and an up-to-date assessment of the potential alternatives.

In light of the above, in addition to further information set out within Section 2 of this NIS, it is considered that specific or detailed consideration of potential alternatives to projects arising from the objectives and principles of the draft GA Concept is not currently possible. However it is considered that the developments arising from the draft GA Concept (which does not specify the extent and nature of any particular development) may be sufficiently supported by adequate evidence to support that no satisfactory or less-damaging alternative solutions exist.

7.3 Imperative Reasons of Overriding Public Interest

As per Article 6(4) of the Habitats Directive, in addition to the requirement to evidence a lack of alternative solutions, there is a requirement for development giving rise to adverse effects on the integrity of European sites for the competent authority to demonstrate that the project is necessary for IROPI.

Again, while it is considered that a detailed and accurate assessment of the projects arising as a result of the adoption of the draft GA Concept is not currently possible, given the lack of detail on the extent and nature of such proposals, it is considered likely that the project-level development of the Coastal Infrastructure Zone may be supported by robust evidence for categorisation as IROPI development. This conclusion is drawn in light of the various national policies identifying the importance of the Shannon Estuary for the future of offshore renewable energy development in Ireland and the identification of Moneypoint as an important strategic location in facilitating this future development.

Where a project arising from the draft GA Concept is deemed to comprise IROPI development, it is considered that the project will be required to demonstrate that appropriate compensatory measures can be put in place to address the identified adverse effects on integrity arising from the project upon the relevant European sites.

7.4 The Identification of Compensatory Measures

Should the projects arising from the objectives and principles of the draft GA Concept seek to develop the Coastal Infrastructure Zone it is envisaged that compensatory measures will be required for the loss of Annex I QI habitats which may arise, including reef and estuary habitats.

ESB will seek to engage with the NPWS, as early as possible in the design process of projects proposed for development of the Coastal Infrastructure Zone, to inform the likely extent and nature of compensation required and to assist in the design, where possible.

Guidance published by the European Commission[45] set out the following in respect of compensation for impacts to estuaries and coastal zones:

"In instances where damaging developments are, in the absence of alternative solutions, to be allowed to proceed there will be a need for compensation measures to fully offset any loss or damage to the site. These should be precisely adapted to the type of impact predicted and should be focused on the coherence of the Natura 2000 network and the particular elements affected at site level. This requires that measures refer to the structural and functional aspects of the site integrity, the related types of habitat and species populations that are affected and the contribution of these elements to the overall coherence of the Natura 2000 network.

Compensatory measures must be feasible and operational in protecting the overall coherence of the Natura 2000 network. The estimated timescale and any maintenance action required to enhance performance should be specified as early as possible in the project. Once the compensation scheme is agreed, the permits granted and a monitoring programme in place, unforeseen uncertainties should in principle not significantly hamper the core of a plan or project. Such possible new uncertainties should, however, trigger targeted investigations and if necessary extended monitoring and adaptive or corrective measures.

'Losses' should be quantified with respect to key habitats and species: according to current knowledge and expert judgement. Compensation measures must be designed on the basis of best scientific knowledge and should accomplish the ecological functions necessary to support the affected species and habitats.

Environmental damage/ environmental benefit from compensation ratio should be assessed: there is wide acknowledgement that compensation/ damage ratios should be generally well above 1:1. Thus, compensation ratios of 1:1 or below should only be considered when it is demonstrated that such measures will be 100% effective in restoring good structure and functionality within a short period of time.

Appropriate compensation sites should be selected by considering the following: (a) Compensation within the Natura 2000 site if the necessary elements to ensure ecological coherence and network functionality exist within the site. (b) Compensation outside the Natura 2000 site if the same contribution to the ecological network is feasible. The new location can be another site designated as EC Guidance on the implementation of the EU nature legislation in estuaries and coastal zones 31 Natura 2000 or a non-designated location. In the latter case, the area has to be designated as a Natura 2000 site itself.

The compensatory measures must ensure the continuity of the ecological processes essential for maintaining the overall coherence of the Natura 2000 network. The compensation scheme should be 'effective' at the time the negative effects occur on the site concerned. Early implementation is of the essence. The application of specific mitigation measures to overcome possible interim losses may be necessary.

All necessary provisions, technical, legal or financial, necessary to implement the compensatory measures should be completed before implementation of the plan or project starts, so as to prevent any unforeseen delays that may hinder the effectiveness of the measures.

Financing, monitoring and reporting: Compensatory measures imply that a sound legal and financial basis for long-term implementation, protection, monitoring and maintenance be secured in advance."

[45] European Commission: Directorate-General for Environment, *Guidelines on the implementation of the birds and habitats directives in estuaries and coastal zones – With particular attention to port development and dredging*, Publications Office, 2012, **https://data.europa.eu/doi/10.2779/44024**

While it is not known whether compensatory measures for the loss of Annex I QI estuary and reef habitat has been proposed and implemented previously in Ireland, it is apparent that a number of schemes which have involved the delivery of compensatory wetland habitat have been delivered within the UK.

The exact extent and nature of compensation required will arise through the design phase of proposed development for within the Coastal Infrastructure Zone.

8. Summary and Conclusion

8.1 Summary

The Screening for AA determined that 30 of the draft GA Concept objectives and principles guiding development have the potential to result in likely significant effects on European sites within the Zone of Influence of the draft GA Concept. These were taken forward to AA.

The Source-Pathway-Receptor method was employed to assess whether the implementation of the draft GA Concept objectives and principles will adversely affect the integrity of the Lower Shannon SAC and River Shannon and River Fergus Estuaries SPA.

- The **Source** of are the 29 objectives and principles taken forward to AA (objective 2, objective 3 objective 4 and principles MEZ1, MEZ3, MEZ4, MEZ6, MEZ7, MEZ9, CIZ1, CIZ2, CIZ3, CIZ5, CIZ6 CIZ7, CIZ8, CIZ9, IEZ1, IEZ2, IEZ3, IEZ5, AMZ4, AMZ6, AMZ7, AMZ8, GDZ1, GDZ3, BZ1, BZ4, TAZ2, WZ2)
- The **Pathways** for effect by which implementation of the draft GA Concept objectives and principles can impact the relevant QIs of the Lower Shannon SAC and the SCIs of the River Shannon and River Fergus Estuaries SPA are through habitat loss, hydrological connectivity, aerial connectivity and functionally linked land; A range of further more distant European sites were also deemed to within the ZoI of the draft GA Concept for impacts arising through large-scale oil spill and underwater noise and vibration effects
- The **Receptors** are the QI marine habitats (Estuaries, Reefs and Perennial vegetation of stony banks) and QI species (otter, common bottlenose dolphin, sea lamprey, brook lamprey and Atlantic salmon) of the Lower Shannon SAC and all the SCIs of the River Shannon and River Fergus Estuaries SPA, in addition to a range of marine and coastal Annex I habitats, marine Annex II species and marine SCI bird populations of European sites within the ZoI for large-scale oil spill or QI marine mammal species within the marine mammal management units for marine mammals in respect of underwater noise and vibration effects (as described in Table 2).

The potential for in-combination impacts with other projects and plans have been assessed in Section 4.7.

Mitigation measures, in the form of in-design mitigation contained within the draft GA Concept and recommended mitigation measures have been provided as part of this AA report. With the implementation of mitigation recommended within this AA, there is sufficient evidence for the AA to conclude that the implementation of the draft GA Concept would not result in adverse effect on the integrity of the Lower Shannon SAC and the River Shannon and River Fergus SPA through accidental pollution events, habitat fragmentation and degradation, noise, vibration, lighting and human presence and species disturbance, underwater noise and vibration, species mortality, spread of invasive species or temporary species disturbance or displacement. This conclusion is drawn for draft GA Concept when considered either alone or in-combination with other plans or projects.

The draft GA Concept and mitigation proposed in this report is directed at a strategic high level and therefore it is considered that it will avoid adverse effects on the integrity of the two European sites, wherever possible, alone or in-combination.

The draft GA Concept is inclusive of objectives and principles for the potential development of the Coastal Infrastructure Zone, which have potential, at the project level, to give rise to the loss of QI Annex I habitats reef and estuaries of the Lower River Shannon SAC and the associated loss of wetland habitat representative of the SCI wetland and waterbirds of the River Shannon and River Fergus Estuaries SPA.

It is considered therefore that proposals for the development of the Coastal Infrastructure Zone, at the project level, have potential to give rise to adverse effects upon the integrity of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA through habitat loss. It is envisaged that such proposals would be required to demonstrate that no suitable and less damaging alternatives exist, that the development is necessary for imperative reasons of overriding public interest and that sufficient compensatory measures can be delivered to offset the loss of habitat area.

Given the nature of the Moneypoint site and its strategic value as a potential hub site for offshore renewable energy it is considered that there may be a strong and valid case that these criteria can be met in respect of the proposed development of the Coastal Infrastructure Zone. Further detailed consideration of the exact extent and nature of the project in question will be required in support of any such case for consideration by the Irish Government and the EU Commission.

8.2 Conclusions

In order for the AA to comply with the requirements of Article 6(3) the Habitats Directive, an Appropriate Assessment undertaken by the competent authority must include an examination, analysis, evaluation, findings, conclusions and a final determination. The information in this report will, along with all other submissions and observations received following public consultation, enable ESB Networks to perform its statutory function in this regard.

This AA has examined and analysed, in light of the best scientific knowledge, with respect to the relevant European sites, the sources and pathways for effect, and how these may result in adverse effects on the identified QIs and SCIs and therefore the integrity of European sites.

Mitigation measures are set out within this report to ensure that adverse effects on the integrity of European sites will be avoided wherever possible during the implementation of the draft GA Concept either alone or in combination with other plans or projects.

There remains the potential for projects arising from the draft GA Concept objectives and principles within the draft GA Concept Coastal Infrastructure Zone to give rise to adverse effects on the integrity of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA through habitat loss. In such circumstances it is considered that it will be for project level consideration as to whether such development is proposed in the absence of suitable alternatives, necessary for imperative reasons of overriding public interest and that suitable compensation measures can be delivered to offset any potential impacts. This process will be highly dependent upon the extent and nature of the proposed development at the detailed project stage.

Accordingly, in the professional opinion of the authors of this report, it is considered that potential for the draft GA Concept to give rise to likely significant effects on European sites has been addressed as far as possible through the implementation of the mitigation measures outlined in this Natura Impact Statement. Where potential for project level adverse effects upon the integrity of European Sites remain further detailed analysis and potentially Article 6(4) assessment may be required.

Appendix A

Impact Assessment of the Draft GA Concept

A.1 Impact Assessment of the Draft GA Concept

Table 5 Impact Assessment of the draft GA Concept

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
Objective 1	To ensure Moneypoint continues to support economic development and activity in the Shannon Estuary, County Clare, the broader Region and State by providing a reliable source of electricity while ensuring the site is developed and operated to the highest environmental standards, in-line with ESB's Environmental Management Systems,	The objective accounts for the provision of support and long-term planning forward for the economic development of the region whilst maintaining supply of electricity. Future development is not inferred from this objective. No potential impacts anticipated.
Objective 2	To transition the site to a new, lower carbon operating profile, moving progressively towards zero carbon generation with Moneypoint providing dispatchable electricity and energy storage to support an increasingly renewable energy sector	The objective suggests that infrastructure development with the potential of construction may occur as a result of the 'transition' of the site from a fossil fuel based electricity source to a lower carbon operating profile. To facilitate this change it is highly likely that infrastructure will require adaptation, with the potential for new development i.e. suggesting construction on site. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
Objective 3	To develop Moneypoint as a base for the offshore renewable energy sector, acting as a construction and deployment base, and a manufacturing location for zero carbon fuels	The objective suggests that infrastructure development, with ongoing construction and deployment operation for the offshore renewable energy sector will be facilitated onsite at Moneypoint. To facilitate this, it is highly likely that infrastructure will require adaptation, with the potential for new development i.e. suggesting construction on site. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
Objective 4	To develop and operate Moneypoint so it supports Ireland's ambitions to become a net exporter of zero carbon energy.	The objective suggests that infrastructure development, with construction and operation for the offshore renewable energy sector will be facilitated onsite at Moneypoint. To facilitate this, it is highly likely that infrastructure will require adaptation, with the potential for new development i.e. suggesting construction on site. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
MEZ1	ESB will develop these lands for activities relating to marine energy and associated industrial activity. While the primary focus will be on development associated with the construction and operation of the Moneypoint Hub – a strategic base for ORE; such developments may include large-scale energy users that require a location adjacent to estuarine/deep water; have a dependency on marine transport, transhipment, bulk cargo; or where the industrial processes benefit from a location adjacent to the marine area and/or proximity to a major energy generation hub. Development will be phased based on the availability of land, as existing uses e.g. FGD landfill area is remediated. Typical uses will include:	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
	• facilities utilising renewable energy in the production of alternative zero-carbon fuels such as hydrogen, ammonia, etc. • construction yard – area for the fabrication and assembly of renewable energy technology infrastructure including fixed and floating foundations, etc. • turbine laydown - storage of turbine elements (blades, nacelle, tower, mooring lines / anchors etc); • turbine assembly and integration – quayside area for the assembly of turbines and their integration on to floating platforms; • ancillary laydown areas and compounds. It is noted that proposals for that facility will incorporate sufficient flexibility in design to future proof the site and ensure it remains a viable base for long-term operations, allowing for increased scale of deployed units etc. The ramp area near the jetty has been identified as vulnerable to coastal inundation. Land uses in this area will be demonstrably 'water compatible' in-line with the relevant Guidelines. Ancillary development may include: • supporting infrastructure – including control buildings, materials handling infrastructure such as concrete batching plant etc • operation and maintenance (O & M) functions for the ORE industry • grid support services e.g. BESS units • substation compound to facilitate offshore grid connection • generation facilities – such as those used for emergency generation • areas of external electrical plant (small scale), • storage facilities (open air or enclosed), • lay down areas, car parking etc, and • ancillary industrial activities.	
MEZ2	All development proposals will have regard to the prevailing land use zoning of the site, and the visual and ecological sensitivity of the adjoining coastline, noting the proximity to a European site. As such, any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives of the adjoining Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA.	The purpose of this objective is to account for the sites sensitivities, it does not strictly suggest development, or when it may occur. Therefore no potential impacts anticipated.
MEZ3	ESB, and third parties including EirGrid, may develop infrastructure e.g. underground export cables, onshore substation, serving ORE developments such as those ESB propose to develop, in this zone.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
MEZ4	ESB will remediate brownfield lands, including the FGD landfill, in line with environmental licensing requirements and planning consents.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
MEZ5	ESB will manage the existing FGD landfill in accordance with the appropriate licences and consents. ESB will investigate the feasibility of developing this area, in scenarios where the landfilled FGD is removed, and where it is not.	The purpose of this objective is to give regard to how the land-use zones within the Moneypoint site will adhere to legislation, licences and consents. No potential impacts anticipated
MEZ6	In-line with the promotion of the circular economy, ESB will seek to realise the commercial value of landfilled FGD located to the east of the station. If feasible this will necessitate the excavation of the material and its export from the site for use or disposal, off-site, subject to consent. Such works would be carried out in-line with Waste Management Regulations.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
MEZ7	Where FGD area exceeds capacity, alternative disposal capacity for FGD waste will be sought in favour of developing Landfill Area B to the west of the existing station.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
MEZ8	Electrical infrastructure will not be located in proximity of the existing wind turbines and the met mast. All other development at these locations will be assessed having regard to the risk of conflicts arising.	The purpose of this objective is to outline parameters relating to the placement of electrical infrastructure. No construction is suggested. No potential impacts anticipated.
MEZ9	ESB will consider the removal or relocation of wind turbines and / or the met mast as necessary, where this would facilitate the broader scale development of the Moneypoint site for purposes associated with marine energy.	This objective outlines the potential for construction in the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in construction. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
CIZ1	ESB will seek to develop and enhance coastal infrastructure at the Moneypoint site to facilitate its development as a hub for the ORE industry. It is expected that new infrastructure will be required for the delivery of turbine elements, deployment of substructures, assembly of turbines and limited storage, at the quayside. This may require the removal of the existing jetty and the development of new quayside infrastructure including infilling / land reclamation; and / or the repurposing of the existing jetty and barge landing facility for alternative uses.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
CIZ2	All development proposals will be developed having regard to the prevailing land use zoning of the wider site, the over-arching requirement to develop facilities to support the development of at-scale ORE development and the ecological sensitivity of the adjoining Shannon Estuary. Proposals will incorporate sufficient flexibility in design to future proof the site and ensure it remains a viable base for long-term operations. Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives of the adjoining Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA, or that circumstances prevail whereupon consent can be granted having regard to broader considerations.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
CIZ3	ESB will work with other developers and operators in the Shannon Estuary, and wider coastal area, to develop additional support infrastructure including wet storage facilities, to meet the needs of the emerging ORE industry. The design and siting of any development in this zone will take cognisance of the visual and ecological sensitivity of the adjoining coastline, which includes the Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA.	Whilst this objective is objective is regarding the collaboration with Shannon Estuary operators the text of 'to develop additional support infrastructure' suggests construction activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
CIZ4	All works will be planned and carried out having regard to the requirements to avoid impacts on the 220kV and 400kV underground cables (UGCs) – with planned re-routing of such services where required.	This objective pertains to electrical supply requirements rather than any construction or operation. No potential impacts anticipated.
CIZ5	Electrical infrastructure will not be located in proximity of the existing wind turbines located in the adjacent Marine Energy Zone. All other development at these locations will be assessed having regard to the risk of impacts arising.	In this objective, the potential for construction is inferred through the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in construction. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
CIZ6	ESB will consider the removal or relocation of the wind turbine where such a proposal would facilitate the broader scale development of the site for purposes associated with marine energy.	In this objective, the potential for construction is inferred through the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in construction. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
CIZ7	All developments within the maritime area will be assessed to identify - and where possible, mitigate against, impacts on marine archaeology.	This objective pertains to assessment criteria rather than construction or operation. As a result no potential impacts anticipated.
CIZ8	ESB may develop infrastructure serving the ORE developments e.g. underground export cables, substations, in this zone.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
CIZ9	Having regard to broader proposals for the development of additional undersea cables, international interconnectors and two-way gas pipelines within the Shannon Estuary, it is acknowledged that this zone may be developed to accommodate such strategic infrastructure.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
IEZ1	ESB will continue to operate the existing Moneypoint generating station in-line with all consents and licences, supporting the energy security of the Region and the State.	This objective pertains to the current operation and the ESB's commitment to generating in line with all consents and licences. No future construction is anticipated. No potential impacts anticipated.
IEZ2	ESB will develop these lands for activities relating to energy generation and associated industrial activity. Given the strategic importance of Moneypoint as a generation asset, the development of this zone will be phased and Moneypoint 'repowered' with the introduction of energy storage, development of new generation capacity and the introduction of new thermal technologies, to ensure the site continues to support energy security.	This objective suggests phased development which generates the potential for cumulative impacts over time. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
	Ancillary developments in the area may include: • supporting infrastructure – including control buildings, materials handling infrastructure such as concrete batching plant etc • energy and fuel storage, • grid support services, • substation compound and areas of external electrical plant • small scale, temporary generation facilities – such as those used for emergency generation • storage facilities (open air or enclosed), • lay down areas, car parking etc. and • ancillary industrial activities. The ramp area near the jetty has been identified as vulnerable to coastal inundation. Land uses in this area will be demonstrably 'water compatible' in-line with the relevant Guidelines.	
IEZ3	ESB will manage and develop this zone to accommodate large-scale electricity generation and all associated above and below ground infrastructure. It is envisaged that, over time, these operations will transition the site to a low- and zero carbon operating profile, in-line with the strategic objectives of ESB.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
IEZ4	ESB will examine the feasibility of repurposing all, or part of, the existing generating station, where such proposals align with ESB's corporate commitments to decarbonise electricity generation activities, in support of national and international targets.	This objective pertains to feasibility studies and proposals. It is not anticipated that construction will be likely as a result of this objective. No potential impacts anticipated.
IEZ5	ESB will seek the wholesale replacement of structures on this site to facilitate the introduction of increasingly lower carbon technology, transitioning over time to alternative low and zero carbon fuels, such as green hydrogen and ammonia, and ensuring Moneypoint continues to operate as a strategic asset in Ireland's energy system.	This objective relates to construction elements regarding the replacement of structures which includes removal and installation with potential for impacts. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
IEZ6	All development proposals will be developed having regard to the prevailing land use zoning of the site, and the visual and ecological sensitivity of the adjoining coastline. Any development in this area will be required to demonstrate that it does not negatively impact on the conservation objectives of the adjoining Lower River Shannon SAC (site code 0002165) and River Shannon and River Fergus Estuaries SPA.	This objective outlines the ESBs position on giving regard to planning policy and ecological sensitivities. No construction is inferred. No potential impacts anticipated.
IEZ7	All works will be planned and carried out having regard to the requirements to avoid impacts on the 220kV and 400kV UGCs and extensive water and drainage networks – with planned re-routing of such services where required.	This objective pertains to electrical supply requirements rather than any construction or operation. No potential impacts anticipated.
AMZ1	ESB will manage this zone in accordance with the appropriate licences and consents.	This objective pertains to ESB's position in managing the AMZ1 in line with the licences and consenting process. Considering that environmental assessments are required under the management of such zones, no potential impacts are anticipated.

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
AMZ2	ESB will continue to utilise the ASA for the storage of ash and/or FGD, seeking revised consents and licences, as required.	This objective sets forward the intention for the ESB to continue their current use of the Ash Management Zone in line with their current consents and licenses, which are in themselves subject to environmental assessment prior to their granting. No potential impacts anticipated.
AMZ3	Where material remains in situ, the existing ASA will be managed, capped, and ultimately decommissioned in-line with the requirements of the Decommissioning Management Plan (DMP) and Closure, Restoration and Aftercare Management Plan (CRAMP).	This objective sets forward the intention for the ESB to continue their current use of the Ash Management Zone in line with their current consents and licenses. The DMP and CRAMP requirements include an environmental assessment which would capture the potential for likely significant effects at project level stage. No potential impacts anticipated.
AMZ4	Where landfilled material is removed, or the site otherwise engineered to accommodate new development, ESB may develop this area to accommodate development ancillary to the primary activities of the main site, such as: • generation activity • supporting services and infrastructure – including control buildings, modules etc, • areas of external electrical plant, • storage facilities (open air or enclosed), • lay down areas, car parking etc.	This objective relates to construction elements regarding the replacement of structures which includes removal and installation with potential for impacts. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
AMZ5	Any new development within this zone will be subject of robust environmental assessment to confirm that it does not impact on the on-going management of the capped landfill. Specifically, a detailed Hydrogeological Risk Assessment will be prepared and a construction methodology submitted to the EPA for approval, in advance of works being permitted or commenced.	This objective sets forward the intention for the ESB to conduct environmental assessment for any future developments and to seek to avoid any impacts on the capped landfill. No potential impacts are anticipated from this objective.
AMZ6	ESB will seek to realise the re-use of the landfilled material at the ASA and to remediate this part of the site rendering it suitable for new development. If feasible, this will necessitate the excavation of the material and its export from the site for use or disposal, off-site, subject to consent. Such works would be carried out in-line with Waste Management Regulations.	For this objective, the reuse of any landfilled material shall be subject to licensing and consenting procedures which would include consideration of environmental and ecological factors. The potential for any likely significant effects shall be captured at project level stage. No potential impacts anticipated arising from this objective.
AMZ7	Where new development is located on the ASA lands, the scale of new development will be appropriate to the location and setting. The transition between any new development and adjoining agricultural areas; will be managed and the sensitivity of views from the N67 and the coast considered in project design. Screen planting will be incorporated into development proposals, as appropriate.	This objective pertains to considerations that will be made during project level stage. The consideration of appropriate design of new development that considers the landscape and visual aspects is key to the objective. No potential impacts anticipated.
AMZ8	Electrical infrastructure will not be located in proximity of the existing wind turbine. All other development at these locations will be assessed having regard to the risk of impacts arising.	In this objective, the potential for construction is inferred through the removal or relocation of infrastructure. Due to ambiguity of wording, the outcome of this principle could result in construction. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
AMZ9	ESB will consider the removal or relocation of the wind turbine where such a proposal would facilitate the broader scale development of the site for purposes associated with marine energy	In this objective, the potential for decommissioning and construction is inferred through the removal of infrastructure, and potential new projects. Due to ambiguity of wording, the outcome of this principle could result in construction. As it is difficult to establish how much construction will be required through the wording of this

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
		objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
GDZ1	These lands lie outside the engineered ASA. ESB may develop these to accommodate relatively small-scale development ancillary to the primary activities of the main site, such as: supporting services and infrastructure – including control buildings, modules etc, • areas of external electrical plant, • storage facilities (open air or enclosed), • lay down areas, car parking etc.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
GDZ2	The scale of any new development will be appropriate to the location and setting. The transition between any new development and adjoining agricultural areas; will be managed and the sensitivity of views from the N67 considered in project design. Screen planting will be incorporated into development proposals, as appropriate.	This objective pertains to considerations that will be made during project level stage. The consideration of appropriate design of new development that considers the landscape and visual aspects is key to the objective. No potential impacts anticipated. .
GDZ3	ESB may develop infrastructure e.g. underground cables, substations, serving the ORE developments in this zone.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
BZ1	These lands will accommodate small-scale, low-level development to ensure they do not have a disproportionate visual impact on adjoining agricultural lands and the adjoining coastal zone.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
BZ2	New development within the buffer zone around the ASA will be sited having regard to the ecological value of the dense oak-dominated immature woodland located to the north of the ASA. The coastal side of the buffer area (and adjacent section of the N67) has been identified as being potentially vulnerable to coastal inundation. Land uses in this area will be demonstrably 'less vulnerable' or 'water compatible' in-line with the relevant Guidelines.	The purpose of this objective is to account for the sites sensitivities, it does not strictly suggest development, or when it may occur. Therefore no potential impacts anticipated.
BZ3	The protected earthwork to the north of the ASA will be protected in situ. Development will generally not be located within 30m of that feature. A suitably qualified archaeologist will be engaged to assess the impact of any works in this area on that monument. It is understood that it may be permissible to install underground services e.g. cables, in this area where it can be demonstrated that there works will have no direct impact on the monument.	This objective outlines protective measures towards features on-site. It does not pertain to construction, rather preventative measures to ensure no impacts in the future. No potential impacts anticipated.
BZ4	ESB may develop infrastructure serving ORE developments - e.g. underground export cables, substations, in this zone.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all

Objective/ Principle	Principles Guiding Development	Rationale for Impact Assessment
		potential impacts as a result of construction must be considered.
TAZ1	ESB recognises the importance of Moneypoint as a strategic node in the transmission network. These lands will be maintained to enhance transmission infrastructure.	Within this objective, there is no new development proposed within this principle . New development is proposed in principle TAZ2. No potential impacts anticipated.
TAZ2	ESB may develop infrastructure e.g. underground export cable, substation, serving the ORE developments such as Moneypoint 1 and 2 Offshore Wind, in this zone.	It is highly likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.
SZ1	This site accommodates existing and proposed strategic cables. The route of these cables will be maintained, as required.	This objective pertains to maintenance of existing infrastructure. No new construction is suggested. No potential impacts anticipated.
SZ2	Existing berms provide screening between the coal storage area and adjoining agricultural lands – noting the significant change in levels due to the excavations undertaken to create the coal storage area. These will be retained and incorporated into future layouts to manage interactions between the site and adjoining land users.	This objective pertains to existing structure and relevance to landscape and visual impacts. No potential impacts anticipated.
WZ1	The protected mature woodland will be maintained free from development to ensure it is retained as a visual and ecological asset on the site.	The purpose of this objective is to account for the sites sensitivities, it does not strictly suggest development, or when it may occur. Therefore no potential impacts anticipated.
WZ2	The remaining lands immediately south of the N67 may accommodate small scale development, where they demonstrably do not impact on the ecological integrity of the woodland or the visual amenity of the N67.	It is likely that the objective will result in construction and operation activities. As it is difficult to establish how much construction will be required through the wording of this objective, on a precautionary basis, all potential impacts as a result of construction must be considered.

A.2 Identified Impacts of the draft GA Concept

Table 6 Potential impacts identified per principle as a result of the implementation of the draft GA Concept in the absence of mitigation.

Objectives or Principles	Accidental Pollution	Habitat fragmentation or degradation	Habitat loss	Aerial noise, vibration, light and human presence related habitat and species disturbance	Underwater Noise and Vibration	Surface water run off/dust carrying suspended silt or contaminants to the marine environment	Temporary species disturbance/ displacement	Spread of Invasive Species	Species Mortality
Objective 1									
Objective 2	X	X	X	X	X	X	X	X	
Objective 3	X	X	X	X	X	X	X	X	

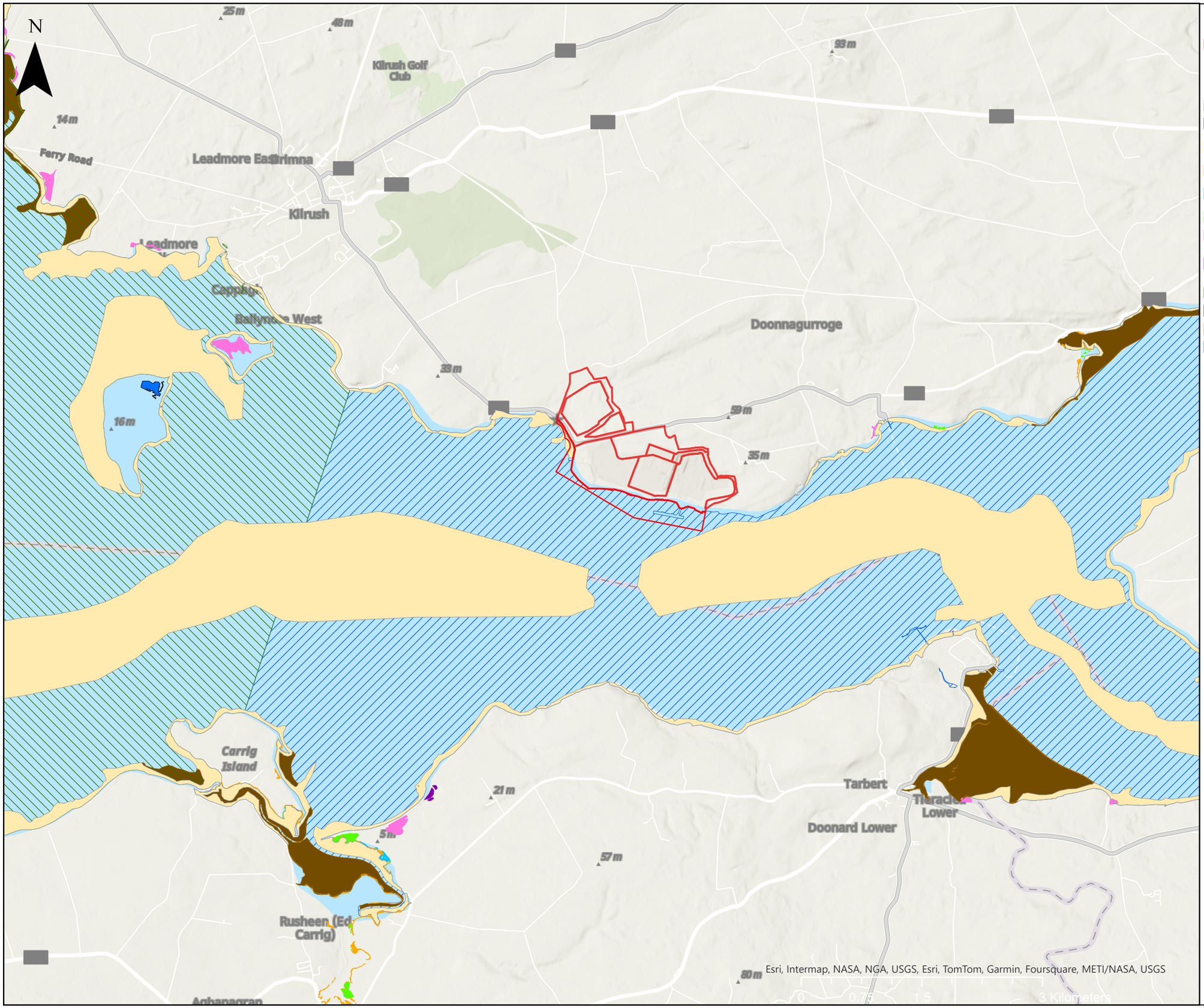
Objectives or Principles	Accidental Pollution	Habitat fragmentation or degradation	Habitat loss	Aerial noise, vibration, light and human presence related habitat and species disturbance	Underwater Noise and Vibration	Surface water run off/dust carrying suspended silt or contaminants to the marine environment	Temporary species disturbance/ displacement	Spread of Invasive Species	Species Mortality
Objective 4	X	X	X	X	X	X	X	X	
MEZ1	X	X	X	X	X	X	X	X	X
MEZ2									
MEZ3	X	X	X	X	X	X	X	X	X
MEZ4				X	X	X	X	X	
MEZ5									
MEZ6				X	X	X	X	X	
MEZ7						X		X	
MEZ8									
MEZ9				X	X	X	X	X	
CIZ1	X	X	X	X	X	X	X	X	X
CIZ2	X	X	X	X	X	X	X	X	X
CIZ3	X	X	X	X	X	X	X	X	X
CIZ4									
CIZ5									
CIZ6									
CIZ7									
CIZ8	X	X	X	X	X	X	X	X	X
CIZ9									
IEZ1									
IEZ2	X	X	X	X	X	X	X	X	X
IEZ3	X	X	X	X	X	X	X	X	X
IEZ4									
IEZ5	X	X	X	X	X	X	X	X	X
IEZ6									
IEZ7									
AMZ1									
AMZ2									

Objectives or Principles	Accidental Pollution	Habitat fragmentation or degradation	Habitat loss	Aerial noise, vibration, light and human presence related habitat and species disturbance	Underwater Noise and Vibration	Surface water run off/dust carrying suspended silt or contaminants to the marine environment	Temporary species disturbance/ displacement	Spread of Invasive Species	Species Mortality
AMZ3									
AMZ4									
AMZ5	X			X	X	X	X	X	
AMZ6									
AMZ7									
GDZ1		X	X	X	X	X	X	X	
GDZ2									
GDZ3	X	X	X	X	X	X	X	X	
BZ1	X	X	X	X	X	X	X	X	
BZ2									
BZ3									
BZ4	X	X	X	X	X	X	X	X	
TAZ1									
TAZ2	X	X	X	X	X	X	X	X	
SZ1	X	X	X	X	X	X	X	X	
SZ2									
WZ1									
WZ2									

Appendix B

Maps

B.1 Qualifying Interest Habitat of the Lower Shannon SAC



A3

31/10/2024 13:08

- Moneypoint Strategy Zones
- 1220 Perennial vegetation of stony banks
- 1230 Sea cliffs
- 1170 Reefs
- 1310 Salicornia mud
- 1310 / 1330, Salicornia mud / Atlantic salt meadows
- 1330 Atlantic salt meadows
- 1330 / 1410, Atlantic salt meadows / Mediterranean salt meadows
- 1410 Mediterranean salt meadows
- Potential 1330 Potential Atlantic salt meadows
- Potential 1330 / Potential 1410, Potential Atlantic salt meadows / Potential Mediterranean salt meadows
- 1160 Large shallow inlets and bays
- 1150 Lagoons*
- 1140 Tidal mudflats
- 1130 Estuaries

Coordinate System:

Irish Transverse Mercator

0 0.75 1.5 Kilometers

Rev	Date	By	Chkd	Appd	Authd
01	01/05/2024	HS	DM	DM	SW

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Dublin
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ESB

Project Name

Green Atlantic @ Moneypoint Concept document

Drawing Title

Annex I Habitats of the Lower River Shannon SAC

Scale at A3

1:45,000

Role

FOR INFORMATION

Suitability

FOR INFORMATION

Project Number	Rev
298122-00	**01**

Drawing Number

01

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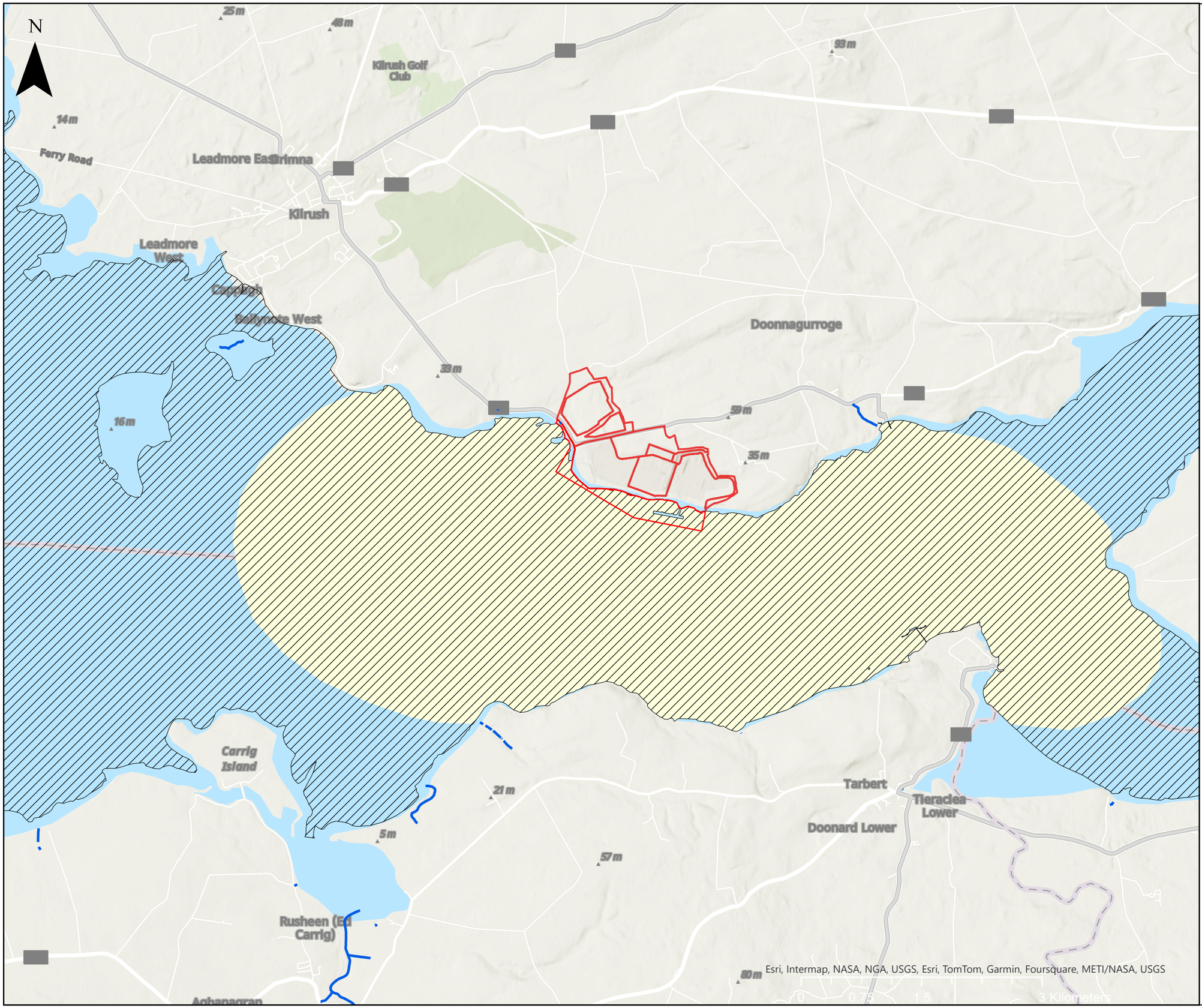
B.2 Qualifying Interest Species Supporting Habitat of Lower Shannon SAC



Legend

- Moneypoint Strategy Zones
- 1349 Bottlenose Dolphin Critical Habitat
- 1349 Bottlenose Dolphin Suitable Habitat
- 1355 Otter Freshwater Habitat Length

A3

31/10/2024 12:42

Coordinate System:

Irish Transverse Mercator

0 0.75 1.5 Kilometers

Rev	Date	By	Chkd	Appd	Authd
01	01/05/2024	HS	DM	DM	SW

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Concept document

Drawing Title

Qualifying Interest Species
Supporting Habitat
Lower Shannon SAC

Scale at A3

1:45,000

Role

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Suitability

FOR INFORMATION

Project Number: **298122-00**

Rev: **01**

Drawing Number

01

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