



Step 3 Emerging Best Performing Options

Powering Up Offshore South Coast

November 2024

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Step 3 Emerging Best Performing Options

Powering Up Offshore South Coast

November 2024

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Glossary of Terms and Acronyms

Glossary of Terms

Term	Definition
Adit	A horizontal or nearly horizontal passage to an underground mine.
Air Insulated Switchgear (AIS) substation	An AIS substation uses air as the main insulation for the exposed electrical conductors.
Applicant	EirGrid plc.
Area of Focus	The term used to describe the area/ zone that EirGrid is focussing on for the current / next Step in the EirGrid Framework for Grid Development.
Circuit	A route through which an electric current can pass. The circuit can be either an Overhead Line (OHL) or an Underground Cable (UGC) or a combination of both.
Communication Chamber	Communication chambers for fibre optics communications installed at joint bays along the cable route to meet the requirements of standard telecommunication cable drum lengths or as required to limit fibre cable pulling forces.
Community and Stakeholder Liaison Manager	The role of the Community and Stakeholder Liaison Manager is to coordinate and lead the extensive stakeholder and community consultation processes for all aspects of the project, both onshore and offshore, throughout its life cycle.
Community Liaison Officer (CLO)	The CLO actively engages with community groups and individuals with an interest in the project. Engagement focuses on communities in the vicinity of the Potential Onshore Infrastructure Zone and the Potential Offshore Infrastructure Zone. This engagement is primarily focused on those groups and individuals that are not involved in the fishing industry.
Competent Authority	The authority charged with undertaking an Environmental Impact Assessment and Appropriate Assessment with a view to issuing a consent.
Construction Compound	A temporary facility to be used during the construction phase for the storage of materials and equipment and the siting of welfare facilities.
Construction Phase	The period covering the construction of the proposed development, including enabling works, access, installation of equipment, commissioning, and testing.
Decommissioning Phase	The period when the proposed development comes to the end of its operational life and is decommissioned / dismantled.
Direct Connection	A direct connection via a radial circuit (tail-fed) from a new EirGrid OCC into an existing or new national electricity transmission system substation.
Electricity Supply Board Networks (ESBN)	ESBN is the onshore Transmission Asset Owner (TAO) for assets associated with the existing potential connection points, i.e. existing substations.
Environmental Impact Assessment Report (EIAR)	A report prepared by The Applicant to describe the likely significant effects of a project and submitted to the Competent Authority with the planning application.
ESBN Substation	An onshore ESBN AIS or GIS substation for the connection of the EirGrid Infrastructure into the ESBN onshore transmission system.
European Sites	Sites, both onshore and offshore, which are designated for conservation and protection under the EU Habitats Directive.
Framework for Grid Development (FGD)	EirGrid follows a six-step approach when developing and implementing the best performing solution option to any identified transmission

Term	Definition
	network need. This six-step approach is described in the document 'Have Your Say'.
Fisheries Liaison Officer (FLO)	The FLO role is to ensure that the views and needs of fishing communities in relation to any EirGrid projects involving the sea and marine is heard, considered, and factored into our decision making. Assisting with the establishment and maintenance of effective communications between the offshore projects and the seafood/marine representatives and fishing communities. Supporting the implementation of agreed actions.
Gas Insulated Switchgear (GIS) substation	As opposed to an AIS substation, the insulating medium for the switchgear equipment associated with GIS substations is gas.
Grid Connection Zone	Potential area where onshore grid connection infrastructure may be developed.
Horizontal Directional Drilling (HDD)	A trenchless crossing technique whereby a hole would be drilled out to a predetermined position to allow a duct to be pulled through
Joint Bays	Joint Bays are required to be installed along an Onshore Cable Route to join consecutive lengths of cable and to facilitate cable pulling. These are underground chambers which are used as the location to pull the various lengths of Onshore Cable through pre-installed ducts, and to connect ("Joint") together those lengths of Onshore Cable into a single overall circuit.
Landfall Zone	Potential area along the coast in which the offshore cables may land and join with the onshore cables in a Transition Joint Bay.
Line Cable Interface Mast (LCIM)	A structural steel overhead line tower which is sited to transition an overhead line to that of an underground cable.
Link Boxes	Underground chambers next to the Onshore Cable trench/ Joint Bays housing electrical earthing links associated with the cable.
Loop-in Connection	The creation of a new grid connection by connecting into an existing circuit. The circuit will be diverted into new bays in the new grid connection substation and therefore splitting the existing circuit at the new grid connection substation.
Maritime Area	As detailed in the Maritime Planning Act 2021, the maritime area extends from the high water of ordinary or medium tides of the sea to the outer limit of the continental shelf, and includes (a) the sea and tidal areas of internal waters of the State as construed in accordance with the Act of 2021, (b) the territorial seas of the State as construed in accordance with the Act of 2021, (c) the exclusive economic zone as construed in accordance with the Act of 2021, and (d) the continental shelf.
Maritime Area Consent (MAC)	A Maritime Area Consent (MAC) is the right to occupy a part of the maritime area, conditional on securing other necessary approvals. A MAC may be granted following assessment of the applicant and the proposed project, and only MAC holders can apply for development (planning) permission in the maritime area.
Maritime Area Regulatory Authority (MARA)	The Maritime Area Regulatory Authority (MARA) are the relevant authority with responsibility for the new consenting regime for the maritime area, including consideration, granting, revoking or suspending of MACs, granting marine usage licences, and administering existing foreshore consents.
Maritime Usage Licence (MUL)	A MUL is required for certain activities in the maritime area, including depositing of any substance or object on or in the sea or seabed, removal of any substance or object from the sea or seabed, marine environmental surveys for the purposes of scientific discovery and site investigations
Natura Impact Statement (NIS)	A report prepared to inform an Appropriate Assessment (AA), by the competent authority, of whether a plan or project will have adverse effects on European sites as required under the EU Habitats Directive.

Term	Definition
Offshore Array Cables	Submarine power cables which link the wind turbines and deliver the power generated by them to the Offshore Substation(s).
Offshore Substation (OSS)	Offshore EirGrid Substation platform that will connect to the Offshore Transmission Cable(s) and the Offshore Array Cables.
Offshore Transmission Cable	The submarine cables which would bring electricity from the offshore substation(s) to the Transition Joint Bay.
Onshore Cable	The underground cable on land which would bring electricity from the transition joint bay to the grid connection zone / connection point.
Onshore Compensation Compound (OCC)	An onshore EirGrid OCC Substation for offshore wind assets, used to balance the reactive power and reduce losses onshore i.e. not a meshed transmission substation.
Overhead Line (OHL)	An overhead line is an electrical circuit that is used to transmit electricity and is typically suspended on either wooden pole-sets or steel lattice structures (towers).
Permanent private access tracks	Permanent private access tracks to off-road Joint Bays/ Transition Joint Bay will likely be required. Such tracks are typically compacted. The intensity of use of these tracks will be minimal as they are required for maintenance access only during the operational phase.
Point of Connection	Point to which the proposed development will connect to the existing electricity grid.
Potential Infrastructure Zones	Potential areas where the proposed infrastructure may be developed.
Powering Up Offshore South Coast - Update Report	Update report detailing work undertaking in line with the Framework for Grid Development.
Settlement	<p>Population classifications, as set out by the Central Statistics Office (CSO):</p> <ul style="list-style-type: none"> ● Small Towns: Population of less than or equal to 1,000 ● Medium Towns: Population of 1,001 - 9,999 ● Large Towns: Population of 10,000 - 30,000 <p>For the purpose of this report, settlements are as identified in open-source mapping data for 'Census towns'.</p>
Substation	Substations (onshore and offshore) are secure compounds which contain electrical apparatus to allow electricity voltage to be transformed - either up or down, allowing the safe and effective transmission and distribution of electricity onto and across the electricity grid
The Project	The proposed development and all development/ works that are functionally dependant on the proposed development.
The Proposed Development	The subject of the future planning application.
Transition Joint Bay (TJB)	Underground structures at the landfall where the Offshore Transmission Cable and the onshore cable will join
Transmission Asset Owner (TAO)	ESB is the Transmission Asset Owner (TAO). This describes ownership of the existing grid infrastructure, and also the proposed on land infrastructure from the EirGrid OCC Substation (but not including the EirGrid OCC Substation) to the grid connection
Trenchless Crossing	A method of cable installation, such as Horizontal Directional Drilling (HDD) for example, where a cable is drilled beneath a feature without the need for trenching.
Underground Cable (UGC)	An underground cable on land through which an electric current can pass.

Glossary of Acronyms

Acronym	Term
AA	Appropriate Assessment
AAP	Area / feature of archaeological potential
ABP	An Bord Pleanála
AC	Alternating Current
ACA	Architectural Conservation Area
AEZ	Archaeological Exclusion Zone
AIS	Air Insulated Switchgear
BPO	Best Performing Option
CAP	Climate Action Plan
CDP	County Development Plan
CLO	Community Liaison Officer
COMAH	Control of Major Accident Hazards
CCC	Cork County Council
cSAC	candidate Special Area of Conservation
CSO	Central Statistics Office
DC	Direct Current
DMAP	Designated Marine Area Plan
EBPO	Emerging Best Performing Option
EC	European Commission
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMF	Electromagnetic Field
EPA	Environmental Protection Agency
EPS	European Protected Species
ESB	Electricity Supply Board
ESBN	ESB Networks
EU	European Union
FGD	Framework for Grid Development
FLO	Fisheries Liaison Officer
GHG	Greenhouse gas
GIS	Gas Insulated Switchgear
GNI	Gas Networks Ireland
GSI	Geological Survey Ireland
GW	Gigawatt
GWTE	Groundwater dependent ecosystems
Ha	Hectares
HDD	Horizontal Directional Drilling
HV	High Voltage
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
HVL	High Value Landscape

Acronym	Term
IAA	Irish Aviation Authority
IEEZ	Irish Exclusive Economic Zone
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
IPCC	Intergovernmental Panel on Climate Change
KCC	Kilkenny County Council
km	Kilometre
kph	Kilometre per hour
kV	Kilovolt
LAP	Local Area Plan
LCA	Landscape Character Area
LCIM	Line Cable Interface Mast
Lg	Locally Important Aquifer– Sand and gravel
LI	Locally Important aquifer– bedrock which is moderately productive only in local zones
Lk	Locally important aquifer – Karstified to a limited degree or area
Lm	Bedrock which is generally moderately productive
m	Metre
m/s	Metres per second
MARA	Maritime Area Regulatory Authority
MCA	Multi-Criteria Analysis
mm/s	Millimetres per second
MU	Management Unit
MUL	Maritime Usage Licence
MW	Mega Watts
NHA	Natural Heritage Area
NIAH	National Inventory of Architectural Heritage
NIS	Natura Impact Statement
nm	Nautical Mile
NMPF	National Marine Planning Framework
NPS	National Policy Objective
NPWS	National Parks and Wildlife Service
OHL	Overhead Line
OPW	Office of Public Works
ORE	Offshore Renewable Energy
ORESS	Offshore Renewable Electricity Support
OSS	Offshore Substation
OWF	Offshore Wind Farm
pNHAs	proposed Natural Heritage Areas
pSAC	Potential Special Area of Conservation
pSPA	Potential Special Protection Area
QI	Qualifying Interest
ROV	Remotely Operated Vehicles
Rkd	Regionally Important Aquifer–Karstified (diffuse)
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
SAC	Special Area of Conservation

Acronym	Term
SAR	Search and Rescue
SCA	Seascape Character Assessment
SCI	Special Conservation Interest
SCI	Sites of Community Importance
SLIA	Seascape / Landscape Impact Assessment
SMR	Sites and Monuments Records
SPA	Special Protection Area
S-P-R	Source-Pathway-Receptor
TAO	Transmission Asset Owner
TII	Transport Infrastructure Ireland
TJB	Transition Joint Bay
TSO	Transmission System Operator
UCC	University College Cork
UGC	Underground Cable
UK	United Kingdom
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
WCC	Wexford County Council
WCCC	Waterford City and County Council
WFD	Water Framework Directive
WCC	Wexford County Council
WT	Wind Turbine
ZoI	Zone of Influence
µg/m ³	Microgram per cubic meter

1 Introduction

1.1 Who is EirGrid?

EirGrid plc (EirGrid) is the state-owned independent Transmission System Operator (TSO) responsible for a safe, secure and reliable supply of electricity now and in the future.

EirGrid develops, manages and operates Ireland's national high voltage electricity grid (also called the "Transmission System"). This brings power from where it is generated to where it is needed, throughout Ireland. EirGrid uses the grid to supply power to industry and businesses that use large amounts of electricity. The grid also powers the distribution network owned by the Transmission Asset Owner (TAO) ESBN. This supplies the electricity used every day in homes, businesses, schools, hospitals, and farms. The European Communities (Internal Market in Electricity) Regulations 2000 (SI 445 of 2000) sets out the role and responsibilities of the TSO; in particular, Article 8(1) (a) gives EirGrid, as TSO, the exclusive function:

"To operate and ensure the maintenance of and, if necessary, develop a safe, secure, reliable, economical, and efficient electricity transmission system, and to explore and develop opportunities for interconnection of its system with other systems, in all cases with a view to ensuring that all reasonable demands for electricity are met having due regard for the environment."

EirGrid brings power from where it is generated to where it is needed throughout Ireland. EirGrid is also leading the secure transition of the electricity grid to a sustainable low-carbon future.

While EirGrid is not responsible for generating electricity or building windfarms, EirGrid is responsible for connecting electricity generation infrastructure, such as offshore and onshore windfarms, into our national electricity transmission system.

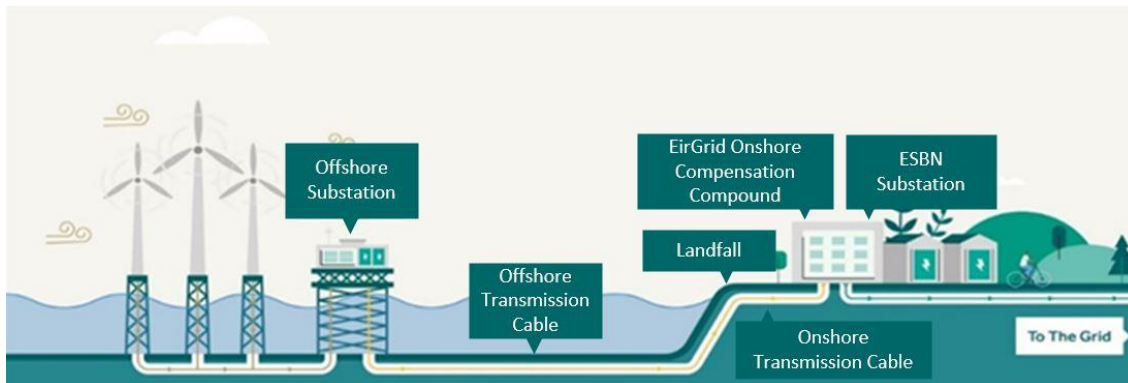
As set out in the [Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System](#) (Department of the Environment, Climate and Communications, DECC, 2021)¹, the Government (of Ireland) has designated EirGrid, under its license as TSO as the offshore asset owner and system operator of Ireland's offshore electricity transmission system.

EirGrid will own, operate and maintain, offshore transmission assets, whether constructed by Developers or by EirGrid.

These offshore transmission system assets will include the offshore substation, offshore transmission cable and onshore transmission cable up to and including an Onshore Compensation Compound. A schematic of a typical offshore wind farm and electricity transmission system is provided in Figure 1.1.

¹ [gov.ie](http://www.gov.ie) - [Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System](#) (www.gov.ie)

Figure 1.1: Typical Offshore Windfarm and Electricity Transmission System



Source: EirGrid

1.2 What is the South Coast Designated Maritime Area Plan?

On 10 October 2024, the Oireachtas approved the South Coast Designated Maritime Area Plan (SC-DMAP) ².

The SC-DMAP represents a spatial plan-led approach for the development of offshore wind farms.

This follows the Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System (Department of the Environment, Climate and Communications, DECC, 2021) ³ which sets out the policy for Ireland's future offshore electricity transmission system.

Establishment of the offshore transmission system policy by DECC has taken place through a set of steps provided for in the Climate Action Plan 2024. ⁴ The Climate Action Plan 2024 places offshore wind energy at the centre of the state's commitment to producing up to 80% of our energy from renewable sources.

As part of this spatial plan-led approach to the delivery of offshore wind, known as Phase 2, electricity will be supplied from offshore wind farms off Ireland's south coast.

The SC-DMAP comprises four proposed Maritime Areas, within which future deployment of fixed offshore wind may take place. They are Area A / Tonn Nua (New Wave), Area B / Lí Ban (the Mermaid Saint), Area C / Manannán (a sea God associated with Ireland and a divine Lord of the Tuatha Dé Dannan) and Area D / Danu (mother of the Tuatha Dé Danann people and the Celtic Goddess of nature).

These wind farms will be provided by private developers. EirGrid will be responsible for delivering the infrastructure that will connect the power from these wind farms off the south coast to the onshore electricity transmission grid. This will be realised through EirGrid's Powering Up Offshore South Coast. ⁵

The Powering Up Offshore South Coast project, the subject of this Step 3 Report, relates to the Tonn Nua (Area A) DMAP only. The SC-DMAP is shown in Figure 1.2.

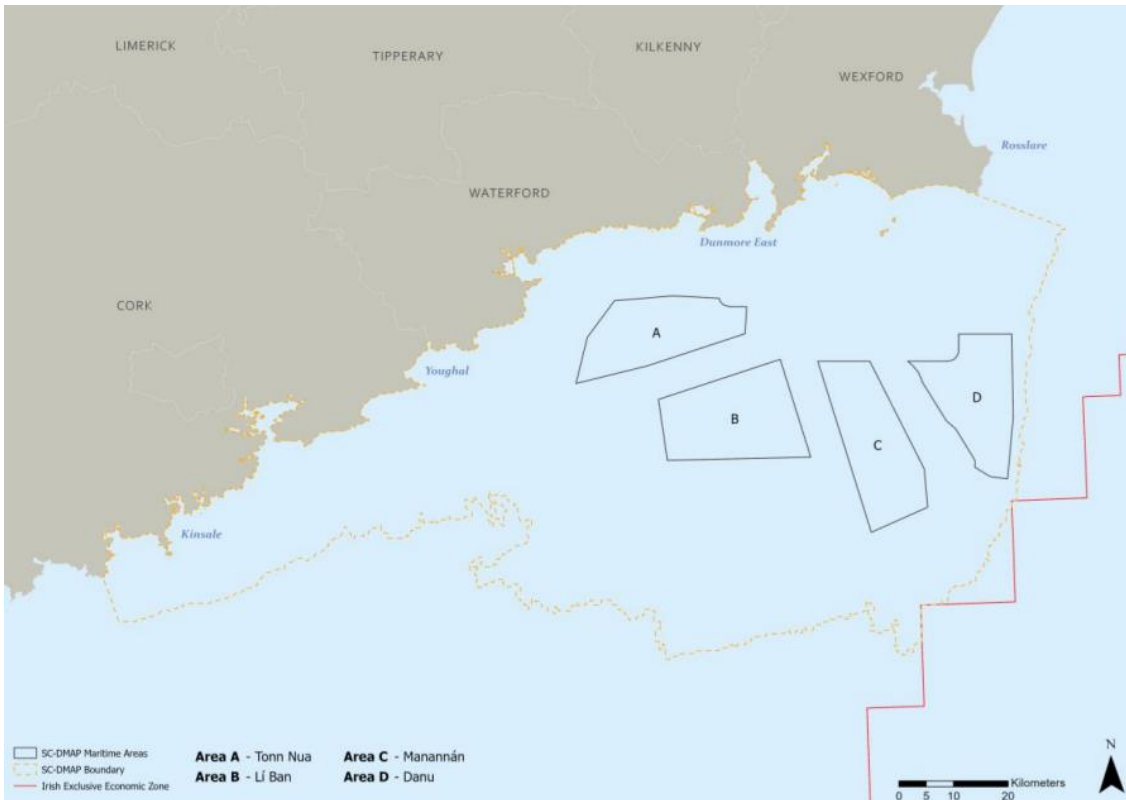
² [gov.ie - The South Coast Designated Maritime Area Plan for Offshore Renewable Energy \(SC-DMAP\)](https://www.gov.ie/en/publications-and-resources/publication/2024-10-10-south-coast-designated-maritime-area-plan-for-offshore-renewable-energy-sc-dmap/)

³ [gov.ie - Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System \(www.gov.ie\)](https://www.gov.ie/en/publications-and-resources/publication/2021-03-18-policy-statement-on-the-framework-for-ireland-s-offshore-electricity-transmission-system/)

⁴ [Climate Action Plan 2024](https://www.gov.ie/en/publications-and-resources/publication/2024-02-14-climate-action-plan-2024/)

⁵ [Powering Up Offshore South Coast](https://www.eirgrid.ie/en/our-work/our-projects/powering-up-offshore-south-coast/)

Figure 1.2: Maritime Areas for Offshore Wind Developments in the South Coast DMAP (SC-DMAP)



Source: gov.ie - The South Coast Designated Maritime Area Plan for Offshore Renewable Energy (SC-DMAP)

1.3 What is the Powering Up Offshore South Coast Project?

As part of [Powering Up Offshore South Coast](#)⁶, EirGrid plans to develop offshore electricity substations and associated undersea electricity cables. This new infrastructure will bring the power generated by offshore windfarms into our national electricity transmission system.

Specifically, Powering Up Offshore South Coast will facilitate the connection of fixed bottom Phase 2 offshore wind farm developments by third party developers off the south coast of Ireland. The successful developers of the offshore wind farm assets will be determined by the results of the ORESS Tonn Nua auction to be held in 2025.

The project will develop offshore transmission infrastructure which will be owned and operated by EirGrid. To achieve this EirGrid will need to develop:

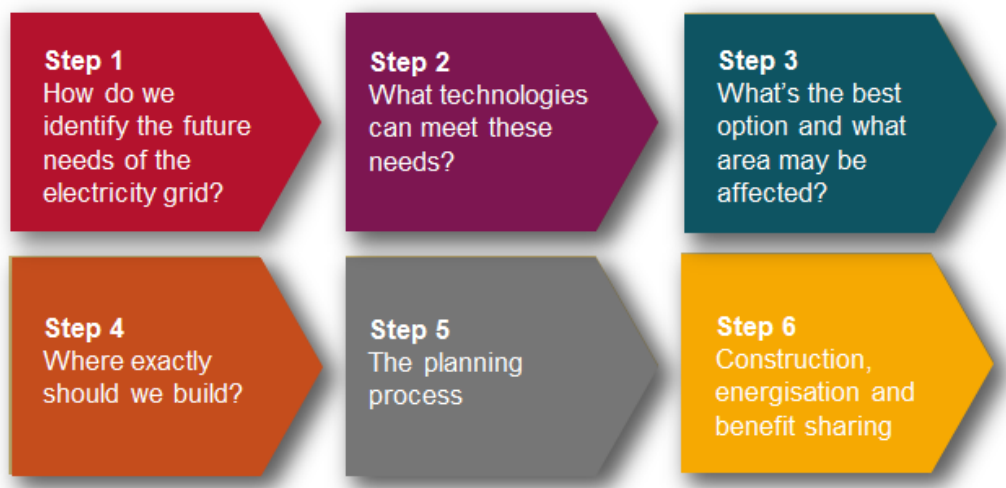
- Offshore substation (OSS) platforms within Tonn Nua.
- Offshore transmission cables connecting the offshore substations to landfalls.
- New onshore substation(s).
- Connections between landfalls and new onshore substations by underground cables.
- Loop-in connections to the existing electricity transmission network from the new substations by either underground cables or overhead lines.

⁶ [Offshore Energy Future | Projects | EirGrid](#)

1.4 Framework for Grid Development

EirGrid follows a six-step approach when developing and implementing the best performing solution option to any identified transmission network need. This six-step approach is described in the document 'Have Your Say'⁷. Each step has a distinct purpose with defined objectives. These are presented at a high-level in Figure 1.3.

Figure 1.3: EirGrid Six Step Framework for Grid Development



Source: EirGrid

1.5 What Step is the Powering Up Offshore South Coast Project at?

The Powering Up Offshore South Coast project is now in Step 3 of the Framework for Grid Development. During Step 3, EirGrid evaluates a long list of Landfall Zones and Grid Connection Zones with the aim of identifying the Step 3 short list of options to bring forward to Step 4.

The project was launched in April 2023 with several public events and key stakeholder briefings held in locations on the south coast in the counties of Cork, Waterford and Wexford in June 2023.

These public events pre-dated the publication of draft DMAPs and provided information on the overall project requirements to provide onshore and offshore grid infrastructure in the Cork, Waterford and Wexford areas to facilitate the connection of offshore wind. This project is the first in the plan-led approach to the development of offshore wind on the south coast.

During the project development process, in May 2024, the Government commenced their public consultation process for the development of the SC-DMAP. This culminated in the approval of the SC-DMAP on 10 October 2024, as discussed in Section 1.2 of this report.

The requirement for the offshore wind farms and EirGrid's OSS platforms to be located within this location has been assessed as part of EirGrid's feasibility studies. Technical and environmental studies have been undertaken on the key project criteria to include electrical requirements, landfall locations, grid interface points and offshore geotechnical desktop studies.

⁷ [EirGrid-Have-Your-Say_May-2017.pdf \(eirgridgroup.com\)](#)

These studies are captured in the 'Powering Up Offshore South Coast – Update Report'. The full report is available on the project web site [Powering Up Offshore South Coast](#).

The Powering Up Offshore South Coast – Update Report provides details on the viable and technically acceptable options that were considered for grid interface points and landfall locations. This resulted in the development of a long list of potential options.

A Multi Criteria Analysis (MCA) was undertaken on the 'long list'. The long list was refined in a two-part approach, initially considering technical and economic performance to determine a short list of options to be further analysed considering technical, economic, environmental, social and deliverability performances. The 'long list' was consequently reduced to a 'short list' of best performing options. The long list and the short list of grid interface points and potential landfall locations (zones) considered in the Powering Up Offshore South Coast – Update Report are presented in Appendix A of this report.

The short-list of landfall locations identified in the Powering Up Offshore South Coast – Update Report represent the long list of Landfall Zones to be evaluated in this Step 3 Emerging Best Performing Options (EBPO) Report. The Step 3 long list of Landfall Zones is presented in Table 1.1.

The Areas of Focus for Grid Connection Zones are in proximity / connected to:

- Existing Aghada 220 kV Substation and Aghada - Knockraha 220 kV double OHL in County Cork.
- Ballyadam in County Cork.
- Existing Great Island 220 kV Substation, Great Island – Kellis 220 kV OHL and Great Island – Lodgewood 220 kV OHL in County Wexford.

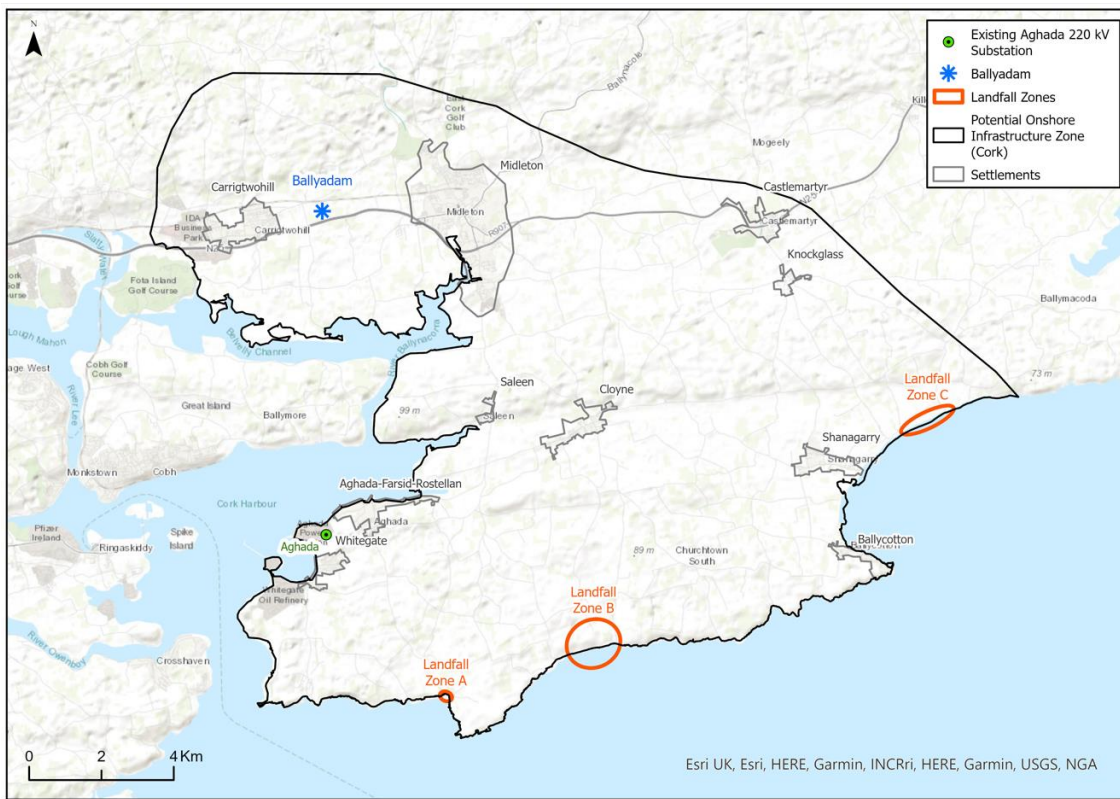
Connection to the grid will be by either direct connection or loop-in to existing overhead lines (OHL's). Further information on grid connection is provided in Section 2.2. The identification of Grid Connection Zones evaluated in this report is discussed in Section 4.2.

Table 1.1: Step 3 Long List of Landfall Zone Options

County	Landfall Zone Options
Cork	Landfall Zone A
	Landfall Zone B
	Landfall Zone C
Waterford	Landfall Zone D
Wexford	Landfall Zone E
	Landfall Zone F
	Landfall Zone G

The Step 3 Areas of Focus for Grid Connection Zones and Landfall Zones in County Cork are presented in Figure 1.4.

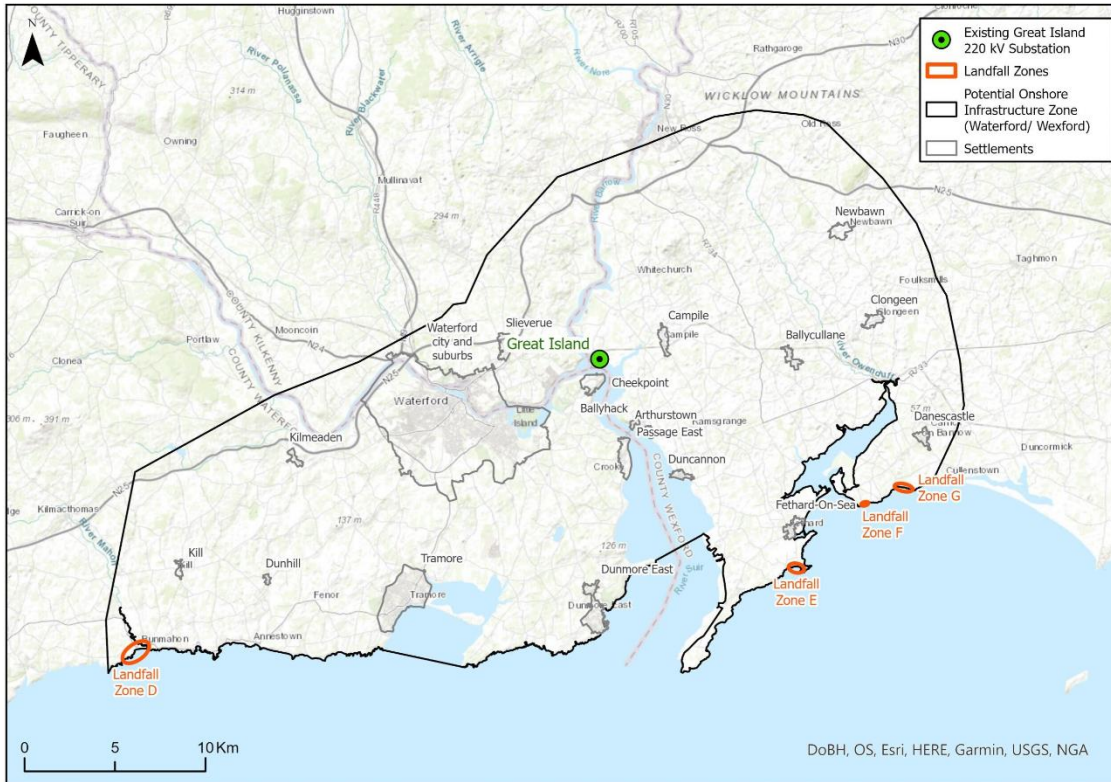
Figure 1.4: Step 3 Areas of Focus (County Cork)



Source: Mott MacDonald

The Step 3 Areas of Focus for Grid Connection Zones and Landfall Zones in County Waterford, County Kilkenny and County Wexford are presented in Figure 1.5.

Figure 1.5: Step 3 Areas of Focus (County Waterford, County Kilkenny and County Wexford)



Source: Mott MacDonald

1.6 What is the aim of this Step 3 Report?

The aim of this Step 3 Report is to present a MCA of feasible Landfall Zone and Grid Connection Zone options to identify EBPO's i.e.:

- EBPO for Landfall Zone(s) and Grid Connection Zone(s) for the connection into the 220 kV transmission grid in the Cork region.
- EBPO for Landfall Zone(s) and Grid Connection Zone(s) for the connection into the 220 kV transmission grid in the Waterford / Wexford region.

Further information on the proposed development is provided in Chapter 2 of this report.

Chapter 3 presents descriptions of the considerations and constraints that have informed this report.

Chapter 4 presents the Grid Connection Zone options and sets out the approach and methodology applied to the identification of the EBPO's to be brought forward to Step 4.

Chapter 5 presents a high- level characterisation of the identified zones.

The long list and the short list of grid interface points and potential landfall locations (zones) considered in the Powering Up Offshore South Coast – Update Report are presented in Appendix A of this report.

The MCA of the Landfall Zones and the Grid Connection Zones is included in Appendix B of the report.

The conclusions of the MCA are presented in Chapter 6 and Chapter 7. Next Steps are discussed in Chapter 8.

EirGrid will now embark on a substantive public engagement campaign engaging with all stakeholders on the findings of this report. Public feedback, local insights and stakeholder engagement will inform decisions for Step 4 and Step 5 of EirGrid's grid development process.

1.7 Stakeholder Consultation and Engagement

Stakeholder engagement is a fundamental part of EirGrid's project development process. EirGrid will continue to consult with the public and seek feedback as the project progresses. An outline of that engagement in relation to this project includes:

- Public engagement commenced in June 2023 following the launch in April of the Shaping Our Offshore Energy Future Phase 2 project, detailing EirGrid's role.
- Briefings and engagement with Executive and elected members of the three Local Authorities.
- Continued collaboration with DECC regarding the SC-DMAP and support for DECC's consultation events.
- Continued engagement with Seafood Offshore Renewable Energy (ORE) working group and fishing communities by EirGrid's Fisheries Liaison Officer (FLO).

EirGrid are undertaking a comprehensive consultation and stakeholder engagement plan for the Step 3 consultation which comprises:

- A number of public events within the study area and coastal regions where members of the public can drop in and meet members of the team, view the information on display and provide feedback for consideration by the project team.
- A project update brochure will be provided which will provide the key summary details of this step in the project development.
- Briefings to community representative organisations, local public participation networks, landowners, the fishing industry, maritime stakeholders and elected representatives.

This will be EirGrid's first public consultation on the project, with further consultations planned as the project progresses to ensure that all feedback from stakeholders is taken into consideration.

EirGrid's Agricultural Liaison Officers (ALOs) will also be engaging with landowners across the Potential Onshore Infrastructure Zones.

During this consultation, and as EirGrid work through the next step of the project development, a community forum for the project will be established. The purpose of the community forum is to establish a representative stakeholder group from the area to ensure that those being impacted by the project have regular opportunities to directly feed into the planning of the work proposed in their area.

Each community forum is independently chaired, and membership can include representatives of local community groups as well as local county councillors and chamber of commerce members.

EirGrid will also establish a Community Benefit Fund during Step 4 and 5 of the project. The Community Forum will be integral to the design of the community benefit strategy and will play a key role in identifying the needs of the area.

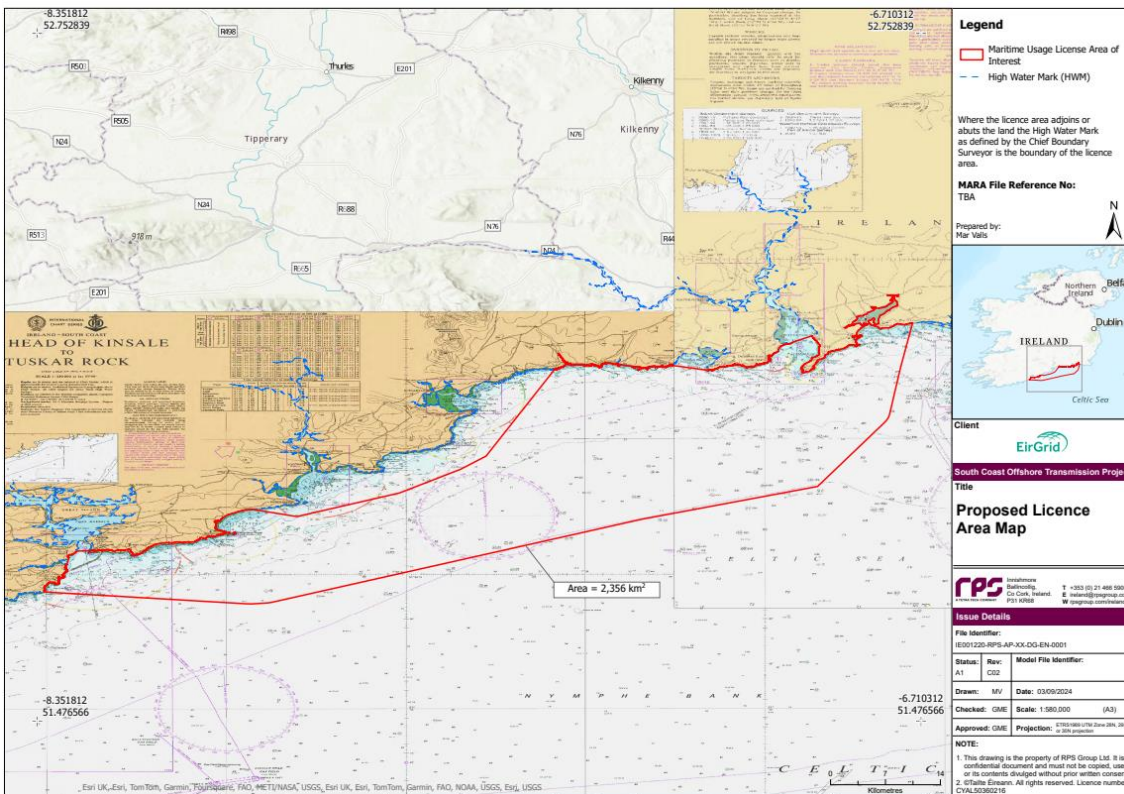
In addition, consultation and engagement is being undertaken as part of the Marine Usage Licence (MUL) application for marine surveys to inform the project development. The surveys

will include marine geotechnical and geophysical site investigations and are required to ground truth the desk-top data available through public sources.

The MUL area has been chosen to allow the flexibility during the next step of the project to assist in determining the most suitable landfall locations, marine cable routes and offshore substation locations.

EirGrid will undertake stakeholder engagement in relation to the MUL application which will include briefings to the local fishing community, to the Seafood ORE working group, the county councils and elected representatives within the area. The MUL area is presented in Figure 1.6.

Figure 1.6: Maritime Usage Licence Application Area



Source: RPS

2 The Proposed Development

2.1 Introduction

The design of the Powering Up Offshore South Coast project will be developed in line with the EirGrid six-step Framework for Grid Development, as described in Section 1.4 of this report.

The following sections identify indicative elements of the project and provide a brief description of these at this early stage of project development.

This Step 3 Report evaluates Landfall Zones and Grid Connection options. It does not identify either onshore or offshore transmission cable routes. These will only be examined in the next step of the project, and subject to ongoing studies, public consultation and future offshore surveys.

The landfalls selected for this Powering Up Offshore South Coast project will not influence the location of the future fixed bottom Phase 2 offshore wind farm development. The location of the Phase 2 offshore wind farm to be developed by others will be determined by the Tonn Nua SC-DMAP and the results of the ORESS Tonn Nua auction to be held in 2025.

2.2 Design Principles and Assumptions

The Powering Up Offshore South Coast project will require:

- Offshore substation platforms located within Tonn Nua.
- Offshore transmission cables connecting the offshore substations to landfalls.
- Connections between landfalls and new onshore substations by underground cables.
- New onshore substations, which will be either:
 - new onshore EirGrid Onshore Compensation Compound (OCC) Substations in proximity to new onshore ESBN Substations for a loop-in connection to existing overhead line(s); or
 - new onshore EirGrid OCC Substation with a tail fed direct connection into an existing ESBN grid connection substation.
- Connections between new onshore substations and existing onshore substations by either underground cables or connections into existing overhead lines.

In order to provide context to the reader, brief descriptions of these key elements of the project are presented herein.

2.2.1 Offshore Substation Platform

An offshore substation is an offshore platform that will connect to the offshore transmission cable and the offshore array cables. The OSS is typically co-located with the offshore wind farms however, the locations of the proposed offshore substations will be determined following the proposed marine survey work and consideration of other factors such as proximity to grid, public engagement and engagement with the successful Developer.

The OSS will accommodate electrical equipment including switchgear, transformers and shunt reactors. The function of the OSS will be to receive power generated by the offshore wind farms via the inter-array cables which will then be stepped up by the OSS transformers for onward transmission via the offshore transmission cables to the electricity transmission system.

Access / egress system for vessels and emergency evacuation and welfare facilities will also be included.

The OSS platform will be supported by a foundation structure, which is expected to be a four-legged jacket bottom fixed foundation. The method of installation for the piles may include hammering and / or drilling to secure the foundations.

Scour protection is anticipated to be required and can include rock bagging, rock placement and matting. The type of scour protection employed will be determined in Step 4, subject to ongoing studies and future offshore surveys. These include ongoing studies being undertaken by EirGrid on the integration of Nature Inclusive Design scour protection which functions for marine biodiversity, in addition to other measures such as fish cages.

The OSS is expected to be unmanned. A typical (enclosed type) OSS platform is presented in Figure 2.1.

Figure 2.1: Typical Enclosed-type OSS Platform



Source: [Kent | Berwick Bank Wind Farm \(kentplc.com\)](https://www.kentplc.com)

2.2.2 Offshore Transmission Cables

Offshore transmission cables will carry the electricity from the OSS platform(s) to the landfall(s) for onward export to the electricity transmission system.

Offshore transmission cables will be required between the OSS(s) and the preferred landfall locations.

The routing and configuration of the offshore transmission cables, and the installation techniques proposed, will be determined in Step 4, subject to the findings of this Step 3 Report and ongoing studies and surveys, including possible crossings of other offshore infrastructure.

Installation techniques may include:

- Simultaneous cable lay and burial utilising a seabed plough or mechanical trencher; or

- Surfaced laid on the seabed and post lay burial using remotely operated vehicles (ROV's), with water jetting systems; or mechanical cutting equipment that creates trenches in the seabed; or
- A combination of the above.

Cable route clearance and preparation may also be required prior to installation, for example to remove boulders.

Where the cable cannot be buried to the desired depth, additional cable protection measures such as rock placement, rock bags, matting or specialist cable protection systems such as protective cable sleeves may be required along the Offshore Transmission Cable route. Cable protection measures may also integrate Nature Inclusive Designs. Figure 2.2 presents images of typical cable laying vessels.

Figure 2.2: Typical Cable Laying Vessels



Source: [Volume-3D2_Technical-Chapters-for-Ireland-Offshore-EIAR_Celtic-Interconnector_June-2021.pdf \(eirgridcelticinterconnector.ie\)](#)

2.2.3 Landfall

The landfall describes the location where the offshore transmission cable carrying electricity from the OSS platform(s) lands onshore and connects with the onshore UGC for onward export to the electricity transmission system.

Onshore Transition Joint Bays (TJB's) will be required at the preferred landfall locations to connect the offshore transmission cables and the onshore UGC.

The TJB will be buried underground and will include:

- Underground concrete chambers which will house the joints between the Offshore Transmission Cables and the onshore UGC.
- Communications chamber(s), which will house the joint between the offshore communications / fibre optic cable and the onshore communications / fibre optic cable.
- Link box chamber(s), which will house the cable sheath earthing and connection design for the onshore and offshore high voltage cable.

Offshore transmission cable installation at the preferred landfall may be by either open cut trenching or by Horizontal Directional Drilling (HDD), whereby a hole would be drilled from the TJB location out to a predetermined position to allow a duct to be pulled through. The cable would then be pulled through the duct to the TJB, the seaward end of the duct and the cable heading offshore would then be buried.

Construction compound(s) / laydown area(s) will be required at the selected landfall locations during the construction phase. It is not anticipated that permanent above ground structures would be required at the preferred landfall locations, and this will be confirmed in Step 4.

2.2.4 Onshore Grid Connection

2.2.4.1 Air Insulated Switchgear / Gas Insulated Switchgear Substations

The Grid Connection Zone options will include new electricity infrastructure connections, by either:

- Direct (tail-fed) connection to existing (ESBN owned) substations; or
- 'Loop-ins' with new ESBN Substations to connect to existing overhead lines (OHLs).

To facilitate this connection, a new EirGrid OCC Substation, will be required. A new ESBN Substation, will also be required, if the new EirGrid OCC Substation does not have a 'direct connection' into an existing ESBN Substation and instead has a 'loop-in' connection to the existing overhead lines (OHLs).

The purpose of the new EirGrid OCC Substation is to balance the reactive power and reduce losses onshore via the provision of dynamic and/or static reactive power compensation, harmonic filtering and switching of the Phase 2 offshore wind farm development power.

The purpose of the new ESBN Substation is to enable connection of the EirGrid Infrastructure into the ESBN onshore transmission system and to allow for TSO control of the Phase 2 offshore wind farm development for onward export to the electricity transmission system.

This Step 3 Report considers the potential for either Air Insulated Switchgear (AIS) or Gas Insulated Switchgear (GIS) substation options.

An AIS substation is typically located outdoors and uses air as the main insulation for the exposed electrical conductors.

Switchgear equipment associated with GIS substations utilises gas as the insulating medium and is typically located indoors within a building.

A decision on AIS or GIS substations will be made in Step 4.

An image of a typical AIS substation is provided in Figure 2.3. An image of a typical GIS substation is provided in Figure 2.4.

Figure 2.3: Typical AIS Substation



Source: EirGrid

Figure 2.4: Typical GIS Substation



Source: EirGrid

2.2.4.2 Direct Connection

For the purposes of this Report, a direct tail-fed connection means a connection from the new EirGrid OCC Substation into either a spare bay or a new bay (as part of a new extension) of an existing or new 220 kV ESBN Substation.

As identified in Section 2.2.4.1, a new ESBN Substation would not be required for a direct tail-fed connection.

2.2.4.3 Overhead Line Loop-in

A loop-in connection to an existing OHL would necessitate works along a short section of an existing OHL, the installation of new OHL structures / UGC and a new ESBN Substation.

2.2.5 Onshore Underground Cable

Connections between landfalls and new onshore EirGrid OCC Substations will be via UGC.

Narrow and / or winding roads present particular technical challenges for in-road cable routing and may necessitate off-road routing and / or road diversions and / or temporary passing bays. Depending on the distance between the points of connection, a number of crossings, for example crossings of watercourses and utilities may be required. These crossings would be facilitated by either open cut trenching or by a trenchless crossing technique such as Horizontal Directional Drilling (HDD), subject to location specific considerations and constraints.

The cable would be delivered to site on drums. Joint bays would be required to be installed at regular intervals along the cable route to join consecutive lengths of cable and to facilitate cable pulling. These would be underground chambers used as the location to pull the various lengths of UGC through pre-installed ducts, and to connect (“Joint”) together those lengths of UGC into a single overall circuit, as illustrated in Figure 2.5.

Temporary laydown areas would be required at regular intervals along the cable route during installation.

Figure 2.5: Typical Joint Bay



Source: [North-Connacht-Brochure-Autumn-Update-2021.pdf \(eirgrid.ie\)](#)

3 Considerations, Opportunities and Constraints

3.1 Introduction

The following sections present descriptions of the considerations and constraints that have informed this report. As described in Section 1.6, the aim of this Step 3 EBPO report is to provide a MCA of feasible Landfall Zones and Grid Connection Zones for the proposed project to identify EBPO's.

The criteria evaluated in this report are:

- Technical Considerations.
- Economic Considerations.
- Environmental Considerations.
- Social Considerations.
- Deliverability Considerations.

These criteria, and associated sub-criterion, are discussed herein. Only sub-criterion that inform a comparative evaluation are brought forward to the multi-criteria analysis (MCA), presented in Appendix B of this report.

3.2 Technical Considerations

Table 3.1 describes the technical considerations, opportunities and constraints that inform this Step 3 Report.

Table 3.1: Technical Considerations

Sub-criterion	Technical Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Compliance with Health and Safety Standards	<p>Compliance with Health and Safety Standards addresses the project's compliance with relevant safety standards such as those from the European Committee for Electrotechnical Standardisation (CENELEC). Materials should comply with IEC or CENELEC standards.</p> <p>Regardless of the location, the proposed development described in Chapter 2 will be designed in accordance with relevant Health and Safety Standards.</p> <p>As compliance with health and safety standards is not a differentiator it is not considered further in this MCA.</p>	No	No
Compliance with Security and Planning Standards	<p>The proposed development would be designed in accordance with EirGrid specifications.</p> <p>The project should comply with the reliability and security standard defined in the Transmission System Security and Planning Standards and the Operation Security Standards. This sub-criterion assesses the following three system performance aspects:</p> <ul style="list-style-type: none"> ● Thermal overload: provides an indication of how much capacity can be connected via the proposed connection method/location. ● Headroom: considers the amount of additional capacity which is available for the future without upgrades. ● Maintenance conditions: are used as an indicator of the benefit of an option in terms of minimising generator constraint during planned outages or an indicator of future additional network reinforcement requirements. <p>Compliance with Security and Planning Standards is not a differentiator it is not considered further in this MCA.</p>	No	No
Average Failure Rates	<p>Average failure rates may be calculated for OHL or UGC using estimated availability or Mean Time to Repair (MTTR) figures.</p> <p>As circuit or station technology is not being assessed as part of this Step 3 report, Average Failure Rates are not a differentiator and are not considered further in this MCA.</p>	No	No
Technology Operational Risk	<p>"Technology Operational Risk" aims to capture the risk of operating different technologies on the network.</p> <p>Technology operational risk is not a differentiator and is not considered further in this MCA.</p>	No	No
Repeatability	<p>"Repeatability" means whether this option can be readily repeated in the EirGrid network. For example, an overhead line option is very repeatable, but a partially underground option is less repeatable as there can only be a certain amount of underground cable in each area of the network.</p>	No	No

Sub-criterion	Technical Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	Circuit or station technology is not being assessed as part of Step 3. Repeatability is not a differentiator and is not considered further in this MCA.		
Expansion or Extendibility	Expansion or Extendibility considers the ease with which the solution option can be expanded, allows for future developments or network reinforcements. For example, spare bays will be required at the 220 kV ESBN grid connection substation which could accommodate further connections and reinforcements.	Yes	Yes
Constructability (Ground Conditions and Marine Processes)	For Landfall Zones, constructability considerations include: <ul style="list-style-type: none"> ● Nearshore and onshore landfall zone characteristics. ● Suitable sized area for construction works and laydown areas. ● Nearshore obstacles such as wrecks, boulders, other offshore infrastructure such as cables, pipelines etc. For Grid Connection Zones, ground conditions including examples such as karst, peat and exposed rock, may require robust engineering solutions. These may include piling, structural support for the cable trench, significant removal of the native material (e.g. peat), rock breaking and / or suitable backfill. Consequently, unfavourable ground conditions should be avoided, where possible. Similarly, topography may result in extensive cut and fill at a chosen site. For HV cables, the EirGrid specifications detail that the gradient should be less than 1 in 6. Soil types will affect the thermal capacity of HV cables and soils such as peat will function as an insulator in certain conditions. Design solutions such as increased phase spacing (increased trench width) would be required to mitigate these conditions.	Yes	Yes
Access	Landfall Zones access considerations include: <ul style="list-style-type: none"> ● Wave conditions and exposure to weather. ● Marine traffic (fishing/leisure activities). ● Vessel suitability. ● Construction traffic. ● Access to site compounds. For Grid Connection Zones, an adequate number of feasible approach corridors for the routing of the required circuits must be available. Cable route access to the onshore substation is an important technical aspect to consider. This assesses if substation access is congested due to existing obstacles including HV cables, HV overhead lines, railway, bridges, greenways, buildings, rivers and other utilities (for example gas, water, MV/LV OHL/UGC). Alternative solutions, including trenchless techniques such as horizontal direction drilling may need to be considered. The width of the roads is also a determining factor in the context of existing utilities. Locating the proposed substation adjacent to a public road avoids the need for long internal access roads.	Yes	Yes

Sub-criterion	Technical Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Physical Constraints	<p>For Landfall Zones, considerations include:</p> <ul style="list-style-type: none"> Existing landfall infrastructure such as cables, pipelines etc. Presence of boulders or rocky outcrops. Presence of wrecks. Wave conditions and exposure to weather. Marine traffic which includes passenger and cargo shipping activity. Fishing activities, including aquaculture. <p>For the purposes of the MCA, in the context of rock cutting, Short implies that a sediment channel may be available/minimal rock cutting expected, Short-Moderate implies an estimate of <5km of rock cutting being required. Moderate implies >5km and <12km and Long implies >12km of rock cutting being required.</p> <p>For Grid Connection Zones, considerations include watercourses, culverts, ditches, trees (root systems), retaining walls, bridges, railways, underground utilities and above ground utilities. The majority of these are hard constraints that cannot be moved and must be avoided. Alternatively, engineering solutions such as trenchless techniques (for example Horizontal Directional Drilling, HDD) may be required.</p>	Yes	Yes

3.3 Economic Considerations

Table 3.2 describes the economic considerations, opportunities and constraints that inform this Step 3 Report.

Table 3.2: Economic Considerations

Sub-criterion	Economic Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Capital Cost	<p>The capital costs are those project implementation costs associated with the procurement, installation and commissioning of the development.</p> <p>The capital cost of the Landfall Zones would be dependent upon location, accessibility, ground conditions, land ownership and construction methodology. For example, whether one or two cable installation vessels (i.e. both a standard cable installation</p>	Yes	Yes

Sub-criterion	Economic Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Life Cycle Costs	<p>vessel and a shallow draft cable installation vessel) may be required due to water depth on approach to landfalls.</p> <p>For the purposes of the MCA, it is assumed that a standard cable installation vessel will be unable to work in water depths less than 15m, due to draught restrictions and a shallow draught vessel would be required for water depths less than 15m.</p> <p>In terms of the length of offshore transmission cable between the nearest indicative potential OSS location and Landfall Zones, Short implies <30km, Moderate implies >30km and <45km and Long implies >45km. For the purposes of the MCA, the indicative potential OSS location for Landfall Zones in Cork is within the western part of Tonn Nua and the indicative potential OSS locations for Landfall Zones in Waterford/Wexford is within the northern or eastern part of Tonn Nua, as appropriate. Indicative possible offshore transmission cable route corridors have been identified based on a high level desk-top review of publicly available geophysical data. The specific offshore transmission cable routes will be subject to further studies and evaluations in Step 4.</p> <p>In terms of distances between the nearest Landfall Zones and the Grid Connection Zones, Short implies <10km, Moderate implies >10km and <25km and Long implies >25km.</p> <p>From an onshore perspective, the lengths of the circuits from the landfall to the grid connection point would be the primary influence towards the overall cost of the project, excluding ground conditions.</p> <p>The capital cost of the Grid Connection Zones includes all the transmission equipment that forms part of the project's scope. This accounts for provision of an EirGrid OCC Substation and a connection to the existing transmission grid. The lowest Grid Connection capital cost would be applicable to a direct connection to an existing substation as it would avoid the need for an ESBN Substation. The greatest Grid Connection capital cost would be applicable to a double circuit loop-in connection into the existing transmission system which would require an ESBN Substation along with multiple circuit loop ins.</p> <p>The ground conditions for different grid connections sites will also influence the capital cost where there is presence of karst, peat, bedrock outcrops or where topography will mean there will be significant groundwork requirements.</p>	No	Yes

Sub-criterion	Economic Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	<p>operating expenditure (OPEX), maintenance, replacement, cost of losses, decommissioning, etc.</p> <p>Life cycle cost differential of circuit route lengths from the landfalls to grid connection zones would be influenced in a similar manner to that of the capital cost relating to circuit route lengths. In this regard, cable losses will not be considered further in the MCA.</p> <p>Circuit or station technology is not being assessed as part of Step 3.</p> <p>Any potential options which avoid the need for an ESBN Substation may be considered as having lower operating and maintenance costs. Such options would comprise a direct connection from the compensation compound into the existing substation.</p>		
Maritime Economy (Ports, Harbours and Shipping and Commercial Fisheries)	<p>Maritime economy is not applicable in the context of landfall zones and is therefore not considered further in the MCA, with the exception of associated social aspects, discussed in Section 3.5.</p> <p>The offshore elements of the proposals (offshore transmission cables and offshore substations and marine surveys for same do have the potential to disaffect the maritime economy. This will be the subject of further assessment in Step 4.</p>	No	No

3.4 Environmental Considerations

Table 3.3 describes the environmental considerations, opportunities and constraints that inform this Step 3 Report.

Table 3.3: Environmental Considerations

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Land use compatibility, other site users and planning policy	<p>The National Planning Marine Framework, County Development Plans and Local Area Plans detail development objectives and policies that influence the siting of developments at county and local levels. These objectives and policies may relate to constraints such as land use zoning, biodiversity, flood risk, cultural heritage, seascape / landscape designations and characterisations, protection</p>	Yes	Yes

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	<p>corridors, amenity and residential land use, shipping and navigation and commercial fisheries. These have informed this MCA.</p> <p>Other key considerations related to land use compatibility, other site users and planning policy are:</p> <ul style="list-style-type: none"> ● State owned or controlled lands. ● Lands in ownership or control of other prescribed bodies, local authorities, utilities. ● Areas where similar infrastructure or buildings exist. ● Constructability, presence of contamination and ground conditions. ● Adequate number of feasible approach corridors for the routing of OHL, UGC and offshore transmission cable. ● Historical, established, current and proposed land / marine use(s), including commercial fisheries operations / aquaculture. ● Potential for physical constraints, incompatible neighbouring land / marine use(s) and land use practices, including commercial fisheries operations / aquaculture. 		
<p>Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes</p>	<p>Particular soil types and structures, for example peat, alluvium deposits and karst features, and proximity to quarries may necessitate extensive civil works to ensure stability. These works may result in additional resource usage and potential for increased pollution risk and noise and traffic impacts. Areas of high landslide susceptibility should also be avoided.</p> <p>County Geological Sites do not receive statutory protection like Natural Heritage Areas (NHA) but receive an effective protection from their inclusion in the planning system which places responsibility on Local Authorities to ensure that geological heritage is protected.</p> <p>Topography, in terms of both elevation and slope, will influence the civil works likely to be required, constructability, visual impact and accessibility.</p> <p>The potential for encountering made ground infill / contaminated soil and water and / or sub-optimum ground conditions are relevant for both onshore and offshore elements.</p> <p>Aquifers are rocks that contain sufficient voids to store water and are permeable enough to allow water to flow through them in significant quantities. An aquifer which is considered to be vulnerable is one which is closer to the surface or where a low permeability drainage path exists to the aquifer below. The overburden geology defines the vulnerability of the aquifer to pollution, and a vulnerability rating is based on the subsoil type and thickness. Significant alterations to a hydrogeological regime could result in contamination or drainage of groundwater, leading to pollution or loss of groundwater dependant habitats such as alkaline fens, turloughs, and bogs.</p>	<p>Yes</p>	<p>Yes</p>
<p>Water Resources</p>	<p>Waterbodies can function as constraints, both in terms of physical barriers to proposed infrastructure and in terms of separation distances from development and works areas.</p>	<p>Yes</p>	<p>Yes</p>

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	<p>The Water Framework Directive 2000/60/EC (WFD) requires the prevention of any deterioration of the status of all waters (surface, ground, estuarine and coastal) and includes requirements to protect, enhance and restore all waters with the aim of achieving “good status”. Water quality management is centred on river basins, which are natural geographical areas that occur in the landscape. River Basin Management Plans set out policies, operations and measures to achieve the Directive objectives for each River Basin District. Careful consideration should therefore be given to water crossings and the siting of any proposed infrastructure to ensure that the proposed development will not in any way prevent waterbodies from meeting any WFD quality elements or prevent any waterbodies from reaching “good status” in the future.</p> <p>Public Water Supply (PWS) Protection Areas and known drinking water supplies also require careful consideration in the context of pollution prevention and control, and potential disruption to flow paths.</p> <p>The Marine Strategy Framework Directive 2008/56/EC (MSFD) requires the application of an ecosystem-based approach to the management of human activities, enabling a sustainable use of marine goods and services. Through the MSFD, Member States are required to systematically assess the environmental status of their marine environment, develop monitoring programmes and put in place programmes of measures. This work is performed to a six-year cycle with reporting deliverables required sequentially every two years.</p> <p>The WFD and MSFD seek to ensure, respectively, Good Ecological Status and Good Environmental Status (GES) within designated water bodies with the MSFD covering waters beyond one nautical mile (nm) and the WFD covering freshwater, transitional and coastal waters up to 1nm.</p>		
<p>Climate, including flood risk and Sustainable Development</p>	<p>Energy infrastructure has a significant degree of resilience to change. It is designed to international standards and the same standards allow infrastructure to operate around the world in varying climatic conditions, including projected climate conditions for Ireland. Climate adaptation is not a differentiating factor and has therefore not been considered further in the MCA.</p> <p>Location specific aspects, such as ground conditions and the volume of cut and fill and / or piling and / or pumping anticipated to be required, may result in increased resource use and increased greenhouse gas emissions.</p> <p>Equipment vulnerable to flooding should avoid areas of known fluvial flood risk, groundwater flood risk and / or known flood plains. Siting, in relation to onshore elements, is therefore an important consideration particularly in relation to the management of flood risk. Specifically in relation to onshore development, which can exacerbate flood risk by accelerating and increasing surface water run-off, altering watercourses and removing floodplain storage.</p> <p>The objectives of the Planning System and Flood Risk Management, Guidelines for Planning Authorities (Office of Public Works (OPW), 2009) include:</p> <ul style="list-style-type: none"> ● Avoid inappropriate development in areas at risk of flooding; and 	<p>Yes</p>	<p>Yes</p>

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	<ul style="list-style-type: none"> Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water runoff. 		
	<p>Sites and areas of known ecological significance should be avoided where possible. At this stage of project development these include:</p> <ul style="list-style-type: none"> Designated Sites of International Importance such as Special Areas of Conservation (SAC), Special Protection Areas (SPA's), Ramsar Sites and Shellfish Waters Sites of National Importance such as (Proposed) Natural Heritage Areas Other Sites/Features such as Native Woodlands, Ancient and Long-Established Woodland and sites with identified Annex 1 type habitats and/or Red List species <p>The Habitats Directive (92/43/EEC, as amended) is the single most important piece of legislation governing the conservation of biodiversity in Europe. The main aim of the Habitats Directive is to achieve and maintain favourable conservation status for habitats and species listed on the Annexes to the Directive. Wild Birds are protected under Annex I of the EU Directive on the Conservation of Wild Birds (79/409/EEC).</p> <p>SACs are areas where habitats and species are protected under the Habitats Directive.</p> <p>SPAs are sites designated for the protection of habitats used by Annex I bird species.</p> <p>Ramsar sites are wetlands of international importance designated under the Ramsar Convention 1971.</p> <p>Shellfish waters are designated under the Shellfish Waters Directive (2006/113/EC) in order to protect or improve shellfish waters to support shellfish life and growth.</p> <p>At a national level, the basic unit of conservation is the Natural Heritage Area (NHA). NHAs are designated to protect habitats, flora, fauna and geological sites of national importance. The Geological Survey of Ireland (GSI) have also compiled a list of geological/geomorphological sites in need of protection through NHA designation. In addition, there are over 600 proposed NHA (pNHA), which were published in 1995, but have not since been statutorily designated. These sites are of significance for wildlife and habitats. Prior to statutory designation, pNHA are subject to limited protection, however for the purposes of the MCA all pNHA will be treated as fully protected. County Development Plans and the NMPF include relevant objectives and policies that have been considered in this report.</p> <p>The Nature Restoration Law will also include targets for restoration of various ecosystems and ensuring no net loss. While it has not been transposed there is an expectation that there will be a requirement for the project to quantify loss of habitat such that no net loss can be demonstrated.</p>	Yes	Yes
Biodiversity			

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	Ireland's 4 th National Biodiversity Action Plan (2023) includes an action for all Public Authorities and private sector bodies to move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and / or investment in Blue / Green infrastructure.		
	<p>Cultural heritage can be divided loosely into the archaeological resource covering sites and monuments from the prehistoric period to the 18th century, and the built heritage resource, encompassing standing structures and sites of cultural importance of a post-18th century date. The National Monuments Act 1930, as amended; the Heritage Act 1995, as amended and relevant provisions of the National Cultural Institutions Act 1997 are the primary means of ensuring the satisfactory protection of archaeological remains, which are held to include all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A national monument is 'a monument or the remains of a monument, the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto' (National Monuments Act 1930). Architectural and built heritage is protected under a number of separate pieces of legislation, including the Heritage Act 1995, the Architectural Heritage (National Inventory) and National Monuments (Miscellaneous Provisions) Act 1999, and the Planning and Development Act 2000, as amended.</p> <p>The Sites and Monuments Record (SMR) contains details of all monuments and places (sites) where it is believed there is a monument known to the ASI pre-dating AD 1700 and also includes a selection of monuments from the post-AD 1700 period.</p> <p>Archaeological features may, in some situations, be considered as architectural heritage and therefore, may appear on both the Records of Monuments and Places (RMP) and the Record of Protected Structures (RPS). This means that these features are protected by both the National Monuments Act 1930, as amended and the Planning and Development Act 2000, as amended. RMPs are surrounded by zones of notification. The zones do not define the exact extent of the monuments but rather are intended to identify them for the purposes of notification under Section 12 of the National Monuments Act (1930-2004).</p> <p>The purpose of the National Inventory of Architectural Heritage (NIAH) is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. Regard must be had to extent of works areas in relation to NIAH.</p>	Yes	Yes
Cultural Heritage, including Underwater Archaeology	The Record of Protected Structures lists protected structures and buildings including structures of architectural, historical, archaeological, artistic, cultural, social, scientific or technical importance.		

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	<p>Architectural Conservation Areas represent a place, area, group of structures or townscape that is of special architectural, historical, archaeological, technical, social, cultural, or scientific, interest, or that contributes to the appreciation of a Protected Structure.</p> <p>Offshore underwater archaeological risk lies in two principal subject areas: submerged palaeolandscapes and shipwreck.</p> <p>The southeast coast is a drowned landscape, which means that submerged palaeolandscapes can be lying under the surface sediment of the seabed. They can also survive at depth and are classically presented as peat layers/organic layers. Shipwreck, on the other hand, tend to be exposed on the seabed and/or be partially buried. The known shipwreck locations across the southern coast are plentiful and reflect the principal importance of the Celtic Sea as a transit corridor for shipping since ancient times. Known shipwreck sites, plotted by the National Monuments Service and INFOMAR, account for only a small percentage of the total number of recorded wrecking events, which leaves open the potential for new surveys/development projects to identify previously unknown wreck sites.</p> <p>The proposed infrastructure should, where possible, aim to avoid proximity to:</p> <ul style="list-style-type: none"> ● Scheduled Monuments and listed buildings. ● Bridges of cultural heritage value, including NIAH bridges. ● Walls and gates that may be of cultural heritage value and may form part of a protected demesne or garden. ● Areas of known high archaeological potential (both onshore and offshore.) ● Shipwreck and associated Archaeological Exclusion Zones (AEZs). 		
Traffic and Transport	<p>Regard must be had to approach roads and their suitability in terms of access and circuit routing, including access for abnormal loads.</p> <p>While onshore cable routing has not been identified at this stage of project development, the following principles are considered:</p> <ul style="list-style-type: none"> ● Existing access points should be used where possible. ● Cable routing should avoid: <ul style="list-style-type: none"> – known and planned settlements, residential areas and commercial centres. – siting joint bays at access points for residential developments and sensitive receptors. – full road closures that may necessitate night-time working which may result in unacceptable noise impacts. Availability of diversions shall be provided if full road closures are envisaged. ● Marine traffic is considered under technical criteria (i.e. Access). 	Yes	Yes

Sub-criterion	Environmental Criteria	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Seascape, Landscape and Visual	<p>Ireland signed and ratified the European Landscape Convention (2000) in 2002 with the Convention entering into force in Ireland in 2004. The aims of the Convention include to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity; to harmonise changes in the landscape which are brought about by social, economic and environmental processes, and to enhance landscapes.</p> <p>International, national and county level landscape designations are key considerations when determining the sensitivity of locations for development opportunities.</p> <p>The Planning and Development Act, 2000 as amended, introduced requirements for the preservation of the character of the landscape and made statutory provision for areas of special amenity and landscape conservation areas. Given the nature of the above ground structures, consideration of elevation and slope, scenic routes, protect views and landscape character areas will be relevant to the siting of infrastructure.</p> <p>In terms of seascape, it is noted that the Landfall Zone options will not influence the location within which future fixed offshore wind turbines, and the EirGrid OSS(s) associated with this project, may be located. These will instead be determined by the Tonn Nua SC-DMAP.</p>	Yes	Yes
Aviation and Telecommunications	<p>Proximity to airports and flight paths and associated land use needs to be considered. For example, the potential for electricity infrastructure to impact on wireless services such as radars and radio communications and marine infrastructure, including cables and Met Eireann infrastructure also needs to be considered.</p> <p>The Cork City Development Plan 2022 – 2028 and Waterford City & County Development Plan 2022-2028 also identify Public Safety Zones (PSZ) associated with Cork and Waterford Airports within the potential infrastructure zones. Planning applications in the vicinity of these zones will be referred to the Irish Aviation Authority (IAA) by the planning authority's Development Management Section to seek their observations as part of the statutory planning process.</p>	Yes	Yes
Opportunities to build better	<p>Location-specific observations, at this early stage in project development, in relation to potential opportunities for Nature Inclusive Design/ Enhancement / Social Inclusion or Outcomes.</p>	Yes	Yes

3.5 Social Considerations

Table 3.4 describes the social considerations, opportunities and constraints that inform this Step 3 Report.

Table 3.4: Social Considerations

Sub-criterion	Social Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Settlement and Communities	<p>Social acceptance is a key consideration of EirGrid in relation to project development. Where possible, concentrations of population are avoided in order to reduce actual and perceived environmental and social effects. The anticipated way of life in a community and how identified communities (including those that may be socially excluded) may be disaffected by the proposed development have informed this report, for example aspects related to:</p> <ul style="list-style-type: none"> ● cultural heritage not captured under environmental criteria i.e. way of life / sense of place - how communities live, work, interact etc these include: shared beliefs, customs, values, language etc. ● types of communities (cohesion, stability, character, facilities etc). ● engagement - political systems – participation in decision-making, level of democratisation, and resources available for this ● voluntary groups working in communities and groups representing people who are socially excluded and whose voices may not be heard in society, such as people with disabilities, migrants or Travellers. 	Yes	Yes
Visitors and Commuters	Potential transient and infrequent visitors, not included under other sub-criterion, such as commuters that may be disaffected by the proposed development have informed this report.	Yes	Yes
Amenities, Recreation and Tourism	Consideration of amenities, recreation (e.g. fishing, water-based sports) and tourism (including potential views to and from) resources and associated access that may be impacted by the proposed development have informed this report.	Yes	Yes
Nuisance and Disturbance	<p>Nuisance and disturbance, in the context of social considerations, relates to potential for people to be disaffected by aspects such as noise and air quality (dust) impact. As such, these are mainly focused on land-based elements. The potential for nuisance or disturbance due to noise impacts at the landfall zones is expected to be associated with the construction phase. In the case of grid connection options, operational noise may also be a potential source of nuisance and disturbance, in the absence of mitigation.</p> <p>Those that may be particularly vulnerable to nuisance and disturbance are also identified, based on information available at the time of writing, for example, users of churches, schools and outdoor amenity areas.</p>	Yes	Yes

Sub-criterion	Social Considerations	Included in MCA for Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Visual Effects	<p>While protected views and landscapes are considered under environmental criteria, consideration is also given to potential visual impacts in a broader sense. In relation to onshore infrastructure, opportunities for visual screening by topography are considered. Vegetation on third party lands is not relied upon for screening.</p> <p>Visual impacts can be expected at landfall locations during the construction phase, with potential to disaffect views to and from a range of high sensitivity coastal receptors including residential, road, tourist, recreational and heritage features.</p> <p>As detailed under Environmental Sub-criterion 'Seascape, Landscape and Visual' the potential landfall location options will not influence the location within which future fixed offshore wind turbines, and the EirGrid OSS(s) associated with this project, may be located. These will instead be determined by the Tonn Nua SC-DMAP. Seascape has therefore not been considered in the MCA.</p>	Yes	Yes

3.6 Deliverability Considerations

Table 3.5 describes the deliverability considerations, opportunities and constraints that inform this Step 3 Report.

Table 3.5: Deliverability Considerations

Sub-criterion	Deliverability Considerations	Included in MCA for Potential Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Dependence on other Projects and outages	<p>This criterion considers general inter-dependence with other projects, including in terms of multi-project programme sequencing. It assesses dependence on completion of other projects such as the extent of existing station works or the extent to which a corridor may be impacted by other infrastructure projects in the area. It assesses outage length required to implement the option including the scheduling constraints of existing circuits and stations outages which are one of EirGrid's greatest deliverability risks. As an example, double overhead circuit outages will be very complex as this will constrain areas of generation such as the Knockraha – Aghada 220 kV double overhead line in Cork. The single overhead lines are less complex.</p>	No	Yes

Sub-criterion	Deliverability Considerations	Included in MCA for Potential Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
Supply Chain	<p>Supply chain relates to any constraints (e.g. limited number of suppliers in Ireland or internationally) that would affect the procurement of materials or services (e.g. cable laying vessels waiting list lead time) to complete the project.</p> <p>Supply chain is not applicable in the context of Landfall Zones or Grid Connection Zones and is therefore not considered further in this MCA.</p>	No	No
Permits and Wayleaves	<p>All options presented will be new infrastructure and will require consents, permits, wayleaves / easements and third-party land agreements. This sub-criterion assesses the associated complexity, challenges and risks to:</p> <ul style="list-style-type: none"> ● securing timely access to land for pre-application surveys. ● achieving timely statutory consent(s) considering the potential level of public interest and the potential for Oral Hearings or Judicial Review. ● obtaining timely post-consent third party landowner wayleaves/ easements/ agreements. <p>The compatibility of land, as identified within the land use compatibility and planning policy sub-criterion, may dramatically differentiate the potential complexity and challenges associated with landowner agreements for the new infrastructure for the zone options. Any potential options which avoid the need for an ESBN Substation would be likely to require fewer landowner agreement challenges.</p> <p>Wayleaves for loop-in connection options, which would require interconnecting OHL circuits from the new station / compound to the existing OHL, may take more time to achieve thereby increasing difficulty and risk for these options. UGC corridors would be located along existing road infrastructure where possible and as such would reduce difficulty and the risk in attaining permits. Where an in-road cable route is not feasible or a shorter alternative off-road route is available and preferable, this would necessitate negotiation with landowners and be subject to wayleave and/or easement requirements.</p>	Yes	Yes
Project Plan Flexibility	<p>This sub-criterion assesses the flexibility of the project plan to account for issues arising during pre-planning conceptual design, consenting, post-planning detailed design and construction phases. An example of pre-planning conceptual design flexibility is the level of flexibility within a corridor to identify a route i.e. number of possible roads associated with each corridor while an example of construction phase flexibility is construction season or working time constraints.</p> <p>Pre-planning conceptual design flexibility related to landfall zones may relate to the level of route flexibility from each landfall to potential grid connection zones i.e. number of possible roads associated with each landfall.</p>	Yes	Yes

Sub-criterion	Deliverability Considerations	Included in MCA for Potential Landfall Zone Options?	Included in MCA for Potential Grid Connection Zone Options?
	For Grid Connection Zones, pre-planning conceptual design flexibility related to grid connection zones may relate to the potential extent of unconstrained compatible land sites available for new infrastructure within the zone.		
Risk of Untried Technologies	<p>This sub-criterion assesses any aspects, whether positive or negative, relating to the adoption of new untried technology on the Irish transmission network.</p> <p>The proposed technology is not a differentiator and is not considered further in this comparative evaluation of potential locations for proposed electricity infrastructure.</p>	No	No
Implementation Timelines	<p>"Implementation Timelines" is an assessment of the relative length of time for each option to progress through each phase up to energisation. This includes for pre-consenting, consenting, engineering and construction timelines.</p> <p>It assumes no unreasonable consenting delays and/or potential judicial reviews and considers time for securing landowner consents of permits, wayleaves and/or easements and third-party land agreements. Consideration is given to the indicative corridor lengths, as well as any seasonal and local constraints that may impact the implementation.</p> <p>For Landfall Zones. considerations include:</p> <ul style="list-style-type: none"> ● Accessibility. ● Enabling works. ● Installation methodology. ● Re-instatement. ● Seasonal or local constraints. <p>For Grid Connection Zones. considerations include:</p> <ul style="list-style-type: none"> ● Consenting timelines. ● Third party landowner consents or agreements. ● Corridor lengths. ● Seasonal or local constraints. 	Yes	Yes

4 Approach and Methodology

4.1 Introduction

This chapter sets out the approach and methodology applied to the identification of the EBPO's to be brought forward to Step 4.

The Landfall Zone options evaluated in this report were identified in the Powering Up Offshore South Coast - Update Report.

4.2 Step 3 Identification of Potential Grid Connection Zones

The identification of Grid Connection Zones considered both loop-in connections and direct connections.

OHL loop-in Grid Connection Zones are constrained, as the ESNB Substation which is required for the OHL loop-in connection, must be relatively close to the existing OHL.

For these OHL loop-in Grid Connection Zones, a buffer of 500m from the existing OHL has been used to identify the Grid Connection Zones to allow for:

- A single circuit OHL loop-in requires two OHL circuits or two cable circuits (transitioned from OHL to cable via Line Cable Interface Masts (LCIMs)) to be routed from the OHL loop-in to the proposed ESNB Substation and associated EirGrid OCC Substation.
- A double or two circuit OHL loop-in requires four OHL circuits or four cable circuits (transitioned from OHL to cable via LCIMs) to be routed from the OHL loop-ins to the proposed ESNB Substation and associated EirGrid OCC Substation.

A direct connection allows for more flexibility regarding the locations of the new EirGrid OCC Substation, as a new ESNB Substation is not required. In addition, only one cable circuit is required to be routed between the new EirGrid OCC Substation and the existing ESNB Substation.

Direct grid connection zones were identified initially using tools such as Geographical Information System (GIS) mapping and having regard to constraints, consideration and opportunities, as described in Chapter 3 of this report. Where possible, linear developments, estuaries, the coast, rivers, mountains, hills and land-use zoning were used to define the extents of the zones.

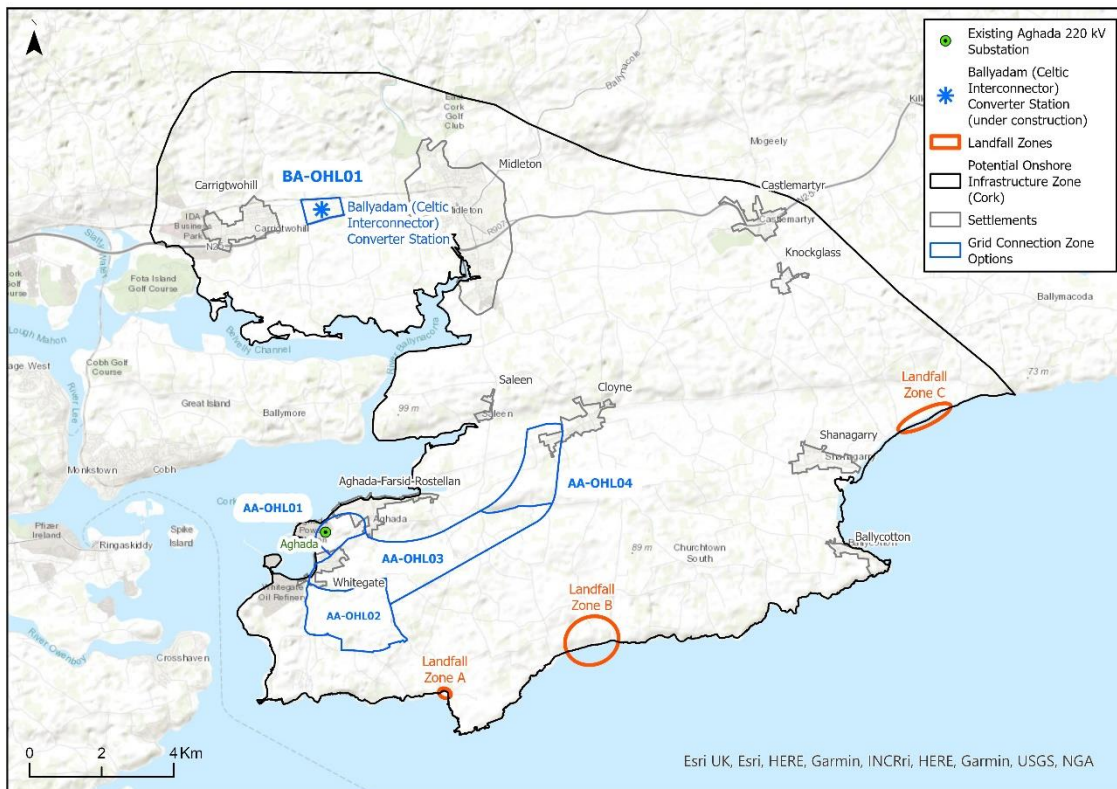
As detailed in Section 1.5 of this report, the Step 3 long list of Landfall Zone options were identified in the Powering Up Offshore South Coast – Update Report. Those Landfall Zones, and the Grid Connection Zones identified in Step 3, are detailed in Table 4.1.

Table 4.1: Step 3 Long List of Options

County	Landfall Zone Options	Grid Connection Zone Options
Cork	Landfall Zone A	● Aghada Loop-in Zone 1 (AA-OHL01)
	Landfall Zone B	● Aghada Loop-in Zone 2 (AA-OHL02)
	Landfall Zone C	● Aghada Loop-in Zone 3 (AA-OHL03) ● Aghada Loop-in Zone 4 (AA-OHL04) ● Ballyadam Loop-in Zone 1 (BA-OHL01)
Waterford	Landfall Zone D	● Great Island Direct Connection Zone 1 (GI-DC01)
Kilkenny	Not Applicable	● Great Island Direct Connection Zone 2 (GI-DC02)
Wexford	Landfall Zone E	● Great Island Direct Connection Zone 3 (GI-DC03)
	Landfall Zone F	● Great Island Direct Connection Zone 4 (GI-DC04)
	Landfall Zone G	● Great Island Direct Connection Zone 5 (GI-DC05) ● Great Island Loop-in Zone 1 (GI-OHL01) ● Great Island Loop-in Zone 2 (GI-OHL02)

The Step 3 longlist of options in County Cork are presented in Figure 4.1.

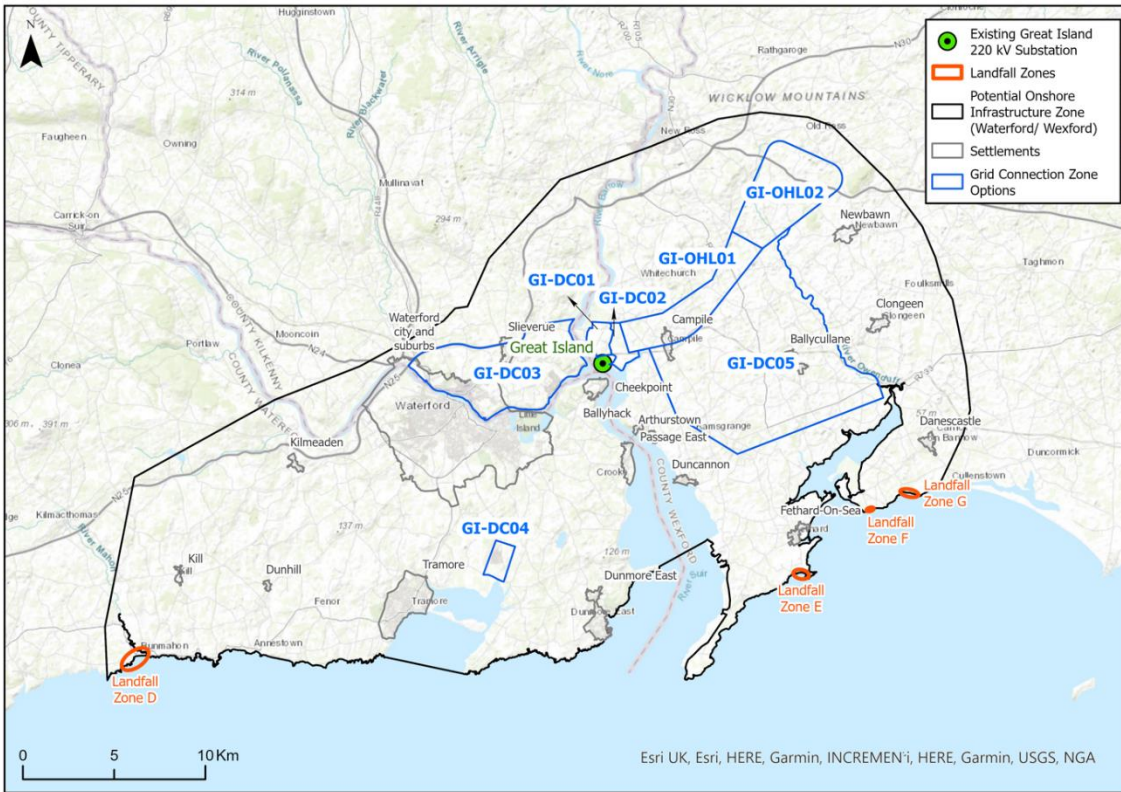
Figure 4.1: Landfall Zone and Grid Connection Zone Options (County Cork)



Source: Mott MacDonald

The Step 3 longlist of options in County Waterford, County Kilkenny and County Wexford are presented in Figure 4.2.

Figure 4.2: Landfall Zone and Grid Connection Zone Options (County Waterford, County Kilkenny and County Wexford)



Source: Mott MacDonald

Further information on the Step 3 Long List of Landfall Zone and Grid Connection Zone options is provided in Chapter 5 of this report.

4.3 Step 3 Identification of Emerging Best Performing Options

4.3.1 Information Gathering

At this early stage in project development, Potential Infrastructure Zones are considered at a high level only, in advance of studies being undertaken and engagement with local authorities, prescribed bodies and other key stakeholders.

Where data relating to the identified considerations, opportunities and constraints, discussed in Chapter 3 are available, these have been considered in the preparation of this report.

Table 4.2 presents the data sources used to inform this report.

Table 4.2: Data Sources Used to Inform this Report

Data source	Date	Data contents
<u>Biodiversity Maps</u>	Accessed 6 August 2024	Historic data on various protected species / Point data from the National Invasive Species Database
<u>Bunmahon Village Health Check.pdf (waterfordcouncil.ie)</u>	Accessed 14 August 2024	Baseline data for Landfall Zone D
Celtic Interconnector Offshore Constraints Report, Document Ref. 400584-PL-TEN-004 Rev.3 (Wood April 2019)	Accessed July 2024	Celtic HVDC interconnector routing
Celtic Interconnector Shipping and Fishing Cable Risk Assessment (Anatex, 2016)	Accessed 10 August 2024	Land /marine use
<u>Data. GOV.IE - https://data.gov.ie/dataset/coast-national-250k-map-of-ireland</u>	Accessed July 2024	Definition of coastline Ireland
<u>EIA Portal</u>	Accessed 8 August 2024	EIAR planning website
<u>EPA Maps</u>	Accessed 31 July 2024	Data on surface waters and soils
European Marine Observation and Data Network (EDMONDNET)	Accessed August 2024	Bathymetry and geophysical data
<u>Excavations</u>	Accessed 30 July 2024	Excavation Bulletins Database
<u>Flood Maps - Floodinfo.ie</u>	Accessed 30 July 2024	Flood Mapping and Drainage Mapping
<u>Geological Survey Ireland Spatial Resources (arcgis.com)</u>	Accessed 30 July 2024	Geological data
<u>Greenlink Interconnector: https://www.greenlink.ie/</u>	Accessed August 2024	Greenlink HVDC interconnector routing
<u>Groundwater Data Viewer GSI</u>	Accessed 30 July 2024	Onshore GSI Geology Data & Contour Layer
<u>Historic Environment Viewer (arcgis.com)</u>	Accessed 30 July 2024	National Monuments Service (NMS) and National Inventory of Architectural Heritage (NIAH)

Data source	Date	Data contents
Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR)	Accessed July 2024	Sub bottom profiling
<u>Ireland's Marine Atlas</u>	Accessed 15 August 2024	Ocean infrastructure, Ports, Harbours, Fishing
<u>Irish Townland and Historical Map Viewer (arcgis.com)</u>	Accessed 30 July 2024	OS 1 st and 2 nd Edition maps
<u>National Parks and Wildlife Service designated area spatial data</u>	Accessed 6 August 2024	Boundary data for SAC, SPA, NHA and pNHA sites
National Parks and Wildlife Service: Irish Semi-Natural Grassland Survey (https://www.npws.ie/sites/default/files/general/0202_ISGS13_grassland_20150225.zip)	Accessed 6 August 2024	Shapefiles for the Irish Semi-Natural Grassland Survey 2007-2012
National Parks and Wildlife Service: Ancient and Long Established Woodland Survey (https://www.npws.ie/sites/default/files/general/ancient-long-established-woodland.zip)	Accessed 6 August 2024	Shapefile for Ancient and Long-Established Woodland Survey (June 2012 update)
National Parks and Wildlife Service: Flora Protection Order (FPO) species (https://www.npws.ie/sites/default/files/general/FPO%202022%20records%20v%201.0%202023.zip)	Accessed 6 August 2024	Shapefiles of FPO species, records within the last 50 years considered
National Parks and Wildlife Service: Freshwater Pearl Mussel (https://www.npws.ie/sites/default/files/general/Margaritifera_sensitive_areas_2020_v10.zip)	Accessed 6 August 2024	Shapefiles of catchments identified containing the known extant populations of the Freshwater Pearl Mussel, <i>Margaritifera margaritifera</i> , in the Republic of Ireland.
National Parks and Wildlife Service: Native Woodlands (https://www.npws.ie/sites/default/files/general/nsnw.zip)	Accessed 6 August 2024	Shapefile for the National Survey of Native Woodlands 2003-2008 (June 2012 update)
National Parks and Wildlife Service: QI/SCI features (https://www.npws.ie/sites/default/files/general/SSCO_April_2022_0.zip)	Accessed 6 August 2024	Shapefiles of QI/SCI features associated with European sites
OSIRIS (2015) Geophysical and Geotechnical Survey Data for Celtic Interconnector	Accessed July 2024	Geotech and Geophysical data
<u>Record of Monuments and Places National Monuments Service (archaeology.ie)</u>	Accessed 31 July 2024	County Cork, Waterford and Wexford Record of Monuments and Places (RMP)
<u>Settlement and Zoning Maps (arcgis.com)</u>	Accessed 6 August 2024	Social considerations
<u>Surveying Open Data Portal - https://data-osi.opendata.arcgis.com/</u>	Accessed July 2024	Electrical Grid Infrastructure

Data source	Date	Data contents
Volume 5: Record of Protected Structures Wexford County Council Online Consultation Portal (wexfordcoco.ie)	Accessed 30 July 2024	County Wexford Record of Protected Structures (RPS)
Volume 6: Architectural Conservation Areas Wexford County Council Online Consultation Portal (wexfordcoco.ie)	Accessed 30 July 2024	County Wexford Architectural Conservation Areas (ACA)
Volume-2-heritage-amenity.pdf (corkcoco.ie)	Accessed 30 July 2024	County Cork Record of Protected Structures (RPS) and Architectural Conservation Areas (ACA)
Volume-3C2_Technical-Chapters-for-Ireland-Onshore-EIAR_Celtic-Interconnector_June-2021	Accessed 12 August 2024	Baseline data for Ballyadam
Waterford City & County Development Plan 2022–2028 - Waterford City & County Council (waterfordcouncil.ie)	Accessed 30 July 2024	Waterford City and County Record of Protected Structures (RPS) and Architectural Conservation Areas (ACA)
Waterford Development Plan Zoning	Accessed 30 July 2024	Zoning/Landscape Character Areas
Waterford Planning Applications (arcgis.com)	Accessed 30 July 2024	Zoning/Landscape Character Areas
Wexford - County Geological Site Report (geodata.gov.ie)	Accessed 14 August 2024	Baseline data for Landfall Zone E
Wexford - County Geological Site Report (geodata.gov.ie)	Accessed 14 August 2024	Baseline data for Landfall Zone G
Wexford.ie Mapping	Accessed 30 July 2024	Zoning/Landscape Character Areas

4.3.2 Geographic Information System

Geographical information system mapping has been used to display key datasets that inform this report.

Geographical information system datasets were collated from a variety of sources, including direct data downloads from open-source authority sites and data imports from Web Mapping Services (WMS) and ArcGIS Feature Services.

These were checked as appropriate to ensure that they were up to date and a copy was imported into the project databases. All data licences were checked to ensure that they were available for use. Each dataset then went through a technical check to ensure that they were complete, correct and relevant. Where possible, ArcGIS layer files were then used to ensure that each dataset was symbolised in line with the authoritative body it was sourced from.

4.3.3 Evaluation of Potential Infrastructure Zones

The constraints and considerations detailed in Chapter 3 of this report have been evaluated for each Landfall Zone and Grid Connection Zone reflecting the characteristics of each element of the proposed development. For example, temporary works associated with the installation of a below ground TJB at the Landfall Zones and permanent above ground structures in the case of Grid Connection Zones.

Based on professional judgement and experience a risk ranking has been assigned to each Landfall Zone and Grid Connection Zone having regard to the sub-criteria presented in Chapter 3 of this report in line with the risk ranking presented in Table 4.3.

Table 4.3: Risk Ranking

Ranking	Description
Dark Blue	High: High probability that the risk would result in an overall proposed development that is not deliverable or may not be granted consent.
Light Blue	Moderate_High: Risk that may be challenging to mitigate to the satisfaction of the consenting authorities, prescribed bodies and stakeholders. Should only be considered where no other options are available.
Dark Green	Moderate: Identified but manageable risk requiring bespoke mitigation measures.
Light Green	Low_Moderate: Identified risk, but manageable with appropriate and standard mitigation measures.
Yellow	Low: An opportunity or a limited risk, assuming that accepted best practice is followed.

Chapter 5 of this report presents a high-level characterisation of the identified zones.

The comparative evaluation of the Landfall Zones and Grid Connection Zones is provided in Appendix B of the report. The conclusions of the MCA are presented in Chapter 6 and Chapter 7. Next Steps are discussed in Chapter 8.

5 Potential Infrastructure Zones under Consideration

5.1 Introduction

This chapter presents an overview of the Potential Infrastructure Zones under consideration as presented in Section 1.5 of this report.

These zones have been the subject of the MCA included in Appendix B of this report. The MCA includes additional detail and information on challenges, risks and opportunities associated with each of the options under consideration.

The specific locations of the EirGrid OCC Substations and the ESNB Substations, if required, will be subject to further studies and evaluations in Step 4, in line with the development of onshore UGC routes and / or consideration of loop-in connection options.

5.2 Potential Landfall Zones (Cork)

Table 5.1 presents a high-level characterisation of Landfall Zones in County Cork.

Table 5.1: Characterisation of Landfall Zones (County Cork)

Landfall Zones	Characterisation of Landfall Zones
Landfall Zone A (County Cork)	<ul style="list-style-type: none"> ● Landfall Zone A is located within the townlands of Ballintra East, Inch and Lahard. ● One-off housing in the surrounding areas. ● Popular for swimming, surfing and bodyboarding, dog walkers with trail walk along the cliff tops. Yoga workshops/events during the summer season. Swell Surf School is located nearby, offering summer camps. Trabolgan holiday village to the west. ● No designated sites in close proximity to the landfall zone. The closest designated site to the landfall is the Cork Harbour SPA (004030), Cork Harbour Ramsar site (000837), and Whitegate Bay pNHA (001084) which are located approximately 4.7km to the north-west of the landfall zone at its closest extent. ● There is one recorded monument located within this landfall zone; Prehistoric site - lithic scatter (SMR ID: CO100-043----). The presence of this asset suggests that further previously unrecorded prehistoric archaeology may be present in the area. ● SS Chicago (W08079), ocean liner wrecked 1868 is located approximately 1.2km west of the landfall zone. ● Significant fisheries around the landfall zone include shrimp, crab and lobster potting and demersal net fishing to the east. Spawning and nursery grounds for a number of species including Horse Mackerel, Whiting and Cod in proximity. ● Disused gas pipeline traverses a small beach with limited flexibility. Extent of rock outcropping on approach further limits flexibility.

Landfall Zones

Characterisation of Landfall Zones

Landfall Zone B (County Cork)

- Landfall Zone B is located within the townlands of Shanahee Ballybranagan, Ballycraheen West, Ballyrobin South and Ballycraheen East.
- Extends between Ballycraheen Beach and Ballybrannigan Beach incorporating cliff faces.
- Small number of residential properties and farm buildings along the local road approaching the beach.
- Popular beach for swimming, surfing and fishing, with a local surf school and a sauna service. Yoga sessions held on the beach.
- No designated sites were noted in close proximity to the landfall zone. The closest designated site to the landfall zone is the Ballycotton, Ballynamona and Shanagarry pNHA located approximately 5km to the east.
- 1st Edition maps record the location of a Coast Guard Station and Signal Post within this Landfall Zone. There are two recorded monuments located within this Landfall Zone; Prehistoric site - lithic scatters (SMR ID: CO100A001---- and CO100-031----). The presence of these assets suggests that further previously unrecorded prehistoric archaeology may be present in the area.
- SS Irish Plane (W09752) steamer wrecked 1947 is located approximately 1.2km south-west of landfall zone.
- Significant fisheries around the landfall zone include shrimp, crab and lobster potting, and demersal net fishing. Periwinkle harvesting within the zone. Spawning and nursery grounds for a number of species including Horse Mackerel, Whiting and Cod.
- Elevated lands to the north but zone is wide enough to offer flexibility. Extent of rock outcropping on approach does however limit flexibility.

Landfall Zone C (County Cork)

- Landfall Zone C is located within the townlands of Garryvoe Lower, Ballybutler and Ballycraheen.
 - Residential properties along An Tra Geal just to the west of the zone. Residential properties are located on either side of the R632, to the north of the zone. Mobile home park located to the west of the landfall zone.
 - Large extent of land to the immediate north-west of the beach area zoned as Green Infrastructure (associated with Shanagarry/Garryvoe). This wetland area forms part of the Ballycotton, Ballynamona and Shanagarry proposed Natural Heritage Area. It supports wetland habitat and serves an important flood storage role.
 - Designated, in part, as Ballycotton, Ballynamona and Shanagarry pNHA. The eastern section of Ballycraheen Beach is more ecologically sensitive and less damaged by coastal erosion than the western section. Ballycotton Bay SPA adjacent to the western boundary.
 - One recorded monument located with this Landfall Zone; Fulacht fia (SMR ID: CO089-076----) to the east. The Zone of Notification of Prehistoric site - lithic scatter (SMR ID: CO089-078----) is also located within the Landfall Zone.
 - An unknown wreck (W10772) is located approximately 2km south of the landfall zone.
 - Significant levels of shrimp, crab and lobster fishing by Ballycotton, Knockadoon and Youghal vessels in the area. Spawning and nursery grounds for a number of species including Herring, Horse Mackerel, Whiting and Cod. Demersal net fishing and periwinkle harvesting also occurring here. Marine Institute maps also show dredge fishing for mussels and clams in the area but engagement with the Marine Institute is required to establish the accuracy of this data as it is understood that dredge fishing does not occur in the area of Ballycraheen. The primary fishing activity in the immediate area is static fishing for shrimp.
 - Extent of rock outcropping on approach limits flexibility.
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5.3 Potential Grid Connection Zones (Cork)

Table 5.2 presents a high-level characterisation of Grid Connection Zones in County Cork.

Table 5.2: Characterisation of Grid Connection Zones (Cork)

Grid Connection Zones	Characterisation of Grid Connection Zones
AA-OHL01 (County Cork)	<ul style="list-style-type: none"> ● The majority of this zone is within land zoned for <i>Industry</i> (approx. 0.55 sq km) and <i>Green Infrastructure</i> (approx. 0.27sq km). ● Majority of this zone is agricultural usage and one-off housing/ farm buildings. There are also sections of this zone containing industrial usages related to the Aghada 220 kV Substation (along the North- West boundary) and a section of existing residential to East. ● The majority of this zone is agricultural usage and one-off housing/ farm buildings; however, this zone includes industrial/ utilities usages associated with Aghada 220 kV Substation. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There is one built heritage asset recorded within the Loop-in Zone; Presbyterian Church (RPS ID: 591). There are four recorded monuments within this Loop-in Zone boundary; Castle - unclassified (SMR ID: CO088-057001-), Country house (SMR ID: CO088-057----), Church (SMR ID: CO088-058002-) and Graveyard (SMR ID: CO088-058001-). ● Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point; however, views would be seen in the context of the long-established energy infrastructure in this zone which can be expected to offer local visual absorption opportunities.
AA-OHL02 (County Cork)	<ul style="list-style-type: none"> ● Entirety of this zone is located within Special Policy Area WG-X-01 (388ha): Area with potential for major, large-scale energy and renewable energy related development, including port-related activities and bulk liquid storage and processing activities. ● This zone is located within predominantly agricultural land, along with one-off housing and agricultural buildings. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There are no architectural or built heritage assets recorded within this Loop-in Zone. The closest built heritage assets are House (NIAH Reg No.: 20831013), located approximately 30m to the north of the Loop-in Zone boundary and Trabolgan House and Gate Lodge (NIAH Reg No.: 20910001), located approximately 45m to the south of the Loop-in Zone boundary. There are four recorded monuments within this Loop-in Zone boundary; Ritual site - holy well (SMR ID: CO088-032----), Enclosure (SMR ID: CO088-034----), Ringfort - rath (SMR ID: CO100-005----) and Ringfort - rath (SMR ID: CO100-006----). ● Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point and Scenic Route S50 Road between Inch and Aghada. This zone is however zoned for energy infrastructure and as such the emerging baseline can reasonably be expected to change.
AA-OHL03 (County Cork)	<ul style="list-style-type: none"> ● No land use zoning applicable to the majority of this zone. Approximately 0.4 sqkm overlaps with Existing Residential/Mixed Residential and Other Uses. ● A large section of this zone is within High Value Landscape. ● Majority of this zone is agricultural usage and one-off housing/ farm buildings.

Grid Connection Zones

Characterisation of Grid Connection Zones

	<ul style="list-style-type: none"> ● A small portion of the zone includes the CLOYNE AGHADA PWS Source Protection Zone. ● This zone is located within predominantly agricultural land, along with one-off housing and agricultural buildings with residential housing along the western boundary of the zone. ● Karst fractures, including Carrigacrump caves pNHA. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There are a number of architectural or built heritage assets recorded within this Loop-in Zone. These consist of a number of buildings in Whitegate; School (NIAH Reg No.: 20831003 and RPS ID: 589), House (NIAH Reg No.: 20831004), House (NIAH Reg No.: 20831006), Water Pump (NIAH Reg No.: 20831005), Fountain (NIAH Reg No.: 20831015), House (NIAH Reg No.: 20831007), House 20831005, Fountain (NIAH Reg No.: 20831008), House (NIAH Reg No.: 20831009), House (NIAH Reg No.: 20831010) and House (NIAH Reg No.: 20831013). There are 12 recorded monuments within this Loop-in Zone boundary; Kiln - lime (SMR ID: CO088-059001-), Church (SMR ID: CO088-043002-), Graveyard (SMR ID: CO088-043001-), Ritual site - holy well (SMR ID: CO088-044002-), Stone sculpture (SMR ID: CO088-044001-), Ringfort - rath (SMR ID: CO088-045----), Enclosure (SMR ID: CO088-042----), Ringfort - rath (SMR ID: CO088-037----), Ringfort - rath (SMR ID: CO088-036----), Enclosure (SMR ID: CO088-115----), Designed landscape - tree-ring (SMR ID: CO088-102----) and Mound (SMR ID: CO088-101----). The Zone of Notification of a further two monuments are also located within this Loop-in Boundary; Graveyard (SMR ID: CO088-033003-) and Ringfort - rath (SMR ID: CO088-038001-). ● Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point, and these would be seen in the context of existing electricity transmission infrastructure (OHL's).
AA-OHL04 (County Cork)	<ul style="list-style-type: none"> ● This loop in Zone is, for the majority, free of land use zoning, although a small section (approx. 0.26 sqkm) overlaps with the settlement of Cloyne and associated Existing Residential/Mixed Residential and Other Uses and Agriculture. ● A large section of this zone is also within the High Value Landscape. ● Majority of this zone is agricultural usage and one-off housing/ farm buildings. ● A large portion of the zone includes the CLOYNE AGHADA PWS Source Protection Zone. ● Karst features (swallow holes and caves) identified within this zone. Carrigacrump caves pNHA is approximately 90m to the south of the zone. ● The majority of this zone is agricultural usage and one-off housing/ farm buildings. Linear residential settlement is located where the zone overlaps with the settlement of Cloyne. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There are four architectural or built heritage assets recorded within this Loop-in Zone; Sign Post (NIAH Reg No.: 20908829), Worker's House (NIAH Reg No.: 20908828), Worker's House (NIAH Reg No.: 20908826) and Gate Lodge (NIAH Reg No.: 20908827). The OS 1st and 2nd Edition maps indicate that the northern portion of the Loop-In Zone falls within the boundary of the 17th/18th century Castle Mary estate. There are three recorded monuments within this Loop-in Zone boundary; Standing Stone (SMR ID: CO088-017----), Ringfort - rath (SMR ID: CO088-028----) and Souterrain (SMR ID: CO088-089----).

Grid Connection Zones	Characterisation of Grid Connection Zones
BA-OHL01 (County Cork)	<ul style="list-style-type: none"> ● Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point, and these would be seen in the context of existing electricity transmission infrastructure (OHL's). Views to / from Cloyne / Cloyne ACA will also require further consideration if this option is brought forward to Step 4. <hr/> <ul style="list-style-type: none"> ● This zone is entirely located within <i>Industry</i> zoning and the Celtic Interconnector site (ABP Ref: 310798 – granted 19/5/2022), which includes a converter substation at Ballyadam. The site also includes a temporary construction compound for the Glounthaune to Midleton Twin Track railway project (ABP-NC04-312676). ● This zone encompasses the site of the Celtic Interconnector Converter Station (under construction at the time of writing). ● This zone is located between Carrigtwohill and Midleton and encompasses Industrial Development Agency (IDA) lands. Midleton railway line runs to the north of the zone and a quarry is located just outside the zone to the south. ● Site is known to contain pockets of calcareous grassland, rare species (e.g. greater knapweed), and small wetland areas. ● There are no architectural or built heritage assets recorded within this Loop-in Zone and there are none located within close proximity. There are three recorded monuments within this Loop-in Zone boundary; Fulacht fia (SMR ID: CO076-120----), Fulacht fia (SMR ID: CO076-121----), Fulacht fia (SMR ID: CO076-123----) and Excavation - miscellaneous (SMR ID: CO076-119----). ● Views to this zone would be seen in the context of the Celtic Interconnector Converter Station which is currently under construction and can be expected to offer local visual absorption opportunities.

5.4 Potential Landfall Zones (Waterford / Wexford)

Table 5.3 presents a high-level characterisation of Landfall Zones in County Cork.

Table 5.3: Characterisation of Landfall Zones (County Waterford / County Wexford)

Landfall Zones	Characterisation of Landfall Zones
Landfall Zone D (County Waterford)	<ul style="list-style-type: none"> ● Landfall Zone D is located within the townlands of Knockmahon, Templeyrick, Ballynasissala and Ballynagigla. ● Zone extends westwards incorporating the cliff-face. ● Bunmahon / Bonmahon village is located adjacent to the beach. Nearby amenities include Bunmahon Beach Boardwalk, a permanent caravan/mobile home holiday park and associated amenities such as car parking and children's playgrounds, sporting facilities (including astroturf), school, cafes and restaurant/pub, take-away (open during summer months) housing and Bunmahon Coast Guard Station (coast and cliff rescue), all within a 0.5km radius from the beach. Slipway for Bunmahon Coast Guard Station appears to be within the zone. Knockmahon National School is approximately 550m from the beach.

Landfall Zones

Characterisation of Landfall Zones

	<ul style="list-style-type: none"> ● Part of UNESCO designated Copper Coast Geopark. Copper Coast Geopark Ltd. is located in Bunmahon. The Geopark Centre hosts a number of annual events that celebrate the local industrial heritage, geological and biodiversity aspects of the Copper Coast area, including the Copper Coast Festival, with a wide range of activities and National Heritage Week events on the beach. ● Overlaps the Mid-Waterford Coast SPA (004193) and Ballyvoyle Head to Tramore pNHA (001693). Chough SCI in the immediate area of the beach (foraging and potentially nesting). Suitable breeding habitat for chough and peregrine occurs close to the beach. A lowland/depositing river flows down from the north. Marsh by the river, and sand dunes sedimentary and rocky sea cliff at/ adjacent to the beach area. ● The Landfall Zone is located within the Copper Coast (Bunmahon/ Knockmahon) Architectural Conservation Area (ACA). The special character of the area relates to its 19th century industrial heritage, which is of technical, historical and social interest. There are five built heritage assets recorded within Bunmahon village on the WCCC RPS within the Landfall Zone: WA750419, WA750420, WA750421, WA750423 and WA750557. There are two recorded monuments located within the Landfall Zone; Ogham stones (SMR ID: WA025-128001- and WA025-128002-). These were originally located within Knockmahon promontory fort (SMR ID: WA025-065----) and are now located within the Geological Park at Bunmahon. ● Ythan (W11705) wrecked in 1905 is located approximately 2km off the landfall zone. ● Significant fisheries around the landfall zone include shrimp, crab and lobster potting, midwater trawl fishing, demersal net fishing. Spawning and nursery grounds for Horse Mackerel, Whiting, Cod. ● Channel through bedrock on approach offers flexibility and limits need for rock cutting.
<p>Landfall Zone E (County Wexford)</p>	<ul style="list-style-type: none"> ● Landfall Zone E is located within the townland of Ramstown. ● One off housing in the surrounding area. Two parking areas close to the beach. Ban Milis housing estate approximately 200m from the landfall zone. ● Zone encompasses agricultural land and one-off housing in addition to Carnivan Beach. There is a walking track along the northern clifftop. St Mogue's GAA and Ramstown Farm / motorhome park approximately 650m north of the landfall zone. Baginbun Norman festival annually hosted at Fethard Castle in Fethard-on-Sea, approximately 2km to the north. The Hook Head Peninsula is popular for diving. ● The entire beach and coastal waters at Carnivan are all designated under the Seas off Wexford SPA (004237), and Hook Head SAC (000764). The centre of the landfall zone (the coastal fringe including the beach) is also designated as Hook Head pNHA (000764). Habitats include a sand/ gravel beach, extensive intertidal and subtidal rocky reef, relatively steep rocky sea cliffs and sedimentary sea cliffs. Non calcareous springs are present along the sea cliffs. The area also includes suitable habitat for breeding chough and peregrine. Bannow Bay to the north is designated a SPA (004033) and SAC (000697). ● Baginbun Martello Tower (NIAH Reg No.: 15705009) is located approximately 110m to the east. An area of high archaeological potential. There are three recorded monuments located within the Landfall Zone (to the east); Military camp (SMR ID: WX050-015003-), Battlefield (SMR ID: WX050-015006-) and Linear earthwork (SMR ID: WX050-015002-), which is a National Monument. These assets share a Zone of Notification and are associated with the 12th century Baginbun Head promontory fort (SMR ID: WX050-015001-), located approximately 245m to the east. ● The entire Hook Head Peninsula is associated with the Anglo-Norman invasion.

Landfall Zones	Characterisation of Landfall Zones
Landfall Zone F (County Wexford)	<ul style="list-style-type: none"> ● Potential for submerged landscape, despite rock outcropping onshore. Further study will be required if this option is brought forward to Step 4, including walkover, intertidal, geotechnical and geophysical surveys. ● Significant fisheries around the landfall zone include shrimp, crab and lobster potting and midwater trawl fishing. Razor clam and cockle dredge fisheries to the north-east. Spawning and nursery grounds for Herring, Horse Mackerel, Whiting, Cod. ● Potentially only a narrow trench available through bedrock, shared with other offshore infrastructure offering limited flexibility. <hr/> <ul style="list-style-type: none"> ● Landfall Zone F is located within the townland of Bannow. ● In Norman times the main settlement in the area would have been on Bannow Island. The main settlement now is the village of Carrig-on-Bannow (Danescastle) approximately 5km to the north-east. Scattered houses and farm buildings in vicinity of the beach. Linear settlement pattern along local roads. Kerragh islands viewpoint on the beach. Blackhall bus stop on the local road to the beach used by commuters in the area. The Norman Way is a heritage route that runs along the south coast of County Wexford. The Bannow Bay Equine Assisted Activities and Learning centre is located approximately 120m to the north. The Hook Head Peninsula is popular for diving. ● The Bannow Bay Equine Assisted Activities and Learning centre may be used by persons particularly vulnerable to change, nuisance and disturbance and will require careful consideration and engagement if this option is brought forward to Step 4. ● The beach and coastal waters at Landfall Zone F are all designated under the Seas off Wexford SPA (004237). Habitats include sand/ gravel beach, rocky intertidal reef and sedimentary cliff. Bannow Bay to the north is designated a SPA (004033) and SAC (000697). ● Bannow Coastguard Station: boathouse (NIAH Reg No.: 15705012) and Bannow Coastguard Station: coastguard station (NIAH Reg No.: 15705011) are located to the northwest, just outside of the boundary of the Landfall Zone. There are no recorded monuments located within the Landfall Zone. The Norman conquest of Ireland began in Bannow Bay in 1169, when three ships commanded by Robert Fitz-Stephen arrived at the behest of Diarmait MacMurrough to support his claim to the Kingdom of Leinster. Although not researched in detail, Bannow is considered to retain high potential. ● Potential for submerged landscape, despite rock outcropping onshore. Further study will be required if this option is brought forward to Step 4, including walkover, intertidal, geotechnical and geophysical surveys. ● Significant fisheries around Landfall Zone F include a herring fishery and spawning ground, shrimp, crab and lobster potting. There are also razor clam and cockle dredge fisheries to the west and in Bannow Bay to the North. Bannow Bay also includes a number of licensed aquaculture sites for oyster production. Spawning and nursery grounds for Herring, Whiting, Horse Mackerel, Cod. ● Potentially only a narrow trench available through bedrock, shared with other offshore infrastructure, offering limited flexibility.
Landfall Zone G (County Wexford)	<ul style="list-style-type: none"> ● Landfall Zone G is located within the townlands of Blackhall, Haggard, Ballymadder, Loftusacre. ● This landfall zone encompasses agricultural land and one-off housing, in addition to Blackhall Beach. Linear settlement pattern along local roads. Land in the immediate vicinity to the beach is predominantly agricultural/ consists of agricultural communities. Kerragh islands can be viewed from the beach. Phil Murphy Weekend, a traditional Irish music festival, takes place in Carrig-on-Bannow annually. The Hook Head Peninsula is popular for diving.

Landfall Zones	Characterisation of Landfall Zones
	<ul style="list-style-type: none"> ● The beach and coastal waters at Landfall Zone G are all designated under the Seas off Wexford SPA (004237). Habitats include a sand/ gravel beach, embryonic dune (east end) and sedimentary and rock cliff (west end). Bannow Bay to the north is designated a SPA (004033) and SAC (000697). ● One built heritage asset recorded within this Landfall Zone; Slade Cottage (NIAH Reg. No.: 15704549). Two recorded monuments located with this Landfall Zone; Ringfort - rath (SMR ID: WX045-054001-) to the east and Ritual site - holy well (SMR ID: WX045-050----) to the northwest. The Zone of Notification of Church (SMR ID: WX045-051----) is also located within the Landfall Zone. The holy well is located adjacent to the church. The entire Hook Head Peninsula is associated with the Anglo-Norman invasion. The Norman conquest of Ireland began in Bannow Bay in 1169 in proximity to this Landfall Zone. ● Potential for submerged landscape, despite rock outcropping onshore. Further study will be required if this option is brought forward to Step 4, including walkover, intertidal, geotechnical and geophysical surveys. ● Significant fisheries around Landfall Zone G include a herring fishery and spawning ground, shrimp, crab and lobster potting. There are also razor clam and cockle dredge fisheries to the west and in Bannow Bay to the North. Bannow Bay also includes a number of licensed aquaculture sites for oyster production. Spawning and nursery grounds for Herring, Whiting, Horse Mackerel, Cod. ● Approach to landfall zone offers flexibility with channel through bedrock

5.5 Potential Grid Connection Zones (Waterford / Wexford / Kilkenny)

Table 5.4 presents a high-level characterisation of Grid Connection Zones in County Waterford and County Wexford and County Kilkenny

Table 5.4: Characterisation of Grid Connection Zones (Waterford / Wexford / Kilkenny)

Grid Connection Zones	Characterisation of Grid Connection Zones
GI-DC01 (County Wexford)	<ul style="list-style-type: none"> ● No land use zoning within the Wexford County Development relating to this Zone. Great Island Power Station (Lower Tier establishment) and associated 220 kV substation are located to the immediate south of this Zone (south of railway line). ● The majority of land within this zone consists of agricultural land, however the lands are adjacent to long-established energy infrastructure with multiple OHL's traversing the zone. Includes Kilmokea Country Manor and Gardens which host festivals and events, including an annual traditional Irish music festival. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There are two built heritage assets within this Zone; Kilmokea House (NIAH Reg No.: 15703907) and Great Island Cemetery (NIAH Reg No.: 15703909). There are a number of recorded monuments within this Zone. These include two Bullaun Stones (SMR ID: WX039-018003- and WX039-018005-), three enclosures (SMR ID: WX039-018001-, WX039-018011 and WX039-018012-), Cross - High cross (SMR ID: WX039-018004-), Headstone (SMR ID: WX039-088----) and Church (SMR ID: WX039-018002-). These monuments are concentrated around and associated with early ecclesiastical site and the parish church of Kilmokea. There is also a moated site (SMR ID: WX039-019----) located in close proximity. There is another concentration of recorded monuments,

Grid Connection Zones

Characterisation of Grid Connection Zones

	<p>including a Leper Hospital (SMR ID: WX039-028005-), burial (SMR ID: WX039-028006-), Castle - ringwork (SMR ID: WX039-028001-), Castle - unclassified (SMR ID: WX039-028003-) and Enclosure - large enclosure (SMR ID: WX039-028004-). These monuments are concentrated around and associated with the 13th century Anglo-Norman castle, Castle - Anglo-Norman masonry castle (SMR ID: WX039-028002-). The areas in and around these concentrations of monuments will need to be avoided, and they indicate the potential for further unrecorded and/or buried archaeology at this location.</p> <p>Access to this zone is poor, with a single access road, there are no obvious diversion routes available. Two HGV's cannot pass on the local roads so traffic disruption is likely. There are however no schools, hospitals churches etc local to the zone that would be particularly disaffected by transport and traffic effects, other than Great Island Power Station.</p> <ul style="list-style-type: none"> ● Development in this zone would be viewed from County Kilkenny, County Waterford and County Wexford, however, those views would be seen in the context of the long-established energy infrastructure in this zone. Waterford City and County CDP 2022 Landscape and Seascape Character Assessment for the coastal area of Cheekpoint is 'Most Sensitive.' Kilkenny City and County Council CDP 2021 includes a number of protected views from elevated lands and describes the area along the River Barrow as Upland Landscape Character Type.
<p>GI-DC02 (County Wexford)</p>	<ul style="list-style-type: none"> ● No land use zoning within the Wexford County Development relating to this Zone. Located adjacent to Great Island Power Station and associated transmission infrastructure. ● Almost entirely located within an area identified as being at risk of flooding (part of Benefitting Lands of the Kilmannock Drainage District). It would not be possible to avoid these areas. ● The zone is traversed by a railway line. Dunbrody Abbey is just outside the zone to the east, includes the Dunbrody Abbey Garden and a Visitor Centre, hosting a wide range of activities including a maze and tea rooms. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There are no architectural or built heritage assets recorded within this Zone. However, there are three built heritage assets recorded close to the Zone boundary; Hill House (NIAH Reg No.: 15703911) is located c. 220m to the east, Kilmannock House Walled Garden (NIAH REG No.: 15703913) is located c. 150m to the north and Kilmannock House (NIAH Reg. No.: 15703912) is located c. 170m to the north. Hill House and Killmannock House are also recorded on the RPS. There are two recorded monuments located with this Landfall Zone; Ringfort - rath (SMR ID: WX039-072----) and Water mill - unclassified (SMR ID: WX039-091----) to the northwest. The Zone of Notification of Moated site (SMR ID: WX039-019----) is also located within this Zone. ● Access to this zone is poor, with a single access road, there are no obvious diversion routes available. Two HGV's cannot pass on the local roads so traffic disruption is likely. There are however no schools, hospitals churches etc local to the zone that would be particularly disaffected by transport and traffic effects, other than Great Island Power Station. ● Development in this zone would be viewed from County Kilkenny, County Waterford and County Wexford, however, those views would be seen in the context of the long-established energy infrastructure in this zone. Waterford City and County CDP 2022 Landscape and Seascape Character Assessment for the coastal area of Cheekpoint is 'Most Sensitive'. Kilkenny City and County Council CDP 2021 includes a number of protected views from elevated lands and describes the area along the River Barrow as Upland Landscape Character Type.
<p>GI-DC03 (County Kilkenny / County Waterford)</p>	<ul style="list-style-type: none"> ● The majority of this zone is within County Kilkenny. Land use zoning limited to residential area of Ferrybank along R711 and route of New Ross Greenway within Waterford Council administrative area. Ferrybank is located in County Waterford).

Grid Connection Zones

Characterisation of Grid Connection Zones

	<ul style="list-style-type: none"> ● Belview Port is located within this zone. It includes approximately 23 businesses and over 600 employees. Celtic Anglican Water is a large water utility company located within this zone, employing approximately 100 employees. These provide a potential hotspot for commuters. Potential traffic impacts along the R711, R448, N29 that may affect commuters to Waterford, Belview Port and surrounding areas. ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. ● There are a number of architectural or built heritage assets recorded within this Zone, mainly concentrated within the northern side of Waterford City. These include the group of assets that are part of Plunket Railway Station; Signal Box (RPS ID: WA730571 and NIAH Reg No.: 22500027), Platform (NIAH Reg. No.: 22500033), Post Box (RPS ID: WA731036), Canopy (RPD ID: WA730709) and the station itself (NIAH Reg No. 22500032). There are also a number of assets recorded within the dock including, Crane (NIAH Reg No.: 22500042) and R. and H. Hall (NIAH Reg No. 22900908). There are a further nine assets recorded within the NIAH which are recorded within the boundary of Waterford City (five of these are also recorded within the RPS) and three assets within the RPS. Beyond this, there are three assets recorded within the NIAH located in/ adjacent to the townland of Newrath to the north-west of the Zone; Granny Bridge (NIAH Reg No.: 12404314), Worker's House (NIAH Reg No.: 12404323) and Mullinabro House (NIAH Reg No.: 12404315). Finally, there is a single asset recorded at the centre of the Zone, Catholic Church of the Assumption (NIAH Reg No. 12404321) and three to the southeast, Snowhill House Gates/Railings/Walls (NIAH Reg No.: 12404405) and Gate Lodge (NIAH Reg No.: 12404404) and Tunnel (NIAH Reg No.: 12404403). This Zone is located approximately 190m to the north/northeast of the Waterford City ACA (across the River Suir). There are approximately 54 recorded monuments located within this Zone. These include a number of prehistoric monuments recorded to the south and southwest of Waterford Golf Club, two assets recorded within Waterford City and c. 16 monuments recorded to the north of Waterford City. There are a number of monuments recorded in/ around the N29 and R448. This would indicate that the archaeological potential is medium in areas with no previous disturbance and this area appears to have been settled and altered by human activity from the Neolithic to the present day. ● This zone is within the Upland Landscape Character Type as described in Kilkenny City and County Council CDP 2021. It is an objective of Kilkenny City and County Council to:- ensure that development in upland areas or on steep slopes will not have a disproportionate, or dominating visual impact (due to excessive bulk, scale or inappropriate siting) and will not significantly interfere or detract from scenic upland vistas. The elevated lands within this zone and surroundings areas could be expected to offer views over a wide area. That said, there may be local visual absorption opportunities in this zone to locate the infrastructure in proximity to industrial type uses so that it would be viewed in that context. Those opportunities would however necessitate early engagement with stakeholders such as Port Authorities, should this option be brought forward to Step 4.
<p>GI-DC04 (County Waterford)</p>	<ul style="list-style-type: none"> ● Partially located in a settlement of the Waterford County Development Plan 2022-2028 - settlement titled 'Airport' which incorporates the airport and the adjacent industrial estate. ● The majority of land within the zone includes industrial type buildings associated with Waterford Airport, also includes Irish Coast Guard Station - Rescue 117 (SAR), with a few one-off houses. Access in this zone includes the R708 and the R685. As the R685 provides access to the Airport, traffic disruptions on this road may have significant effects on the operation of the airport. ● Extensive and early engagement with Waterford Airport, the Irish Aviation Authority (IAA) and the Irish Coastguard would be required if this option is brought forward to Step 4 ● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures.

Grid Connection Zones	Characterisation of Grid Connection Zones
GI-OHL02 (County Wexford)	<p data-bbox="680 309 1861 357">WX039-076----), Ringfort - rath (SMR ID: WX039-079----), Church (SMR ID: WX034-051----), Burnt mound (SMR ID: WX034-070001-) and Burnt mound (SMR ID: WX034-070002-).</p> <ul data-bbox="636 373 1912 1007" style="list-style-type: none"> <li data-bbox="636 373 1912 475">● The potential for views from distinctive landscapes such as Slieve Coiltia and Tinnacarrick and to / from the JFK Arboretum are of note, in addition to the current agricultural land use (pastures) across the majority of this zone. While these views would be seen in the context of existing electricity transmission infrastructure (OHL's), they will require further consideration if this option is brought forward to Step 4. <li data-bbox="636 496 1912 517">● Includes the village of Ballinaboola (a level 5 Small Village, Category 2, in accordance with the Wexford County Development Plan). <li data-bbox="636 533 1912 580">● The majority of land within this zone consists of agricultural land. The Horse and Hound Hotel in Ballinaboola village hosts occasional gigs and events. <li data-bbox="636 596 1912 617">● Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. <li data-bbox="636 633 1912 922">● There are seven architectural or built heritage assets recorded within this Loop-in Zone. These include Carnagh Graveyard/ Cemetery (NIAH Reg No.: 15703505), Carnagh House (NIAH Reg No.: 15703504), Ballinaboola House (NIAH Reg No.: 15703507), Mill (NIAH Reg No.: 15703506), Saint Mary's Catholic Church (NIAH Reg No.: 15703501), Saint Mary's Catholic Church Curate's House (NIAH Reg No.: 15703502) and Post Box (NIAH Reg. No.: 15703503). There are 20 recorded monuments within this Loop-in Zone boundary; Moated site (SMR ID: WX034-042----), Church (SMR ID: WX035-035001-), Graveyard (SMR ID: WX035-035002-), Field boundary (SMR ID: WX035-085----), Church (SMR ID: WX035-034001-), Graveyard (SMR ID: WX035-034002-), Ringfort - rath (SMR ID: WX035-080----), Moated site (SMR ID: WX035-019----), Moated site (SMR ID: WX035-018----), Ringfort - rath (SMR ID: WX035-017----), Moated site (SMR ID: WX034-025----), Ritual site - holy well (SMR ID: WX035-020----), Burnt mound (SMR ID: WX035-076----), Ringfort - rath (SMR ID: WX035-013----), Moated site (SMR ID: WX035-009----), Ringfort - rath (SMR ID: WX035-008----), Enclosure (SMR ID: WX035-007----), Ringfort - rath (SMR ID: WX035-002----), Slab-lined burial (SMR ID: WX030-051----), Ringfort - unclassified (SMR ID: WX035-005----). <li data-bbox="636 938 1912 1007">● The potential for views from distinctive landscapes such as Slieve Coiltia and Tinnacarrick and Carrickbyrne are of note, in addition to the current agricultural land use (pastures) across the majority of this zone. These views would however be seen in the context of existing electricity transmission infrastructure (OHL's)

6 Emerging Best Performing Options (Cork)

6.1 Introduction

This chapter presents the Step 3 EBPO for Landfall Zones and Grid Connection Zones in County Cork, based on the detail provided in the MCA included in Appendix B of this report.

The Step 3 EBPO for Landfall Zones and Grid Connection Zones in County Cork are presented in Figure 6.1.

6.2 Emerging Best Performing Landfall Zones (Cork)

Landfall Zones A-C present a number of challenges in terms of physical constraints and the marine approach to make landfall for the offshore transmission cables. That said, it has been deemed that these challenges, in line with the risk ranking in Table 4.2, are manageable.

It has been determined therefore that all of the Step 3 longlist of Landfall Zones for County Cork merit further analysis before a determination can be made on a short-list. Consequently, Landfall Zones A-C will be brought forward to Step 4 for further study, as detailed in Table 6.1.

Table 6.1: Step 3 Short List of Landfall Zone Options (Cork)

Criterion	MCA	Step 3 Short-list
Landfall Zone A		✓
Landfall Zone B		✓
Landfall Zone C		✓

6.3 Emerging Best Performing Grid Connection Zones (Cork)

AA-OHL01 is a constrained zone with energy infrastructure to the west including a new Battery Energy Storage System (BESS) development, 110 kV and 220 kV OHL's and two high-pressure gas pipelines. The area to the east of the zone has less favourable topography for siting substations.

The entirety of AA-OHL02 is within lands zoned for energy development consistent with the requirements of this project. Although there is existing energy infrastructure in this zone, the 110 kV OHL's and high-pressure gas pipelines are generally to the north of the zone and topography to the east and southeast of the zone is favourable. This presents opportunities to site the EirGrid OCC Substation and ESBN Substation.

AA-OHL03 includes a number of recorded architectural or built heritage assets and twelve recorded monuments, however this zone offers a corridor along the 220 kV OHL's where there are opportunities for siting an EirGrid OCC Substation and an ESBN Substation. Siting of the substation will need to consider existing constraints such as OHL's, high pressure gas pipeline and the karst features in the northeastern section, including Carrigacrump caves pNHA.

A large portion of AA-OHL04 includes the Cloyne-Aghada Potable Water Source Protection Zone. Karst features (swallow holes and caves) have also been identified within this zone, with Carrigacrump caves pNHA located approximately 90m to the south of the zone. There are also very steep hills to the south and the residential areas of Cloyne to the north.

BA-OHL01 is entirely located within *Industry* zoning and the Celtic Interconnector site (ABP Ref: 310798 – granted 19/5/2022), which includes a converter substation at Ballyadam. BA-OHL01 includes known karst features, however, construction of the Converter Station for the Celtic Interconnector is ongoing within this zone. Further (Step 4) studies, of the emerging baseline at Ballyadam, would be required.

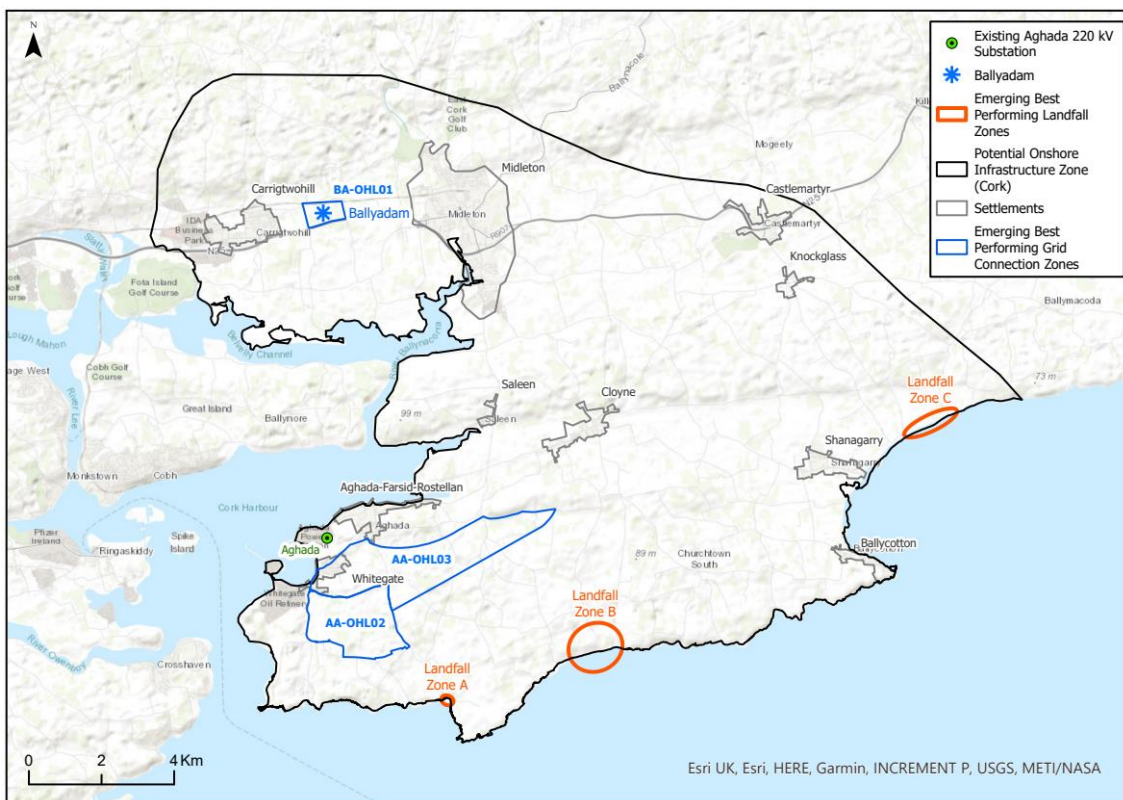
Therefore, as detailed in Table 6.2 AA-OHL02, AA-OHL03 and BA-OHL01 will be brought forward to Step 4.

Subject to further study, and in line with the risk ranking in Table 6.2, BA-OHL01 will only be brought forward to Step 5 for planning if no other options are available.

Table 6.2: Step 3 Short List of Grid Connection Zone Options (Cork)

Criterion	MCA	Step 3 Short-list
AA-OHL01		X
AA-OHL02		✓
AA-OHL03		✓
AA-OHL04		X
BA-OHL01		✓

Figure 6.1: Step 3 EBPO in County Cork



Source: Mott MacDonald

7 Emerging Best Performing Options (Waterford / Wexford)

7.1 Introduction

This chapter presents the Step 3 EBPO for Landfall Zones and Grid Connection Zones in County Waterford and County Wexford, based on the detail provided in the MCA included in Appendix B of this report.

The Step 3 EBPO for Landfall Zones and Grid Connection Zones in County Waterford and County Wexford are presented in Figure 7.1.

7.2 Emerging Best Performing Landfall Zones (Waterford / Wexford)

Based on desk-top studies undertaken, Landfall Zone D offers the best performing marine approach for the offshore transmission cable installation for the Waterford / Wexford options. The transmission cable route can potentially follow a channel through the rock outcropping with sufficient depth to bury the cable without the need for significant rock cutting or external protection (by way of rock placement). Avoidance of rock cutting and other permanent disruption to the seabed is beneficial in terms of environmental considerations, including airborne and underwater noise. Rock cutting also presents a more complex cable installation solution with higher costs, longer schedule durations and greater execution risk. Consequently, it is preferable to minimise the transmission cable length over rock outcropping.

Landfall Zone D does however present other significant technical, environmental, social and deliverability challenges. It is located adjacent to Bunmahon village, partly within the UNESCO designated Copper Coast Geopark and overlaps the Mid-Waterford Coast SPA (004193) and Ballyvoyle Head to Tramore pNHA (001693). Landfall Zone D also incorporates the Copper Coast (Bunmahon/ Knockmahon) ACA. In addition, it will be very challenging to connect into EBP Grid Connection Zone options east of Great Island 220 kV Substation in County Wexford. These challenges include third party agreements and crossing of the Barrow/Suir/Nore.

While an offshore transmission cable through rock outcropping may be possible for Landfall Zones F and G, Landfall Zones E-G present challenges in terms of the marine approach to make landfall for the offshore transmission cables, Designated Sites, physical constraints and the local road network. It has been deemed that these challenges, in line with the risk rating in Table 4.2, are manageable.

Further studies and surveys will be undertaken in Step 4, and there are information gaps in the absence of such studies/surveys having been undertaken. It has been determined therefore that all of the Step 3 longlist of Landfall Zones for County Waterford / County Wexford merit further analysis before a determination can be made on a short-list. Consequently, Landfall Zones D-G will be brought forward to Step 4 for further study, as detailed in Table 7.1.

Table 7.1: Step 3 Short List of Landfall Zone Options (Waterford / Wexford)

Sub-Criteria	MCA	Step 3 Short-list
Landfall Zone D		✓
Landfall Zone E		✓

Sub-Criteria	MCA	Step 3 Short-list
Landfall Zone F		✓
Landfall Zone G		✓

Subject to further study, and in line with the risk ranking in Table 4.3, Landfall Zone D will only be brought forward to Step 5 for planning if no other options are available.

7.3 Emerging Best Performing Grid Connection Zones (Waterford / Wexford)

All direct connection options (GI-DC01 - GI-DC05) would utilise the last available spare 220 kV switchgear bay at Great Island 220 kV substation. As identified in Section 2.2.4.1, a new ESBN Substation would not be required for a direct connection. Consequently, as there would be no available spare bays, and there would be no new ESBN Substation, there would be no availability for scalability or possibility for future extendibility. GI-DC02 is also almost entirely located within an area identified as being at risk of flooding. In consideration of EirGrid’s requirement for future extendibility, and identified flood risk, GI-DC01 to GI-DC05 will not be brought forward to Step 4 for further study, as detailed in Table 7.2.

As detailed in Section 4.2, OHL loop-in Grid Connection Zones GI-OHL01 and GI-OHL02 have been identified by a buffer from existing OHL’s. Both options benefit from proximity to existing OHL’s.

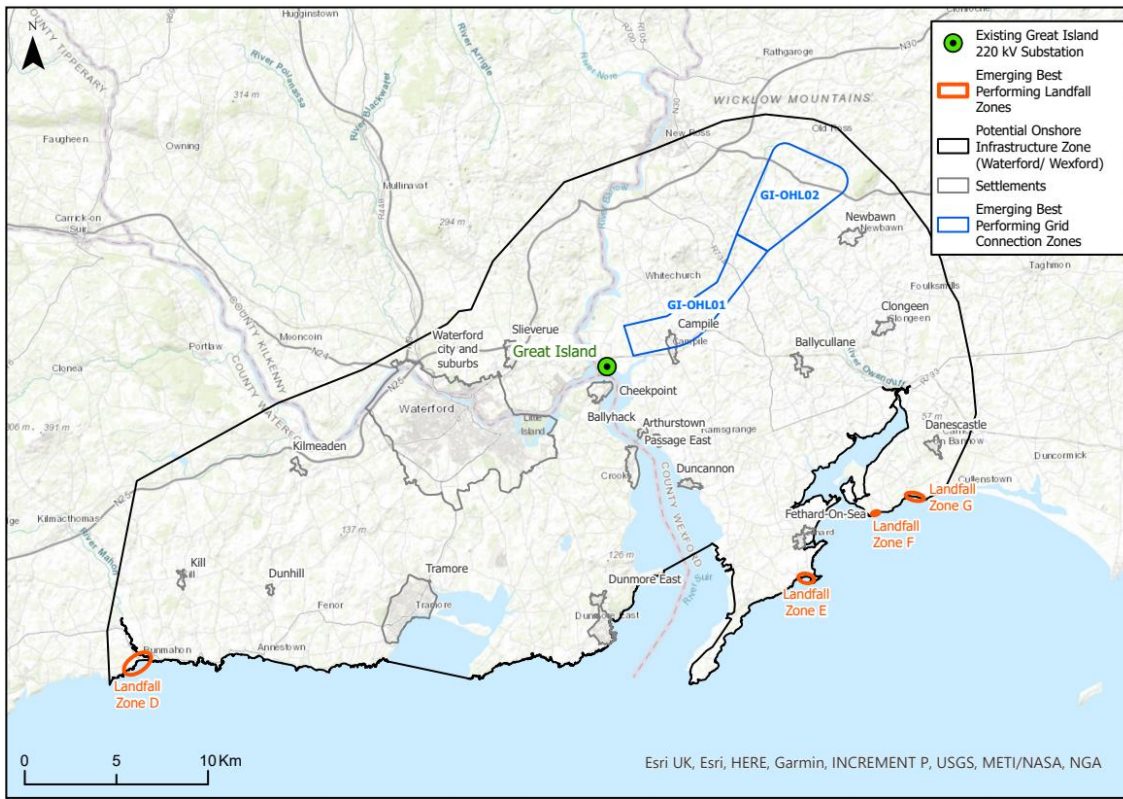
GI-OHL01 is relatively flat and there are opportunities to site the EirGrid OCC Substation and ESBN Substation. John F Kennedy Arboretum is a popular landscape-based tourism / recreation feature located to the north of GI-OHL01. Viewpoints from within John F Kennedy Arboretum may be impacted. There is also the potential for views of GI-OHL01 and GI-OHL02 from distinctive landscapes such as Slieve Coiltia, Tinnacarrick and Carrickbyrne, in addition to the current agricultural land use (pastures) across the majority of this zones.

For GI-OHL02, similar to GI-OHL01, there are opportunities to site the EirGrid OCC Substation and ESBN Substation along the OHL’s. This zone however has topographic challenges, for example Tinnacarrick. There is also potential for views from distinctive landscapes such as Slieve Coiltia and Tinnacarrick and Carrickbyrne, in addition to the current agricultural land use (pastures) across the majority of this zone.

Table 7.2: Step 3 Short List of Grid Connection Zone Options (Waterford / Wexford)

Criterion	MCA	Step 3 Short-list
GI-DC01		X
GI-DC02		X
GI-DC03		X
GI-DC04		X
GI-DC05		X
GI-OHL01		✓
GI-OHL02		✓

Figure 7.1: Step 3 EBPO in County Waterford and County Wexford



Source: Mott MacDonald

8 Next Steps

EirGrid will undertake public consultation and engagement on the EBPO’s presented in Chapter 6 and Chapter 7 of this report, which are summarised in Table 8.1.

Table 8.1: Step 3 Short List of Options

Landfall Zone Options	Grid Connection Zone Options
Landfall Zone A (County Cork)	● AA-OHL02 (County Cork)
Landfall Zone B (County Cork)	● AA-OHL03 (County Cork)
Landfall Zone C (County Cork)	● BA-OHL01 (County Cork)
Landfall Zone D (County Waterford)	● GI-OHL01 (County Wexford)
Landfall Zone E (County Wexford)	● GI-OHL02 (County Wexford)
Landfall Zone F (County Wexford)	
Landfall Zone G (County Wexford)	

Following the consultation, EirGrid will produce a Consultation Feedback Report. The feedback received from the consultation will be taken into consideration by the team during Step 4 activities.

The following activities are planned for Step 4:

- Commence marine survey works in 2025 to inform the design for the offshore transmission cable routes, OSS locations and landfall locations. This is subject to receiving a MUL from MARA as discussed in Section 1.7.
- Consult and engage with the public on the potential locations of the grid connection, OSS platform(s), offshore and onshore cable routes and landfall locations.
- Identify and confirm the BPO for the Grid Connection Zones and the Landfall Zones, offshore and onshore transmission cable routes and OSS locations.
- Develop offshore and onshore transmission cable routes.

A. Powering Up Offshore South Coast – Update Report

A.1 Grid Interface Points

Table A.1 presents the long list of grid interface points initially considered in the Powering Up Offshore South Coast – Update Report.

Table A.1: Long list of Grid Interface Points (Powering Up Offshore South Coast – Update Report)

Option No	County	Options
1		Tail into Knockraha 220 kV station
2		Tail into Aghada 220 kV station
3		Tail into Raffeen 220 kV station
4		New station looped into Aghada - Knockraha 1&2 220 kV
5	Cork	New station looped into Cullenagh – Knockraha 220 kV and/or Knockraha – Raffeen 220 kV circuits
6		New station looped into Clashavoon – Knockraha 220 kV and/or Killonan – Knockraha 220 kV circuits
7		New station looped into Aghada – Knockraha 220 kV 1&2 and/or Knockraha – Raffeen 220 kV circuits
8		New station looped into Aghada – Knockraha 220 kV 1&2, and/or (Celtic) Ballyadam 400 kV circuit
9		Tail into Great Island 220 kV station
10	Waterford / Wexford	Tail into Cullenagh 220 kV station
11		New station loop into Great Island – Kellis 220 kV circuit

Table A.2 presents the short list of grid interface points which have been brought forward to Step 3 of the process for further consideration.

Table A.2: Short list of Grid Interface Points (Powering Up Offshore South Coast – Update Report)

Option No	County	Options
4	Cork	New station looped into Aghada - Knockraha 1&2 220 kV
9	Wexford	Tail into Great Island 220 kV station
11		New station loop into Great Island – Kellis 220 kV circuit

A.2 Landfall Options

Table A.3 presents the long list of potential landfall locations initially considered in the Powering Up Offshore South Coast – Update Report.

The short list of potential landfall locations which have been brought forward to Step 3 of the process for further consideration are highlighted in bold and are presented in Table A.4.

Table A.3: Long list of Potential Landfall Locations (Powering Up Offshore South Coast – Update Report)

Option No	County	Options
1	Cork	Rocky Bay
2	Cork	Corkbeg Beach
3	Cork	White Bay Beach
4	Cork	Inch Beach
5	Cork	Ballycroneen Beach
6	Cork	Ballycrenane Beach
7	Cork	Knockadoon Head
8	Cork	Redbarn Beach
9	Cork	Claycastle Beach
10	Waterford	Clonea Beach
11	Waterford	Kilfarrasy
12	Wexford	Carnivan Beach
13	Wexford	The Long Gap
14	Wexford	Cullenstown Beach
15	Wexford	Blackhall Beach
16	Wexford	Bannow Bay Beach
17	Wexford	Bannow Island Beach
18	Wexford	Grange Beach (Fethard)
19	Wexford	Sandeel Beach
20	Wexford	Slade Harbour
21	Waterford	Dunmore East
22	Waterford	Rathmoylan Cove
23	Waterford	Tramore Beach
24	Waterford	Garrarus Beach
25	Waterford	Annestown Beach
26	Waterford	Bunmahon Beach
27	Waterford	Killelton Bay Beach
28	Waterford	Ballyvooney Cove
29	Waterford	Ballydowane Bay
30	Waterford	Stradbally Cove
31	Wexford	Fethard Beach

Table A.4 presents the short list of potential landfall locations which have been brought forward to Step 3 of the process for further consideration.

For the Step 3 report, for clarity, rather than use the Option Numbers presented in the Powering Up Offshore South Coast – Update Report, Landfall Zones A-G have been used. Details of the associated townlands for Landfall Zones A-G re provided in Chapter 5 of this report.

Table A.4: Step 3 Short list of Potential Landfall Locations

County	Landfall Zone Options (Option Number*)
Cork	Landfall Zone A (4)
	Landfall Zone B (5)
	Landfall Zone C (6)

County	Landfall Zone Options (Option Number*)
Waterford	Landfall Zone D (26)
Wexford	Landfall Zone E (12)
	Landfall Zone F (13)
	Landfall Zone G (15)

* Powering Up Offshore South Coast – Update Report

B. Step 3 Multi-Criteria Analysis

B.1 Evaluation of Landfall Zones (Cork)

B.1.1 Technical Considerations

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Expansion or Extendibility	<ul style="list-style-type: none"> The disused Kinsale gas pipeline presents a constraint in terms of Expansion or Extendibility. 	<ul style="list-style-type: none"> No significant constraints in terms of Expansion or Extendibility identified at the time of writing. 	<ul style="list-style-type: none"> No significant constraints in terms of Expansion or Extendibility identified at the time of writing.
Constructability (Ground Conditions and Marine Processes)	<ul style="list-style-type: none"> Open cut or HDD installation at landfall. Moderate distance covering rock outcropping requiring complex installation methods. The disused Kinsale gas pipeline presents a constraint in terms of Constructability. 	<ul style="list-style-type: none"> Open cut or HDD Installation at landfall. Moderate distance covering rock outcropping requiring complex installation methods. 	<ul style="list-style-type: none"> Open cut or HDD Installation at landfall. Long distance covering rock outcropping requiring complex installation methods.
Access	<ul style="list-style-type: none"> Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used. 	<ul style="list-style-type: none"> Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used. 	<ul style="list-style-type: none"> Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used.
Physical Constraints	<ul style="list-style-type: none"> The disused Kinsale gas pipeline presents a physical constraint. 	<ul style="list-style-type: none"> No identified pipelines or cables offshore within landfall approach. 	<ul style="list-style-type: none"> No identified pipelines or cables offshore within landfall approach.
MCA Ranking (Technical)	Dark Green	Light Green	Dark Green

B.1.2 Economic Considerations

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Capital Cost	<ul style="list-style-type: none"> Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the offshore transmission cable. Moderate distance covering rock outcropping requiring complex installation methods. Short straight-line distance to the existing Aghada substation. Moderate distance to Ballyadam. Long distance to Indicative Potential OSS location (western part of Tonn Nua). 	<ul style="list-style-type: none"> Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the offshore transmission cable. Moderate distance covering rock outcropping requiring complex installation methods. Short straight-line distance to the existing Aghada substation. Moderate distance to Ballyadam. Long distance to Indicative Potential OSS location (western part of Tonn Nua). 	<ul style="list-style-type: none"> Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the offshore transmission cable. Long distance covering rock outcropping requiring complex installation methods. Moderate straight-line distance to the existing Aghada substation/ Ballyadam. Moderate distance to Indicative Potential OSS location (western part of Tonn Nua).
MCA Ranking (Economic)	Dark Green	Light Green	Dark Green

B.1.3 Environmental Considerations

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Land use compatibility, other site users and planning policy	<ul style="list-style-type: none"> Located within a High Value Landscape designation. Trabolgan holiday village is situated to the west and a surf school operates from the beach. Small number of residential properties and farm buildings close to the beach in the settlement of Lahard (east of the site boundary). Popular for swimming, surfing and bodyboarding, dog walkers; Some yoga workshops/events take place on the beach during summer. Swell Surf School - summer camps at surf school. Trail walk along the cliff tops. Disused Kinsale gas pipeline traverses the beach. Other land uses include agricultural land and one-off housing. The landfall falls within a harbour administration site. No planning applications within the landfall zone, and applications in the immediate surrounds include only one-off housing and small agricultural developments, at the time of writing. 	<ul style="list-style-type: none"> Located within a 'High Value Landscape' designation. Bathing, fishing and surfing amenity value to locals and tourists. Amenity value for shore fishing, swimming and angling. It is understood that the beach is also used for periwinkle harvesting. According to basemap imagery, the current land use within the landfall zone includes mainly agricultural land along with a few one-off houses, in addition to the existing beach. Planning Applications within the landfall zone at the time of writing include applications for one off housing and extensions to existing dwellings. 	<ul style="list-style-type: none"> Located within a High Value Landscape designation. No approved planning applications within the landfall zone, with one off housing in the surrounding area. According to basemap imagery, the current land use within the landfall zone includes mainly agricultural land and a small area of car parking adjacent to a dwelling, in addition to the beach. The car park has good access to the beach; beach fishing is popular in the area - particularly used by sea angling clubs e.g. rebel county sea angling club. Within approximately 1.8km SE of Garryvoe and Ballycotton Seafood, and approximately 1.5km South of Garryvoe Church and Graveyard. Ballymaloe Cookery School is located approximately 2.5km to the west/NW (straight line distances).

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	<ul style="list-style-type: none"> Narrow, south-east facing sandy pocket beach, with surrounding cliffs. Some rocky outcrops on main beach, lots of rocky outcrops close to cliff faces. Slow incline up from beach. Bedrock outcrops are present along the cliffs of coastline as well as along the eastern side of Ballintra East Road. The bedrock geology consists of flaser-bedded sandstone and minor mudstone. Superficial cover is predominantly till derived from Devonian sandstones and alluvium is present along the river channel of the Ardra More_010 River draining from the north-west. Two rivers drain into the landfall zone. Ballintra West Geological Heritage Area directly to west. The GSI records the underlying bedrock as 'Old Head Sandstone Formation' overlain by till. No karst features identified on GSI data viewer. The bedrock aquifer is classified as a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones'. Groundwater vulnerability is classified as extreme with rock at or near surface over the majority of the zone. According to GSI data, landslide susceptibility is predominantly moderately high along the steep cliffs of the coastline and low further inland. There are no recorded landslides within this area. 	<ul style="list-style-type: none"> Narrow south facing gravel and sand pocket beach with rocky outcrops at either side, and some larger rocky outcrops on beach. Coarse sediment on the upper beach indicative of a moderate wave climate. Encompasses Ballycroneen Bay Geological Heritage Area. According to 2023 GSI Report⁸ 'It merits promotion, possibly as part of a south coast geological heritage trail.' A stream flows across the beach resulting in some erosion. Some evidence of stream meanders. Relatively large changes in superficial sediment cover evident leading to exposure of rocky outcrops. In proximity to Ballycroneen Bay Geological Heritage Area. Bedrock crops out at the cliffs along the coastline. The bedrock geology consists of sandstone, siltstone and mudstone. Superficial cover is predominantly till derived from Devonian sandstones. The bedrock aquifer is classified as a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. No karst features identified on GSI viewer. Groundwater vulnerability is classified as extreme. According to GSI data, landslide susceptibility is low with areas of moderately low along cliffs in the east and west of the zone. There are no recorded landslides within this area. 	<ul style="list-style-type: none"> South-east facing sandy embayment from Garryvoe to Ballywilling fixed by a western headland and exhibiting east-west alongshore transport. Local rocky outcrop in the intertidal area. Small dunes. Some evidence of beach rotation. Four rivers drain to the beach; two through the zone. No karst features identified on GSI viewer. However, the Waulsortian Limestones underlie the zone and these are classified as karstified bedrock meaning karstic features may be present. Superficial cover is predominantly till derived from Devonian sandstones. The bedrock aquifer is classified as a Regionally Important Aquifer - karstified bedrock. Groundwater vulnerability is classified as moderate over the entire zone. One borehole is located in the east of the zone. The source use is 'Other' which may be a ground investigation/monitoring borehole not used for abstraction, but further studies would be required to confirm this if this option is brought forward to Step 4. According to GSI data, landslide susceptibility is low or low inferred over the entire zone. There are no recorded landslides within this area.
Water Resources	<ul style="list-style-type: none"> West Ballintra (IE_SW_19A220720) drains to the western side of Inch Beach and Inch River (IE_SW_19A220720) drains to the eastern side. According to EPA data the 2016-2021 WFD status of: <ul style="list-style-type: none"> Outer Cork Harbour is Moderate. West Ballintra is Good. Inch is Good. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions within the landfall zone. 	<ul style="list-style-type: none"> Tullagh 19 and South Ballyrobin drains into Outer Cork Harbour at this landfall zone. According to EPA data the 2016-2021 WFD status of: <ul style="list-style-type: none"> Western Celtic Sea is Moderate. Tullagh 19 is Good. South Ballyrobin is Good. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions. 	<ul style="list-style-type: none"> Lower Garryvoe and Schoolgardens drain into Ballycotton Bay at this landfall zone. According to EPA data the 2016-2021 WFD status of: <ul style="list-style-type: none"> Ballycotton Bay is Good. Lower Garryvoe and Schoolgardens is Good. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions.
Climate, including flood risk and Sustainable Development	<ul style="list-style-type: none"> National Coastal Flood Hazard Maps indicates a high probability of flooding across the beach and pushing up the Inch and West Ballintra rivers on the eastern and western sides of the beach respectively. 	<ul style="list-style-type: none"> National Coastal Flood Hazard Maps indicates a high probability of flooding across the beach extending northwards up the Tulluagh River to the car park and mobile homes to the east. 	<ul style="list-style-type: none"> National Coastal Flood Hazard Maps indicates a high probability of flooding extending across an extensive area incorporating agricultural fields inland between the Garryvoe Lower Road and the Ballycrenane Road. It is anticipated that these areas could be avoided. Large extent of land to the immediate north-west of the beach area zoned as Green Infrastructure (associated with Ballycotton, Ballynamona and Shanagarry pNHA): <ul style="list-style-type: none"> GC-01 - It supports wetland habitat and serves an important flood storage role which should be protected.
Biodiversity	<ul style="list-style-type: none"> No designated sites in close proximity to the landfall zone. The closest designated site to the landfall is the Cork Harbour SPA (004030), Cork Harbour Ramsar site (000837), and Whitegate Bay pNHA (001084) which are located approximately 4.7km to the northwest of the landfall zone. A scoping site visit (June 2024) noted small areas of coastal unimproved grassland, sedimentary sea cliff, fixed dune, a river, reedbeds and inland woodland as being habitats of local importance. No breeding seabird colonies or nesting beach bird species were noted. An old (unused) sand marten colony was noted on the western side of the beach. No records of third schedule listed invasive species were noted in the landfall zone. <i>Rosa rugosa</i> (medium impact invasive) has spread across some of the fixed dune habitat. The landfall zone is not within any pearl mussel sensitive areas. FPO 2022 mapping records did not have any recent records (within the last 50 years) for species in the vicinity of the landfall zone. 	<ul style="list-style-type: none"> No designated sites in close proximity to the landfall zone. The closest designated site to the landfall zone is the Ballycotton, Ballynamona and Shanagarry pNHA located approximately 5km to the east. A scoping site visit (June 2024) noted localised coastal unimproved grassland, a river and inland scrub as habitats of local importance. No breeding seabird colonies or nesting beach bird species were noted. No records of third schedule listed invasive species were noted in the landfall zone. The landfall zone is not within any pearl mussel sensitive areas. FPO 2022 mapping records did not have any recent records (within the last 50 years) for species in the vicinity of the landfall zone. 	<ul style="list-style-type: none"> Approximately 70% of the length of the Landfall Zone is designated as part of the Ballycotton, Ballynamona and Shanagarry pNHA. Landfall zone borders Ballycotton Bay SPA (site Code 004022) A scoping site visit (June 2024) noted the eastern end of Ballycrenane beach is more ecologically sensitive and less damaged by coastal erosion. Sensitive habitats include shingle bank and a small saltmarsh (Annex 1 habitat). No breeding seabird colonies or nesting beach bird species were noted. The beach at the western end is badly affected by coastal erosion and the main sand/ gravel beach is relatively narrow with no significant offshore intertidal reef noted. No records of third schedule listed invasive species were noted in the landfall zone. The landfall zone is not within any pearl mussel sensitive areas. FPO 2022 mapping records did not have any recent records (within the last 50 years) for species in the vicinity of the landfall zone.

⁸ https://gsi.geodata.gov.ie/downloads/Geoheritage/Reports/CK009_Cork_CGS_Ballycroneen_Bay.pdf

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
	<ul style="list-style-type: none"> Records for other protected species in the area included a variety of cetaceans, badger (<i>Meles meles</i>), and otter (<i>Lutra lutra</i>). 	<ul style="list-style-type: none"> Records for other protected species in the area included a variety of cetaceans, badger (<i>Meles meles</i>), and otter (<i>Lutra lutra</i>). 	<ul style="list-style-type: none"> Records for other protected species in the area included a variety of cetaceans, badger (<i>Meles meles</i>), and otter (<i>Lutra lutra</i>).
Cultural Heritage, including Underwater Archaeology	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this Landfall Zone. The closest built heritage asset is located approximately 178m northwest of the Landfall Zone boundary; Coastguard Station (RPS ID: 666). There is one recorded monument located within this Landfall Zone; Prehistoric site - lithic scatter (SMR ID: CO100-043----). The presence of this asset suggests that further previously unrecorded prehistoric archaeology may be present in the area. There are a number of townland boundaries located within the Landfall Zone (between Ballintra East, Inch and Lahard). SS Chicago (W08079), ocean liner wrecked 1868 is located approximately 1km west of this Landfall Zone. 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this Landfall Zone. The closest built heritage asset is located approximately 1km northwest of the Landfall Zone boundary; House (NIAH REG No.: 20910019). The OS 1st Edition map record the location of a Coast Guard Station and Signal Post within this Landfall Zone. There two recorded monuments located within this Landfall Zone; Prehistoric site - lithic scatters (SMR ID: CO100A001---- and CO100-031----). The presence of these assets suggests that further previously unrecorded prehistoric archaeology may be present in the area. There are a number of townland boundaries located within the Landfall Zone (between Ballycraheen West, Ballycraheen East and Ballyrobin South). SS Irish Plane (W09752) steamer wrecked 1947 is located approximately 1km south-west of Landfall Zone. 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this Landfall Zone. The closest built heritage asset is located approximately 304m north of the Landfall Zone boundary; Thatch House (RPS ID: 1118). There is one recorded monument located with this Landfall Zone; Fulacht fia (SMR ID: CO089-076----) to the east. The Zone of Notification of Prehistoric site - lithic scatter (SMR ID: CO089-078----) is also located within the Landfall Zone. There are a number of townland boundaries located within the Landfall Zone (between Garryvoe Lower, Ballybutler and Ballycrehane). An unknown wreck (W10772) is located approximately 2km South of this Landfall Zone
Traffic and Transport	<ul style="list-style-type: none"> Access would be from local roads (Aghada) or local/regional roads (Ballyadam). The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of cable route. Lane closures likely on regional roads. Would likely need private land if passing bays required, however relatively short distance to nearest grid connection options. 	<ul style="list-style-type: none"> Access would be from local roads (Aghada) or local/regional roads (Ballyadam). Ballycraheen National School may influence timing of construction traffic movements and routing. The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of cable route. Lane closures likely on regional roads. Would likely need private land if passing bays required, however relatively short distance to nearest grid connection options. 	<ul style="list-style-type: none"> Access would be from local / regional roads (Aghada / Ballyadam). The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of cable route. Lane closures likely on regional roads. Would likely need private land if passing bays required. Cycle Route EV1 could be impacted by associated cabling/construction routes.
Seascape, Landscape and Visual	<ul style="list-style-type: none"> Located within the 'Complex indented small peninsulas, low sea cliffs and small sandy beaches' seascape coastal type and Cork Harbour and Estuary Character Area from the Regional Seascape Assessment (2020). Within the 'Broad Bay Coast' landscape type, which is identified as a High Value Landscape in the Cork CDP (2022-2028). Temporary visual effects associated with works at the landfall zone will occur during the construction phase. During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground infrastructure is anticipated to be a track and manhole type cover. The DMAP will determine the location of the offshore wind farm to be developed by others. The OSS to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the future offshore wind farm. 	<ul style="list-style-type: none"> Designated scenic route S49 (Road between Inch and Ballycotton via Ballybranagan) follows a local road approximately 750m inland to the north and offers views over the bay. 	<ul style="list-style-type: none"> Designated scenic route S47 (Road between Garrvoe and Knockadoon) follows a local road approximately 1km inland to the north and offers views towards the bay.
Aviation and Telecommunications	<ul style="list-style-type: none"> Guileen Coast Guard Station approximately 822m to the west. EirGrid will engage with key stakeholders such as the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops. 	<ul style="list-style-type: none"> No potential risks identified at this early stage of the project that are specific to this landfall zone. EirGrid will engage with key stakeholders such as the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops. 	
Opportunities to build better	<ul style="list-style-type: none"> No obvious location specific opportunities identified at this early stage of project development. Further studies will however be undertaken in Step 4. 		<ul style="list-style-type: none"> Area of Green Infrastructure / wetlands may offer opportunities to enhance the biodiversity value of this area.
MCA Ranking (Environmental)	Dark Green	Dark Green	Dark Green

B.1.4 Social Considerations

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Settlements and Communities (including Fishing Communities)	<ul style="list-style-type: none"> The nearest settlement is Whitegate, approximately 4km northwest of landfall zone. A small number of residential properties and farm buildings close to the beach in the settlement of Lahard (east of the landfall zone). 	<ul style="list-style-type: none"> The nearest settlement is Aghada-Farsid-Rostellan, approximately 6km northwest of landfall zone. Ballycraheen National School located approximately 390m to the north along the L3638. 	<ul style="list-style-type: none"> The nearest settlement is Shanagarry, approximately 1.6km west of landfall zone. A mobile home park is located to the west of the zone. A car park to the east of the zone.

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
	<ul style="list-style-type: none"> Popular surfing beach with a local surf school. Trabolgan holiday village is situated to the west. Communities that rely on commercial fishing have the potential to be disaffected by the proposals. Significant fisheries around the landfall zone include shrimp, crab and lobster potting, and demersal net fishing to the east. Significant shrimp, lobster and crab potting in the area. Spawning and nursery grounds for a number of species including Horse Mackerel, Whiting and Cod. Potting and netting vessels from Crosshaven, Ballycotton and Cobh operating in area. 	<ul style="list-style-type: none"> A small number of residential properties and farm buildings along the local road, approaching the beach. Significant fisheries around the landfall zone include shrimp, crab and lobster potting, and demersal net fishing. Periwinkle harvesting also occurring here. Spawning and nursery grounds for a number of species including Horse Mackerel, Whiting and Cod. Potting and netting vessels from Ballycotton and Crosshaven operating in area. 	<ul style="list-style-type: none"> Residential properties along An Tra Geal just to the west of the zone. Residential properties are located on either side of the R632, to the north of the zone. Significant levels of shrimp, crab and lobster fishing by Ballycotton vessels in the area. Demersal net fishing and periwinkle harvesting also occurring here. Marine Institute maps also show dredge fishing for mussels and clams in the area but engagement with the Marine Institute is required to establish the accuracy of this data. Spawning and nursery grounds for a number of species including Herring, Horse Mackerel, Whiting and Cod. The primary fishing activity in the immediate area is static fishing for shrimp.
Visitors and Commuters	<ul style="list-style-type: none"> Inch Beach is popular with surfers, dog walkers and swimmers. Yoga workshops/events take place on the beach during summer months and a surf school operates from Inch Beach. 	<ul style="list-style-type: none"> Ballycreeen National School is located approximately 830m north of the zone. Sauna services on the beach. This beach offers bathing, fishing and surfing amenity value to locals and tourists. 	<ul style="list-style-type: none"> Popular tourist beach, busy in summer season. Beach fishing is popular in the area, including with sea angling clubs such as Rebel County Sea Angling Club. Ballymaloe House, Garryvoe Beach Homes and various other tourist accommodation located in proximity.
Amenities, Recreation and Tourism	<ul style="list-style-type: none"> Inch Beach popular for swimming, surfing and bodyboarding. Sauna services in proximity to the beach. Swell Surf School offers summer camps at surf school. Trail walks along the cliff tops. 	<ul style="list-style-type: none"> Landfall Zone B is a sandy beach with amenity value for shore fishing, swimming and angling. It is understood that the beach is also used for periwinkle harvesting. Yoga sessions on the beach, and a sauna service operating in the area. 	<ul style="list-style-type: none"> Garryvoe Beach to the west of the landfall zone has a picnic area, car park, lifeguard station and public toilets, all located just outside the landfall zone to the west. Ballinwillig Beach scenic viewpoint is located to its east. Garryvoe Playground (Clós Súgartha Garryvoe) is located just outside the landfall zone (to its west), opposite the beach. Coastal Cabin sauna hut, Garryvoe Hotel (including Garryvoe Health Club), The Lighthouse Bistro, Coffee Ola Limited and The Cave Bar are all located just outside the landfall zone, to its west. Beach fishing is popular in the area - particularly used by sea angling clubs e.g. rebel county sea angling club. The landfall zone is approximately 2km southeast of Garryvoe and Ballycotton Seafood, and approximately 1.5km south of Garryvoe Church and Graveyard. Ballymaloe Cookery School is located approximately 5km to the northwest (straight line distances).
Nuisance and Disturbance	<ul style="list-style-type: none"> The construction phase can be expected to cause nuisance and disturbance for visitors to the beach. 	<ul style="list-style-type: none"> L3639 is the only road to the beach. The construction phase can be expected to cause nuisance and disturbance to local residents along the road during the construction phase. 	<ul style="list-style-type: none"> The construction phase can be expected to cause nuisance and disturbance in terms of access to Garryvoe village and surrounding amenities.
Visual Effects	<ul style="list-style-type: none"> Temporary visual effects associated with works at the landfall zone will occur during the construction phase. During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground infrastructure is anticipated to be a track and manhole type cover. The DMAP will determine the location of the offshore wind farm to be developed by others. The offshore substation (OSS) to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the offshore wind farm. 		
MCA Ranking (Social)	Dark Green	Dark Green	Dark Green

B.1.5 Deliverability Considerations

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Permits and Wayleaves	<ul style="list-style-type: none"> Agreement for construction compounds, TJB, permanent access track, cable route and surveys would be required for all options. Offshore proximity agreement and /or pipeline crossing agreement may be required for disused Kinsale pipeline. Landownership discussed under Implementation Timelines. 	<ul style="list-style-type: none"> Agreement for construction compounds, TJB, permanent access track, cable route and surveys would be required for all options. Landownership discussed under Implementation Timelines. 	
Project Plan Flexibility	<ul style="list-style-type: none"> Open cut or HDD installation all along the zone with the cable most likely off-road entering into the road network. Option most likely to cross into the field northeast or directly facing the landfall. Landfall is relatively flat ground. Low flexibility as nearshore transmission cable will potentially share landfall with Kinsale pipeline. 	<ul style="list-style-type: none"> With the current topographical layout of this landfall, it would appear challenging to land at this landfall via HDD (most likely technique) and make it back to the wider road network. Landfall zone wide enough to determine optimum location and methodology. Requirement to minimise cable route across large extent of rock outcropping would limit flexibility. 	<ul style="list-style-type: none"> Open cut or HDD installation. Very wide beach with options to come to the main road network at Ballinwillig or at Garryvoe. Relatively flat ground around the landfall. Landfall zone wide enough to determine optimum location and methodology.

Sub-Criteria	Landfall Zone A	Landfall Zone B	Landfall Zone C
Implementation Timelines	<ul style="list-style-type: none"> ● Long distance to Indicative Potential OSS location (western part of Tonn Nua) utilising complex installation methods. ● Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the offshore transmission cable. ● Interface with disused gas pipeline. ● Short straight-line distance to the existing Aghada substation. Moderate distance to Ballyadam. ● Very limited space for a construction compound/TJBs at the landfall in public road/lands and limited/residential accessibility, access will be very limited if not possible for construction phase traffic. This will most likely be in third party lands with the use of a temporary haul road from wider road network for construction compound, TJB and permanent access track to the TJB. ● Agreement with landowners will be required. 	<ul style="list-style-type: none"> ● Long distance to Indicative Potential OSS location (western part of Tonn Nua) utilising complex installation methods. ● Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the offshore transmission cable. ● Area characterised by long period swell. ● Short straight-line distance to the existing Aghada substation. Moderate distance to Ballyadam. ● Limited/residential accessibility, access will be very limited if not possible at all via the cul-de-sacs for large traffic vehicles. This will most likely be in third party lands with the use of a temporary haul road from wider road network for construction compound, TJB, HDD compound and permanent access track to the TJB. ● Agreement with landowners will be required. 	<ul style="list-style-type: none"> ● Requirement to minimise cable route across large extent of rock outcropping will limit flexibility ● Moderate distance to Indicative Potential OSS location (western part of Tonn Nua) utilising complex installation methods. ● Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the offshore transmission cable. ● Area characterised by long period swell. ● Moderate straight-line distance to the existing Aghada substation/ Ballyadam. ● Carpark may be able to be used for TJB or construction compound but this may also be in third party lands with the use of a temporary haul road from wider road network for construction compound, TJB, HDD compound and permanent access track to the TJB. ● Access will be via the regional road just north of the landfall. ● Agreement with landowners would likely be required for the works.
MM MCA Ranking (Deliverability)	Dark Green	Dark Green	Light Green

B.1.6 Summary of Evaluations

Criterion	Landfall Zone A	Landfall Zone B	Landfall Zone C
Technical			
Economic			
Environmental			
Social			
Deliverability			
Overall MCA			

B.2 Evaluation of Grid Connection Zones (Cork)

B.2.1 Technical Considerations

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
Expansion or Extendibility	<ul style="list-style-type: none"> Double overhead line loop-in of the 220 kV Knockraha – Aghada double circuit will require a minimum of an 8 bay AIS/GIS grid connection substation and there will be 3 spare bays for future expansion. For Cork, this sub-criterion is not a differentiator. 				
Constructability (Ground conditions)	<ul style="list-style-type: none"> Zone is hilly with unfavourable topography which will likely require more ground works. 	<ul style="list-style-type: none"> Zone is slightly hilly to the west but relatively flat to the east and south which is favourable for siting substation. 	<ul style="list-style-type: none"> Zone is hilly which will require siting the substation in the right area to limit groundworks. Limited karst features to the northeast of the zone. This includes caves at Carrigacrump. Where karst is present, this would likely require more complex construction methodology and site investigation. 	<ul style="list-style-type: none"> Zone topography is very hilly towards the south and relatively flat to the North. Greater changes in topography will likely require more ground works. Karst features to the southwest of Cloyne including swallow hole and caves. Where karst is present, this would likely require more complex construction methodology and site investigation. 	<ul style="list-style-type: none"> Zone includes a hill to the southeast corner which would need to be voided if possible due to the steep topography. Karst features includes two enclosed depressions, karst bedrock outcrop, swallow hole and turloughs to the north. Where karst is present, this would likely require more complex construction methodology and site investigation.
Access	<ul style="list-style-type: none"> Access from R630 will be very challenging as there is a steep incline to this zone. Road access most likely from the south and east local roads which are close to the R630. 	<ul style="list-style-type: none"> Single lane road access all around the zone with wider single lane road to the west. R630 is northwest of the zone starting in Whitegate. 	<ul style="list-style-type: none"> This zone includes a small section of the R630 to the west but the rest will be access from local roads. 	<ul style="list-style-type: none"> Zone includes a section of the R631 near Cloyne and limited local roads. 	<ul style="list-style-type: none"> Good access from the N25 and the local road to the west. Road to the north is cut off by the railway track.
Physical Constraints	<ul style="list-style-type: none"> Two high pressure gas pipelines cross the zone. One 220 kV double circuit OHL, into which is the proposed loop-in connection. One 110 kV single circuit OHL crosses the zones. Reservoir detailed in EPA water layer to the northeast of the 220 kV substation. New ESB Battery Energy Storage System (BESS) to the west of the zone just south of the existing substation. 	<ul style="list-style-type: none"> High pressure gas pipe cuts the northwest corner and the northeast corner. Two 110 kV single circuit OHLs cross the north of the zone. 	<ul style="list-style-type: none"> High pressure gas infrastructure to the west of the zone and east. One 220 kV double circuit OHL, into which is the proposed loop-in connection. Two 110 kV single circuits running through the zone. One 220 kV single UGC from Glanagow to Aghada. Whitegate village is to the west of the zone. 	<ul style="list-style-type: none"> High pressure gas pipeline clips the southwestern corner of the zone. One 220 kV double circuit OHL, into which is the proposed loop-in connection. One 110 kV single circuit clips the southwestern corner of the zone. Crocane Solar / Wind Farm is constructed to the south of the zone. 	<ul style="list-style-type: none"> Celtic Interconnector Converter Station site is currently being constructed on the Ballyadam site. Railway runs to the north of the site. Irish Rail have proposed works here to create a dual rail system. One 220 kV double circuit OHL clips the southwestern corner of the Ballyadam site, into which is the proposed loop-in connection. There's a 38 kV UGC around the northern, eastern and southern boundary of the site.
MCA Ranking (Technical)	Light Blue	Light Green	Dark Green	Light Blue	Light Blue

B.2.2 Economic Considerations

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
Capital Cost	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Short length cable route from nearest landfall to the substations and to the OHLs. EirGrid OCC Substation. ESBN Substation. Double OHL Line Loop in. Four LCIM towers for transitioning from OHL Loop-In to UGC. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Short length cable route from nearest landfall to the substations and to the OHLs. EirGrid OCC Substation. ESBN Substation. Double OHL Line Loop in. Four LCIM towers for transitioning from OHL Loop-In to UGC. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Short length cable route from landfall to the substations and to the OHLs. EirGrid OCC Substation. ESBN Substation. Double OHL Line Loop in. Four LCIM towers for transitioning from OHL Loop-In to UGC. Assumes this zone will avoid very minor section of Karst. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Short length cable route from nearest landfall to the substations and to the OHLs. Greater cost associated with karst ground conditions if present including great site investigations and more complex construction methodology for the foundations. EirGrid OCC Substation. ESBN Substation. Double OHL Line Loop in. Four LCIM towers for transitioning from OHL to UGC. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Moderate length cable route from nearest landfall to the substations and to the OHLs. Greater cost associated with karst ground conditions if present including great site investigations and more complex construction methodology for the foundations. EirGrid OCC Substation. ESBN Substation. Double OHL Line Loop in. Four LCIM towers for transitioning from OHL to UGC.
Lifecycle Cost	<p>Lifecycle Costs will include:</p> <ul style="list-style-type: none"> EirGrid OCC Substation. ESBN Substation. Short onshore HV cable circuit. OHL infrastructure. 	<p>Lifecycle Costs will include:</p> <ul style="list-style-type: none"> EirGrid OCC Substation. ESBN Substation. Short onshore HV cable circuit. OHL infrastructure. 	<p>Lifecycle Costs will include:</p> <ul style="list-style-type: none"> EirGrid OCC Substation. ESBN Substation. Short onshore HV cable circuit. OHL infrastructure. 	<p>Lifecycle Costs will include:</p> <ul style="list-style-type: none"> EirGrid OCC Substation. ESBN Substation. Short onshore HV cable circuit. OHL infrastructure. 	<p>Lifecycle Costs will include:</p> <ul style="list-style-type: none"> EirGrid OCC Substation. ESBN Substation. Moderate length onshore HV cable circuit. OHL infrastructure.

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
MCA Ranking (Economic)	Yellow	Yellow	Yellow	Yellow	Dark Green

B.2.3 Environmental Considerations

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
Land use compatibility, other site users and planning policy	<ul style="list-style-type: none"> The majority of this zone is within land zoned for <i>Industry</i> (approx. 0.55 sq km) and <i>Green Infrastructure</i> (approx. 0.27sq km). The rest of this zone) is zoned for <i>Residential and Existing Residential/Mixed Residential and Other Uses</i>. Specific objectives include: <ul style="list-style-type: none"> WG-I-01: Development of small to medium scale energy related uses WG-GC-06: Retain open space where existing land uses will remain largely unchanged. <i>The area makes a significant contribution to attractiveness of longer distance views...</i> WG-I-05: <i>Maintain existing industrial/ electricity generation uses.</i> Majority of this zone is agricultural usage and one-off housing/ farm buildings. There are also sections of this zone containing industrial usages related to the Aghada 220 kV Substation (along the North- West boundary) and a section of existing residential to East. There are a number of permitted planning applications relating to the existing Aghada 220 kV substation (including current ABP appeal RD0027, lodged 2017). Permission was granted on the eastern boundary of the zone for dwelling houses (Ref 224225, granted February 2023) 	<ul style="list-style-type: none"> Entirety of this zone is located within Special Policy Area WG-X-01 (388ha): Area with potential for major, large-scale energy and renewable energy related development, including port-related activities and bulk liquid storage and processing activities. Bound by roads which are designated as scenic routes. A large section of this zone is within High Value Landscape. Whitegate & Aghada Development boundary. CCC CDP 22 V4: The overall strategic aim for Whitegate and Aghada is to promote its role as a location for the storage and processing of strategic energy resources, consolidating its industrial and harbour related roles within this sensitive coastal setting and with limited expansion of residential uses. Whitegate has been designated as a Strategic Employment Location in this plan suitable for large scale employment development, i.e., large stand-alone uses which require significant amounts of land. The Cork Metropolitan Area Transport Strategy (CMATS) identifies a Greenway linking the City with Midleton (Part of the EuroVelo 1 route) via Tivoli, Glanmire, Little Island and Carrigtwohill. The study also identifies a potential Midleton-Ballinacurra-Whitegate Greenway route. Work has commenced on the development of upgraded pedestrian and cycle routes from Ballinacurra to Midleton train station. It is an objective of the Cork MASP to deliver a number of Strategic Road Network Improvements including the upgrade of the R630 Regional Road linking Midleton to Whitegate Road (Energy Hub) and to support the designation of this route to National Road Status. All approved planning applications within this zone relate to one off housing and small agricultural development. 	<ul style="list-style-type: none"> No land use zoning applicable to the majority of this zone. Approximately 0.4 sqkm overlaps with <i>Existing Residential/Mixed Residential and Other Uses</i> and approx 0.01sqkm is overlapping with <i>Green Infrastructure</i> of Whitegate and Aghada settlement plan. A large section of this zone is within High Value Landscape. Majority of this zone is agricultural usage and one-off housing/ farm buildings. All approved application within this zone relate to one off housing and small agricultural development. 	<ul style="list-style-type: none"> This loop in Zone is, for the majority, free of land use zoning, although a small section (approx. 0.26 sqkm) overlaps with the settlement of Cloyne and associated Existing Residential/Mixed Residential and Other Uses and Agriculture. A large section of this zone is also within the High Value Landscape. Majority of this zone is agricultural usage and one-off housing/ farm buildings. Linear residential settlement is located where the zone overlaps with the settlement of Cloyne. The majority of planning approvals within this zone relate to one off housing and small-scale agricultural development. The following applications are however of note: <ul style="list-style-type: none"> 217429: (Extensions duration for permission 16/5269) A 5.7MW solar farm. Crocane Wind Farm, Crocane, Cloyne, Co. Cork (granted February 22, 2022) The zone indicates a potential substation to be located within immediate proximity of the village, alongside residential zoned lands. 	<ul style="list-style-type: none"> This zone is entirely located within <i>Industry</i> zoning and the Celtic Interconnector site (ABP Ref: 310798 – granted 19/5/2022), which includes a converter substation at Ballyadam. The site also includes a temporary construction compound for the Glounthaune to Midleton Twin Track railway project (ABP-NC04-312676). There is a specific map-based objective for the site (indicated in the Development Plan as being 56.3Ha), CT-I-03 (indicating the aspiration and intention of the Council that this be for higher order industrial/ commercial type development and not necessarily for utility structures), and another at the north-western corner of the site, CT-U-09. CT-I-03 requires that the site be used for Industrial development. CT-U-09 requires the Installation of segregated Pedestrian/Cycling Crossing at Ballyadam Bridge. A relatively recent planning application has been lodged (currently on FI) for an underground grid connection from the permitted Ballynaclashy Solar Farm to a substation at the permitted Lysaghtstown Solar Farm (ABP 311238-21), at Ballynaclashy, Ballyrichardbeg (LA Ref. 23/05893) c.1.5km north-east of Ballyadam.

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
Land, Soils, and Hydrogeology	<ul style="list-style-type: none"> Bedrock: sandstone, mudstone, limestone - Palaeozoic, Carboniferous, Mississippian age. Subsoil: Typically, Sandstone till (Devonian). Includes part of the EPA licensed boundary of Aghada Power Station. The EPA licensed boundary would need to be removed from the zone extents should this zone be brought forward to Step 4. The potential for contaminated land to be encountered would need to be considered should this zone be brought forward to Step 4. Extreme Groundwater Vulnerability/ Rock at or Near Surface. Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. No groundwater boreholes and wells recorded at this zone, based on GSI.ie mapping. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is generally low, increasing to Moderate-High / High closer to the coast. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: sandstone, mudstone, limestone - Palaeozoic, Carboniferous, Mississippian age. Subsoil: Typically, Sandstone till (Devonian). Land use history does not indicate potential to encounter contaminated land. Extreme to High Groundwater Vulnerability. Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. No groundwater boreholes and wells recorded at this zone, based on GSI.ie mapping. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is generally low. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: sandstone, mudstone, limestone - Palaeozoic, Carboniferous, Mississippian age. Tournaisian limestone to the north. Subsoil: Typically, Sandstone till (Devonian). Land use history does not indicate potential to encounter contaminated land. Karst features (caves) identified in the northeastern section of this zone - Karst risk appears to be in northern most section. Extreme to High Groundwater Vulnerability. Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones / Locally Important Aquifer – Karstified. A small portion of the zone includes the CLOYNE AGHADA PWS Source Protection Zone. There are a number of groundwater boreholes and wells recorded at this zone. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is generally low. 	<ul style="list-style-type: none"> Bedrock: Tournaisian limestone/ Tournaisian sandstone, mudstone, limestone. Typically, Sandstone till (Devonian) with bedrock at surface. Land use history does not indicate potential to encounter contaminated land. Extreme to Moderate Groundwater Vulnerability. Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones / Regionally Important Aquifer - Karstified (diffuse). Karst features (swallow holes and caves) identified within this zone. Carrigacrum caves pNHA is approximately 90m to the south of the zone. A large portion of the zone includes the CLOYNE AGHADA PWS Source Protection Zone. There are a number of groundwater boreholes recorded at this zone. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is generally low. 	<ul style="list-style-type: none"> Bedrock: Tournaisian limestone. Sandstone till (Devonian) with Karstified limestone bedrock as surface. Land use history does not indicate potential to encounter contaminated land. Known karst features (including two enclosed depressions, turlough and swallow hole). Regionally Important Aquifer - Karstified (diffuse). High to extreme groundwater vulnerability with Rock at or near Surface or Karst. Regionally Important Aquifer - Karstified (diffuse). There are no groundwater boreholes or wells recorded at this zone, according to publicly available GSI.ie data. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is generally low with localised areas of Moderately Low susceptibility. Construction of the Converter Station for the Celtic Interconnector is ongoing within this zone. Further studies, and the emerging baseline, would need to be considered should this zone be brought forward to Step 4.
Water Resources	<ul style="list-style-type: none"> No EPA referenced watercourses in this zone. 	<ul style="list-style-type: none"> Includes Farrannamanagh_010. According to EPA data 2016-2021 the status of Farrannamanagh_010 is Good. 	<ul style="list-style-type: none"> A number of watercourses in this zone. According to EPA data 2016-2021 the status of Aughane, Farrannamanagh, Aghada and Lower_Aghada is Good A small portion of the zone includes the CLOYNE AGHADA PWS Source Protection Zone. 	<ul style="list-style-type: none"> Includes Farrannamanagh_010. According to EPA data 2016-2021 the status of Farrannamanagh_010 is Good. A large portion of the zone includes the CLOYNE AGHADA PWS Source Protection Zone. 	<ul style="list-style-type: none"> No EPA referenced watercourses in this zone.
Climate, including flood risk and Sustainable Development	<ul style="list-style-type: none"> The zone is not identified as being at risk of flooding on floodinfo.ie. 	<ul style="list-style-type: none"> Localised area around the Ardnabourkey River identified as being at risk of flooding. This area can be avoided. 	<ul style="list-style-type: none"> Localised area around the Farrannamanagh River identified as being at risk of flooding. Karst features (caves) identified in the north-eastern section of this zone. These areas can be avoided. 	<ul style="list-style-type: none"> Karst features (swallow holes and caves) identified within this zone which may indicate areas at risk of flooding. Engineering solutions for development within areas of karst may not align with sustainable development principles. 	<ul style="list-style-type: none"> A flood risk assessment, which included hydraulic modelling, was undertaken at the Ballyadam site as part of the Celtic Interconnector project. That assessment predicted that the flood risk area was limited to depressions on the site at the time of the assessment, which acted to reduce flood risk across the site. Given that construction is underway, and that a number of karst features are known to exist at the site, further studies would be required to evaluate the potential level of flood risk based on a future baseline.
Biodiversity	<ul style="list-style-type: none"> Zone does not intersect with any designated sites. Closest is Cork Harbour SPA (004030), and Rostellan Lough, Aghada Shore and Poul nabibe Inlet pNHA (001076) which is located approximately 0.08km to the north of the zone. No watercourses identified within this zone. Likely some drainage ditches on field boundaries. Habitats appear to be largely agricultural grassland with typical 	<ul style="list-style-type: none"> Zone does not intersect with any designated sites. Closest is Cork Harbour SPA (004030), and Rostellan Lough, Aghada Shore And Poul nabibe Inlet pNHA (001076) which is located 250m to the north of the zone. 	<ul style="list-style-type: none"> Zone overlaps on the western edge with the Cork Harbour SPA (004030), Cork Harbour Ramsar site (837), and Whitegate Bay pNHA (001084). Carrigacrum caves pNHA is also located within the Zone. These areas can be avoided. 	<ul style="list-style-type: none"> Zone does not intersect with any designated sites. Closest is Carrigacrum caves pNHA which is approximately 90m to the south of the zone. No watercourses identified within the zone. Habitats appear to be largely 	<ul style="list-style-type: none"> Zone does not intersect with any designated sites. Closest is the Great Island Channel pNHA which is located 2.4km to the southwest of the zone. No watercourses within the zone, but potential for connectivity to European sites via underground karst conduits was raised for the Celtic Interconnector.

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
	<p>treeline/hedgerow borders. Woodland present on the western edge.</p> <ul style="list-style-type: none"> No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), marsh fritillary (<i>Euphydras aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<ul style="list-style-type: none"> Two watercourses identified within the zone, one of which has connectivity to the above designated sites. Habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders. No records from the FPO 2022 records within the last 50 years in the vicinity of the Zone. No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), marsh fritillary (<i>Euphydras aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<ul style="list-style-type: none"> Two watercourses identified within the zone. These outfall into the Rostellan Lough, Aghada Shore and Poul nabibe Inlet pNHA, and Cork Harbour SPA. Habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders. No records from the FPO 2022 records within the last 50 years in the vicinity of the Zone. No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), marsh fritillary (<i>Euphydras aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<p>agricultural grassland with typical treeline/hedgerow borders,</p> <ul style="list-style-type: none"> No records from the FPO 2022 records within the last 50 years in the vicinity of the Zone. No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), marsh fritillary (<i>Euphydras aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<ul style="list-style-type: none"> Site is known to contain pockets of calcareous grassland, rare species (eg greater knapweed), and small wetland areas. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), marsh fritillary (<i>Euphydras aurinia</i>) in the area.
<p>Cultural Heritage, including Underwater Archaeology</p>	<ul style="list-style-type: none"> There is one built heritage asset recorded within the Loop-in Zone; Presbyterian Church (RPS ID: 591). There are four recorded monuments within this Loop-in Zone boundary; Castle - unclassified (SMR ID: CO088-057001-), Country house (SMR ID: CO088-057----), Church (SMR ID: CO088-058002-) and Graveyard (SMR ID: CO088-058001-). There is a townland boundary within this Loop-in Zone, between Aghada and Ballincarroonig. Three archaeological excavations were undertaken within the Loop-in Zone boundary: 04D0110, 04R038, 00E0605 and 03E1406. No archaeologically significant finds or features were identified by any of the excavations. The GSI records the underlying bedrock as 'Ballyknock Member' and 'Old Head Sandstone Formation' overlain by till. 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this Loop-in Zone. The closest built heritage assets are House (NIAH Reg No.: 20831013), located approximately 30m to the north of the Loop-in Zone boundary and Trabolgan House and Gate Lodge (NIAH Reg No.: 20910001), located approximately 45m to the south of the Loop-in Zone boundary. There are four recorded monuments within this Loop-in Zone boundary; Ritual site - holy well (SMR ID: CO088-032----), Enclosure (SMR ID: CO088-034----), Ringfort - rath (SMR ID: CO100-005----) and Ringfort - rath (SMR ID: CO100-006----). There are a number of townland boundaries located within the Loop-in Zone (between Ballytigueen, Ballyhook and Ardnabourkey). One archaeological excavation was undertaken within the Loop-in Zone boundary: 08E0350. Works were carried out along the route of the East Cork Gas Pipeline on behalf of Bord Gáis Éireann. Monitoring of the topsoil-stripping along the pipeline route between March and April 2008 revealed a spread of burnt-mound material at Ardnabourkey 1, Co. Cork. This spread was subsequently resolved in May 2008. Radiocarbon analysis of the burnt-mound spread 	<ul style="list-style-type: none"> There are a number of architectural or built heritage assets recorded within this Loop-in Zone. These consist of a number of buildings in Whitegate; School (NIAH Reg No.: 20831003 and RPS ID: 589), House (NIAH Reg No.: 20831004), House (NIAH Reg No.: 20831006), Water Pump (NIAH Reg No.: 20831005), Fountain (NIAH Reg No.: 20831015), House (NIAH Reg No.: 20831007), House (NIAH Reg No.: 20831005), Fountain (NIAH Reg No.: 20831008), House (NIAH Reg No.: 20831009), House (NIAH Reg No.: 20831010) and House (NIAH Reg No.: 20831013). There are 12 recorded monuments within this Loop-in Zone boundary; Kiln - lime (SMR ID: CO088-059001-), Church (SMR ID: CO088-043002-), Graveyard (SMR ID: CO088-043001-), Ritual site - holy well (SMR ID: CO088-044002-), Stone sculpture (SMR ID: CO088-044001-), Ringfort - rath (SMR ID: CO088-045----), Enclosure (SMR ID: CO088-042----), Ringfort - rath (SMR ID: CO088-037----), Ringfort - rath (SMR ID: CO088-036----), Enclosure (SMR ID: CO088-115----), Designed landscape - 	<ul style="list-style-type: none"> There are four architectural or built heritage assets recorded within this Loop-in Zone; Sign Post (NIAH Reg No.: 20908829), Worker's House (NIAH Reg No.: 20908828), Worker's House (NIAH Reg No.: 20908826) and Gate Lodge (NIAH Reg No.: 20908827). The OS 1st and 2nd Edition maps indicate that the northern portion of the Loop-In Zone falls within the boundary of the 17th /18th century Castle Mary estate. There are three recorded monuments within this Loop-in Zone boundary; Standing Stone (SMR ID: CO088-017----), Ringfort - rath (SMR ID: CO088-028----) and Souterrain (SMR ID: CO088-089----). There are a number of townland boundaries located within the Loop-in Zone (Castlemary, Aughane, Lurrig, Carrigacrump, Ballintrim and Crocane). The closest archaeological excavation was undertaken approximately 410m to the west of the Loop-in Zone boundary; 08E0089, 08E0177. Works were carried out along the route of the East Cork Gas Pipeline on behalf of Bord Gáis Éireann. Assessment took place of CO088-090/091 in the townland of Castlemary 1, Co. Cork, under licence 08E0089 and revealed the presence of two burnt-mound spreads. The spreads were subsequently excavated in March 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this Loop-in Zone and there are none located within close proximity. There are three recorded monuments within this Loop-in Zone boundary; Fulacht fia (SMR ID: CO076-120----), Fulacht fia (SMR ID: CO076-121----), Fulacht fia (SMR ID: CO076-123----) and Excavation - miscellaneous (SMR ID: CO076-119----). Two archaeological excavations were undertaken within the Loop-in Zone boundary; 20E0250 - no features of archaeological significance were recorded and 06E0612 - five pits were recorded in close proximity to each other and a post-hole was recorded 0.15m to the east. Two pits (C3A and B) had lenses of charcoal-enriched soil and oxidised clay in the fills and the general impression was that the material was dumped into the pits from activity elsewhere rather than in-situ burning. Burnt animal bone, a stone axehead fragment and a shaped stone were recovered from C3A. The Fulacht Fias outlined previously were recorded during this excavation, along with a burnt spread. The GSI records the underlying bedrock as 'Waulsortian Limestones' overlain by till.

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
		<p>revealed that it dated to the Middle Bronze Age.</p> <ul style="list-style-type: none"> The GSI records the underlying bedrock as 'Ballyknock Member', 'Old Head Sandstone Formation' and 'Pigs Cove Member' overlain by till. 	<p>tree-ring (SMR ID: CO088-102---) and Mound (SMR ID: CO088-101----). The Zone of Notification of a further two monuments are also located within this Loop-in Boundary; Graveyard (SMR ID: CO088-033003-) and Ringfort - rath (SMR ID: CO088-038001-).</p> <ul style="list-style-type: none"> There are a number of townland boundaries located within the Loop-in Zone (Mosestown, Aghada, Ballynookery, Curragh, Peafield, Glenbradagh, Ballysovane, Hermitage, Buckstown, Knockboghil, Titeskin, Ballincurrig, Ballintrim Aand Carrigacrump). Two archaeological excavations were undertaken within the Loop-in Zone boundary; 19E0157 - no finds or features of archaeological significance were exposed in any of the trenches and 03E0719 - all the trenches investigated were archaeologically featureless. The GSI records the underlying bedrock as 'Ballyknock Member', 'Old Head Sandstone Formation' and 'Pigs Cove Member' overlain by till. 	<p>2008 under licence 08E0177. Radiocarbon analysis of the burnt-mound spreads revealed that they dated to the Middle Bronze Age.</p> <ul style="list-style-type: none"> The GSI records the underlying bedrock as 'Ballyknock Member', 'Old Head Sandstone Formation' and 'Pigs Cove Member' overlain by till. 	
Traffic and Transport	<ul style="list-style-type: none"> Access in this zone includes the R630 and local roads. Diversion routes available. Potential for traffic effects during the construction phase, for road users travelling to / from Aghada/Whitegate. 	<ul style="list-style-type: none"> Access in this zone is limited to local roads, however, as this zone is zoned for energy infrastructure, the emerging baseline is expected to change in terms of access. Further consideration would be required if this option is brought forward to Step 4 	<ul style="list-style-type: none"> Access in this zone includes the R630 and local roads. Diversion routes available. 	<ul style="list-style-type: none"> Road access in this zone includes the R631 and local roads. Diversion routes available. Potential for traffic effects during the construction phase, for road users along the R631 and surrounding roads, travelling to / from Cloyne 	<ul style="list-style-type: none"> Access from the N25 and the local road. Diversion routes available. Potential for traffic effects during the construction phase, for road users along the N25 and surrounding roads
Seascape, Landscape and Visual	<ul style="list-style-type: none"> Located within High Value Landscape / Cork Harbour and Estuary Seascape Character Areas and Coastal Types. Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point; however, views would be seen in the context of the long-established energy infrastructure in this zone which can be expected to offer local visual absorption opportunities. 	<ul style="list-style-type: none"> Located within High Value Landscape. Partially located within Cork Harbour and Estuary Seascape Character Areas and Coastal Type. Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point and Scenic Route S50 Road between Inch and Aghada. This zone is however zoned for energy infrastructure and as such the emerging baseline can reasonably be expected to change. 	<ul style="list-style-type: none"> Located within High Value Landscape. Landscape Character Type: City Harbour and Estuary/ Landscape Character Type: Broad Fertile Lowland Valleys. Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point, and these would be seen in the context of existing electricity transmission infrastructure (OHL's). 	<ul style="list-style-type: none"> Located within High Value Landscape. Landscape Character Type: Broad Fertile Lowland Valleys. Views could be expected from Scenic Route S51 Road from Ballynacorra via East Ferry to Whitegate and Roche's Point, and these would be seen in the context of existing electricity transmission infrastructure (OHL's) . Views to / from Cloyne / Cloyne ACA will also require further consideration if this option is brought forward to Step 4. 	<ul style="list-style-type: none"> Located within High Value Landscape. Landscape Character Type: City Harbour and Estuary. Views to this zone would be seen in the context of the Celtic Interconnector Converter Station which is currently under construction and can be expected to offer local visual absorption opportunities.
Aviation and Telecommunications	<ul style="list-style-type: none"> No potential risks identified at this early stage of the project that are specific to AA-OHL01-04 and BA-OHL01. 				
Opportunities to build better	<ul style="list-style-type: none"> Any development proposals in this zone would be required under the CDP to provide for the upgrading of the county road adjoining the site up to the junction with the R630 regional road. 		<ul style="list-style-type: none"> No obvious location specific opportunities identified at this early stage of project development. Further studies will however be undertaken in Step 4. 		
MCA Ranking (Environmental)	Light Green	Yellow	Dark Green	Light Blue	Dark Green

B.2.4 Social Considerations

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
Settlements and Communities	<ul style="list-style-type: none"> Two CSO settlements within the zone - Whitegate and Aghada-Farsid-Rostellan. Whitegate hosts retail shops, playground, cemetery, school. Aghada-Farsid-Rostellan hosts post office, national school, parks and retail shops. The Whitegate Residents Association organises clean ups for the tidy town competitions and other events/projects for the community. The majority of this zone is agricultural usage and one-off housing/ farm buildings; however, this zone includes industrial/ utilities usages associated with Aghada 220 kV Substation (along the North- West boundary). Adjacent to Aghada Power Station and overlooks Whitegate Oil Refinery. 	<ul style="list-style-type: none"> Whitegate, a CSO settlement, just north of the zone. Whitegate hosts retail shops, playground, cemetery, school. The Whitegate Residents Association organises clean ups for the tidy town competitions and other events/projects for the community. This zone is located within predominantly agricultural land, along with one-off housing and agricultural buildings. This zone aligns with lands zoned for energy infrastructure; therefore, the emerging (future) baseline is expected to change such that the proposed infrastructure would be in keeping with the receiving environment. 	<ul style="list-style-type: none"> Whitegate, a CSO settlement, within the zone. Whitegate hosts retail shops, playground, cemetery, school. This zone is located within predominantly agricultural land, along with one-off housing and agricultural buildings. Existing residential housing is located with an area of approximately 0.4 sqkm, along the western boundary of the zone. The Whitegate Residents Association organises clean ups for the tidy town competitions and other events/projects for the community. 	<ul style="list-style-type: none"> Cloyne, a CSO settlement, within the zone. Cloyne hosts retail shops, GAA, church, medical centre, playground and pre school. The majority of this zone is agricultural usage and one-off housing/ farm buildings. Linear residential settlement is located where the zone overlaps with the settlement of Cloyne. Crocane Wind Farm within the zone. 	<ul style="list-style-type: none"> This zone is located between Carrigwohill and Midleton and encompasses Industrial Development Agency (IDA) lands. Midleton railway line runs to the north of the zone and a quarry is located just outside the zone to the south. Ballyadam is the site of the Celtic Interconnector Converter Station and so the proposed infrastructure would be in keeping with the emerging baseline
Visitors and Commuters	<ul style="list-style-type: none"> Commuters such as employees at, and service providers for, Aghada Power Station, which is located just outside this zone, may have potential to be affected. 	<ul style="list-style-type: none"> Commuters such as employees at and service providers for Whitegate Refinery, which is located to the west of this zone, may have potential to be affected. Visitors to Trabologan Holiday Village, White Bay and Roches Point have potential to be affected, however. the emerging baseline is of note having regard to the anticipated development of the area for energy infrastructure. 	<ul style="list-style-type: none"> Commuters such as employees at and service providers for Whitegate Refinery and Aghada Power Station may have potential to be affected. 	<ul style="list-style-type: none"> The R631 traverses this zone. Commuters and visitors to Cloyne and surrounding area have potential to be affected. 	<ul style="list-style-type: none"> The zone is bordered by the N25 and the Cork-Midleton railway, both of which are used extensively by commuters. A caravan park and a football club are located immediately outside the zone, to the west. A railway line is located to the north.
Amenities, Recreation and Tourism	<ul style="list-style-type: none"> The local L3648 road runs within the zone and connects to Whitegate. The village hosts several amenities and recreational facilities. Lower Aghada Festival held in Lower Aghada Pier is approximately 600m north of the zone. Aghada Community Centre is approximately 300m east of the zone hosts theatre events 	<ul style="list-style-type: none"> No specific amenity or recreational or tourism identified for this zone. 	<ul style="list-style-type: none"> The local road within the zone connects to nearby settlements including Whitegate, Aghada, Cloyne. These villages hosts several amenities and recreational facilities. Lower Aghada Festival held in Lower Aghada Pier is approximately 1km north of the zone. Aghada Community Centre is approximately 350m east of the zone hosts theatre events. 	<ul style="list-style-type: none"> Cloyne village hosts several festivals including, Cloyne Music Festival, Midleton Arts Festival and Harvest Festival. There are several amenities in Cloyne village, just outside the zone. 	<ul style="list-style-type: none"> No specific amenity or recreational or tourism identified for this zone, however Carrigwohill United is an Amateur Soccer Club and Jasmine Villa Caravan and Camping are located to the west. Midleton is located to the west.
Nuisance and Disturbance	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population in particular along the L3648 and R630 (outside the zone) - both connecting Aghada-Farsid-Rostellan and Whitegate. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population in particular along local roads connecting to several beaches in County Cork. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population.
Visual Effects	<ul style="list-style-type: none"> The potential development would be viewed in the context of the long-established energy infrastructure in the area. 	<ul style="list-style-type: none"> The potential development would be viewed in the context of the anticipated emerging baseline for this zone which is zoned for energy infrastructure. 	<ul style="list-style-type: none"> While the potential development would be viewed in the context of the long-established transmission infrastructure in the area (OHL's), local populations may be disaffected. 	<ul style="list-style-type: none"> While the potential development would be viewed in the context of the long-established transmission infrastructure in the area (OHL's), local populations may be disaffected. 	<ul style="list-style-type: none"> The potential development would be viewed in the context of electricity transmission infrastructure associated with the Celtic Interconnector (the Converter Station), which is now under construction.
MCA Ranking (Social)	Light Green	Yellow	Dark Green	Dark Green	Light Green

B.2.5 Deliverability Considerations

Sub-criteria	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01	
Dependence on other projects and outages	<ul style="list-style-type: none"> Getting an outage of the 220 kV Aghada-Knockraha double circuit OHL will be very challenging considering a potential outage duration up to a number of months. This is not a differentiator for Cork. 					
Permits and Wayleaves	<ul style="list-style-type: none"> Short underground cable routing will be required from the ESBN Substation and EirGrid OCC Substation to the nearest landfall. Cable joint bays and passing bays will likely be required within private land holdings for inroad cable routing to these zones. Very short OHL or underground cable routing will be required from the existing overhead lines to the ESBN Substation and EirGrid Substation. OHL or cable routing, joint bays and passing bays will likely be required within private land holdings within these zones. 				<ul style="list-style-type: none"> Very short OHL or underground cable routing will be required from the existing overhead lines to the ESBN Substation and EirGrid Substation. Moderate length underground cable routing will be required from the ESBN Substation and EirGrid OCC Substation to the nearest landfall. Cable joint bays and passing bays will likely be required within private land holdings for inroad cable routing to these zones. 	
Project Plan Flexibility	<ul style="list-style-type: none"> Small zone with very limited locations for the substations and overhead line cable interfacing. Therefore, there is limited flexibility within this zone. Cable route from landfall will likely have multiple options of getting into this zone. 	<ul style="list-style-type: none"> Medium sized zone so there will be a number of sites and overhead line options available within this zone and therefore some flexibility. Cable route from landfall will likely have multiple options of getting into this zone. 	<ul style="list-style-type: none"> Large sized zone so there will be a number of sites and overhead line options available within this zone and therefore flexibility. Cable route from landfall will likely have multiple options of getting into this zone. 	<ul style="list-style-type: none"> Medium sized zone although there may not be a lot of sites or flexibility available when considering the physical constraints within this zone. Cable route will likely have multiple options of getting into this zone. 	<ul style="list-style-type: none"> Small zone with limited locations for the substations and overhead line cable interfacing. Therefore, there is limited flexibility within this zone. Cable route will likely have multiple options of getting into this zone. 	
Implementation Timelines	<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the EirGrid and ESBN Substations and access. Landowner engagement for OHL/cable routes from the existing overhead lines to the ESBN Substation, EirGrid OCC Substation and landfall. Planning consent for new infrastructure. 220 kV Aghada-Knockraha double circuit OHL outages. Construction of short HV cable routing, EirGrid and ESBN Substations and OHL interconnection infrastructure. 			<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the substations and access. Landowner engagement for OHL/cable routes from the existing overhead lines to the substations and landfall. Planning consent for new infrastructure. 220 kV Aghada-Knockraha double circuit OHL outages Construction of short HV cable routing, substations and OHL interconnection infrastructure. Construction methodology and SI associated with area of karst. 		<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the substations and access. Landowner engagement for OHL/cable routes from the existing overhead lines to the substations and landfall. Planning consent for new infrastructure. 220 kV Aghada-Knockraha double circuit OHL outages Construction of HV cable routing, substations and OHL interconnection infrastructure. Moderate cable route. Construction methodology and SI associated with area of karst.
MCA Ranking (Deliverability)	Dark Green	Light Green	Light Green	Light Blue	Dark Green	

B.2.6 Summary of Evaluations

Criterion	AA-OHL01	AA-OHL02	AA-OHL03	AA-OHL04	BA-OHL01
Technical	Light Blue	Light Green	Dark Green	Light Blue	Light Blue
Economic	Light Green	Light Green	Light Green	Light Green	Light Green
Environmental	Light Green	Light Green	Light Green	Light Green	Light Green
Social	Light Green	Light Green	Light Green	Light Green	Light Green
Deliverability	Light Green	Light Green	Light Green	Light Green	Light Green
Overall MCA	Light Blue	Light Green	Dark Green	Light Blue	Light Blue

B.3 Evaluation of Landfall Zones (Waterford / Wexford)

B.3.1 Technical Considerations

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Expansion or Extendibility	<ul style="list-style-type: none"> No significant constraints in terms of Expansion or Extendibility identified at the time of writing. 	<ul style="list-style-type: none"> Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. 	<ul style="list-style-type: none"> Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. 	<ul style="list-style-type: none"> No significant constraints in terms of Expansion or Extendibility identified at the time of writing.
Constructability (Ground Conditions and Marine Processes)	<ul style="list-style-type: none"> HDD or open cut. No rock outcropping identified based on analysis of open-source geo-physical data therefore simplified offshore transmission cable installation. Seabed comprises mainly sand and some exposed bedrock at beach, leading to a channel between rock outcrops. Cable protection likely a combination of subsea plough burial and ROV trenching techniques. 	<ul style="list-style-type: none"> HDD techniques most likely at landfall Short to moderate distance covering rock outcropping requiring complex installation methods. Seabed comprises bedrock and softer sedimentary rock leading towards a narrow channel between bedrock outcrops. Cable protection likely a combination of open cut, rock cutting, followed by subsea plough burial and ROV trenching techniques. 	<ul style="list-style-type: none"> HDD or open cut. Short to moderate distance covering rock outcropping requiring complex installation methods. Seabed comprises first sand/boulders and coarse substrate then rock outcropping with slate / siltstone substrate, changing to a sand and coarse substrate. Shallow sloping sea may lead requirement for shallow draft vessel followed by a deep- water vessel. Cable protection likely a combination of open cut, rock cutting, followed by subsea plough burial and ROV trenching techniques. 	
Access	<ul style="list-style-type: none"> Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used 	<ul style="list-style-type: none"> Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used 	<ul style="list-style-type: none"> Shallow sloping sea will require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route 	
Physical Constraints	<ul style="list-style-type: none"> No pipelines or cables offshore within landfall approach. 	<ul style="list-style-type: none"> Other offshore infrastructure will make landfall between Landfall Zone E and Landfall Zone F. 		<ul style="list-style-type: none"> No pipelines or cables offshore within landfall approach. Other offshore infrastructure will make landfall in the same region however proposed offshore transmission cable route will not be impacted at landfall. A cable crossing of other offshore infrastructure will be required along its length.
MCA Ranking (Technical)	Light Green	Dark Green	Light Blue	Dark Green

B.3.2 Economic Considerations

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Capital Cost	<ul style="list-style-type: none"> Assumed that a single deep draught cable installation vessel will be able to get sufficiently in close to the landfall location to enable installation of the transmission cable. No rock outcropping identified therefore simplified offshore transmission cable installation. Long straight-line distance to Great Island Substation. Short distance to Indicative Potential OSS location (northern part of Tonn Nua). 	<ul style="list-style-type: none"> Assumed that a single deep draught cable installation vessel will be able to get sufficiently close to the landfall location to enable installation of the transmission cable. Short to moderate distance covering rock outcropping requiring complex installation methods. Moderate straight-line distance to Great Island Substation. Moderate distance to Indicative Potential OSS location (eastern part of Tonn Nua). 	<ul style="list-style-type: none"> Shallow sloping sea will require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route. Short to moderate distance covering rock outcropping requiring complex installation methods. Moderate straight-line distance to Great Island Substation. Moderate distance to Indicative Potential OSS location (eastern part of Tonn Nua). 	
MCA Ranking (Economic)	Light Green	Dark Green	Light Green	Light Green

B.3.3 Environmental Considerations

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Land use compatibility, other site users and planning policy	<ul style="list-style-type: none"> Intersects with Land Use Zoning 'RV' – "Protect and promote the character of the Rural Village and promote a vibrant community appropriate to available physical and community infrastructure." Within the Bunmahon Settlement boundary. Local Area Objective are applicable. Bunmahon Tidy Towns has been successful in accessing funding from the Department of Rural & Community Development Town & Village Renewal Scheme to be spent on Bunmahon village public realm works including boardwalk infrastructure, connectivity to Tra na mBo and amenity upgrades⁹. Part of UNESCO designated Copper Coast Geopark Landfall zone includes a permanent caravan/mobile home holiday park and associated amenities such as car parking and children's playgrounds, sporting facilities, retail and housing, all within an approximate 0.5km radius from the beach. A new Coast Guard station operates from just above the village, the associated slipway appears to be within the landfall zone. Notable planning application within this zone include WCC ref 2460438: development consisting of: An Integrated Constructed Wetland (ICW) with a total site area of 2.07ha for the management and treatment of municipal wastewaters. (Live case, due to be decided 25/09/2024). 	<ul style="list-style-type: none"> Within the Coastal Zone – Hook Head. Closest settlement is Fethard-on-Sea (approximately 1.3km to the north away). Town and surrounding beaches are very popular for local tourism¹⁰, hiking and birdwatching. On the cliffs to the east is an early 19th century Martello Tower which is now a private residence. The cliffs here are approximately 20m high. There are two parking areas close to the beach. There is one approved application for a rural one-off dwelling within this zone, and also overlapping with this zone, is the planning approval for Greenlink (ABP Ref: 308906, Granted 23/6/2021). Objective CZM60 To ensure that development proposals do not adversely impact on sports clubs and other recreational users, in particular, their facilities and other physical infrastructure, or unduly interfere with access to and along the shore, to the water or use of the resource for recreation and tourism. Significant landbank within close proximity (approximately 400m) of the landfall was recently sold on auction¹¹. Chapter 12 of the Wexford County Development Plan relates to Coastal Zone Management and Marine Spatial Planning. Section 12.2 notes (inter alia) that: In this regard, the planning authority will, inter alia, <ul style="list-style-type: none"> Avoid vulnerable development in areas under threat from coastal erosion and/or coastal flooding/sea level rise. Ensure new developments do not exacerbate erosion or flood risk at that location, or elsewhere along the coast. Bannow Bay also includes a number of licensed aquaculture sites for oyster production. 	<ul style="list-style-type: none"> Within the Coastal Zone –Cullenstown and within and adjacent to Coastal and Distinctive Landscape, Bannow Bay. A popular shore fishing beach, the slipway is tidal and parking is restricted. There are no approved planning applications within the landfall zone, and those in the surrounding area relate to one off housing. Objective CZM60 To ensure that development proposals do not adversely impact on sports clubs and other recreational users, in particular, their facilities and other physical infrastructure, or unduly interfere with access to and along the shore, to the water or use of the resource for recreation and tourism. Bannow Bay also includes a number of licensed aquaculture sites for oyster production. 	<ul style="list-style-type: none"> Within the Coastal Zone – Cullenstown and within and adjacent to Coastal and Distinctive Landscape, Bannow Bay. Few scattered houses and farm buildings in vicinity of the beach. Relatively isolated strand, but popular with families and walkers. There is unpaved parking in the area. There are no approved planning applications within the landfall zone, and those in the surrounding area relate to one off housing. Objective CZM60 To ensure that development proposals do not adversely impact on sports clubs and other recreational users, in particular, their facilities and other physical infrastructure, or unduly interfere with access to and along the shore, to the water or use of the resource for recreation and tourism. Bannow Bay also includes a number of licensed aquaculture sites for oyster production.
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	<ul style="list-style-type: none"> Forms part of Copper Coast UNESCO Geopark. Copper Coast Geopark Ltd. is located in Bunmahon. The area is known as the Copper Coast after mineral deposits that were extensively mined from 1824 to 1908, leaving behind widespread impressions including cliff top shafts, cliff face adits and mine buildings. There is no indication regarding a risk of encountering contaminated land in surrounding areas associated with the industrial heritage of Bunmahon but this would require further consideration if this option is brought forward to Step 4. Encompasses part of Bunmahon Head Geological Heritage audited site. The Copper Coast Geological Garden (Geogarden), in Bunmahon, includes a Time Path guide through geological time. The zone is underlain by alluvium deposits, andesite, tuff, slate, shale and mudstone. Bedrock outcrop or subcrop as well as a variety of volcanic rocks of Ordovician age. No karst features are identified. Groundwater vulnerability is moderate to extreme within the zone. Rock is near or at surface along the coastline. 	<ul style="list-style-type: none"> Exposed rocks form Petit's Bay Geological Heritage audited site. Till derived from Lower Palaeozoic shales. Cambrian greywacke, slate, quartzite. Cambrian greywacke, slate, quartzite age. Booley Bay Formation Grey to black mudstones with siltstone. Steeply dipping interbedded siltstones and shales. Extreme groundwater vulnerability. No karst features identified. Landslide susceptibility within the beach is low but high to moderately high along the coastline. No recorded landslide events in this Zone, according to publicly available gsi.ie data. 	<ul style="list-style-type: none"> South facing sandy beach contained by rocky outcrops and headlands and backed by actively eroding cliffs. Gravel component on the upper beach. Rocky outcrops nearshore. Little evidence of net alongshore transport. Changes in beach area not detected. No bedrock outcrops identified onshore, but bedrock is visible offshore and likely to be close to surface onshore. The Kiln Bay Formation underlies the zone which consists of green-gray or buff slates and greywackes. Superficial deposits in the area include till derived from Cambrian sandstones and shales. No karst features are identified on the GSI viewer. Zone is underlain by a 'Poor Aquifer - bedrock which is generally unproductive except for Local Zones (PI)'. Groundwater vulnerability is high within the zone and extreme in areas to the east and west of the bay. Landslide susceptibility in the zone is low to moderate and there are no historical landslides recorded. 	<ul style="list-style-type: none"> Encompasses Loftusacre Geological Heritage audited site. Palaeozoic, Middle - Upper Ordovician age slate, sandstone, greywacke, conglomerate. Ochreous slates and shales. Extreme to Moderate groundwater vulnerability Landslide susceptibility within the beach is low but moderately high along the coastline. No recorded landslide events in this Zone, according to publicly available gsi.ie data.

⁹ <https://consult.waterfordcouncil.ie/ga/system/files/materials/805/1015/Bunmahon%20Village%20Health%20Check.pdf>

¹⁰ <https://www.fethardonsea.ie/amenities/> and <https://www.fethardonsea.ie/about-us/>,

¹¹ https://mediaserver.4pm.ie/818092/pdf/carnivan-fethard-on-sea-co-wexford-670ab227_12c30946_5ca25339_59b4df81.pdf

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
	<ul style="list-style-type: none"> 19th c well zone recording poor yield class and unknown source use within the zone. Landslide susceptibility within the beach is low but high to moderately high along the coastline. No recorded landslide events in this Zone, according to publicly available gsi.ie data. 			
Water Resources	<ul style="list-style-type: none"> Mahon Estuary and Ballyvaden_10 drain into this landfall zone. According to EPA data the 2016-2021 WFD status of: <ul style="list-style-type: none"> Eastern Celtic Sea to the south is High. Mahon Estuary, which flows from the north is Moderate. Ballyvaden_10 which flows from northeast is Moderate. No nutrient sensitive watercourses. No public water supply protection areas. Drinking water river abstraction (Article 7) - Ballyaden_10. Water crossing would be located proximate to this landfall zone. 	<ul style="list-style-type: none"> According to EPA data the 2016-2021 WFD status of Eastern Celtic Sea to the south is High. There are no other EPA referenced watercourses in the immediate area. No nutrient sensitive watercourses; public water supply protection areas; drinking water river abstractions proximate to this landfall zone. 		<ul style="list-style-type: none"> Ballymadeer_10 drains this landfall zone. According to EPA data the 2016-2021 WFD status of: <ul style="list-style-type: none"> Eastern Celtic Sea to south is High. Ballymadeer_10 to north-west is Moderate. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions.
Climate, including flood risk and Sustainable Development	<ul style="list-style-type: none"> High probability of flooding along full extent of beach according to the National Coastal Flood Hazard Maps. Extensive areas at risk of flooding in the area of Bunmahon and along the River Mahon and Ballycvaden Stream. It is unlikely that these areas could be avoided and this may be a constraining factor for laydown areas and crossings. 	<ul style="list-style-type: none"> High probability of flooding along full extent of beach according to the National Coastal Flood Hazard Maps. 	<ul style="list-style-type: none"> High probability of flooding along full extent of beach according to the National Coastal Flood Hazard Maps. Noted that parking is restricted in the area. 	<ul style="list-style-type: none"> High probability of flooding along full extent of beach according to the National Coastal Flood Hazard Maps, extending along the Loftusacre River.
Biodiversity	<ul style="list-style-type: none"> The Mid-Waterford Coast SPA (004193) and Ballyvoyle Head to Tramore pNHA (001693) boundaries overlap the Landfall Zone A scoping visit (June 2024) confirmed chough SCI in the immediate area of the beach (foraging and potentially nesting). Suitable breeding habitat for chough and peregrine occurs close to the beach, although no breeding colonies were noted. Habitat mapping indicates the beach area is comprised of sandy shores (LS2). A lowland/depositing river is recorded flowing down from the north of the zone. Site visit for scoping confirmed areas of marsh by the river, and sand dunes sedimentary and rocky sea cliff at/ adjacent to the beach area. No records from the NPWS FPO 2022 records were noted within the landfall zone. Japanese knotweed (<i>Fallopia japonica</i>) has been recorded on the edge of the road to the north of the beach. The landfall zone is not within any pearl mussel sensitive areas, however there is upstream connectivity via the river to the north to the Mahon catchment which is noted as containing "other extant populations". A number of bryophytes protected under the FPO were recorded in the area (NBDC records within the last 50 years). These are greater copperwort (<i>Cephaloziella nicholsonii</i>), lesser copperwort (<i>Cephaloziella massalongi</i>), and gravel thread-moss (<i>Pohlia andalusica</i>). Other records for protected species in the area included various cetaceans, badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), and a number of bat species. 	<ul style="list-style-type: none"> The entire beach and coastal waters at Landfall Zone E are all designated under the Seas off Wexford SPA (004237), and Hook Head SAC (000764). The centre of the landfall zone (the coastal fringe including the beach) is also designated as Hook Head pNHA (000764). A scoping site visit notes that habitats include a sand/ gravel beach, extensive intertidal and subtidal rocky reef, relatively steep rocky sea cliffs and sedimentary sea cliffs. Non calcareous springs are present along the sea cliffs. No breeding seabird colonies or nesting beach bird species were noted, but the area contains suitable habitat for breeding chough and peregrine. FPO 2022 mapping records of perennial glasswort (<i>Salicornia perennis</i>), and cottonweed (<i>Achillea maritima</i>), clustered clover (<i>Trifolium glomeratum</i>) were recorded in the area. No records of third schedule listed invasive species were noted in the landfall zone. The landfall zone is not within any pearl mussel sensitive areas. Records for protected species in the area included marsh fritillary (<i>Euphydryas aurinia</i>), and seal (<i>Phoca vitulina</i>). It is likely that species such as otters (<i>Lutra lutra</i>) and badgers (<i>Meles meles</i>) occur in the area. Bannow Bay to the north is designated a SPA (004033) and SAC (000697) and would be very sensitive in terms of potential HDD crossing to reach Grid Connection Zones. 	<ul style="list-style-type: none"> The beach and coastal waters at Landfall Zone F are all designated under the Seas off Wexford SPA (004237). A scoping site visit (June 2024) noted habitats including sand/ gravel beach, rocky intertidal reef and sedimentary cliff. No breeding seabird colonies or other cliff nesting species were noted. No nesting beach bird species were recorded. No records of third schedule listed invasive species were noted in the landfall zone. The landfall zone is not within any pearl mussel sensitive areas. FPO 2022 mapping records of perennial glasswort (<i>Salicornia perennis</i>), and cottonweed (<i>Achillea maritima</i>) were recorded in the area. No additional records for protected species in the area were found at the landfall zone, however it is likely that species such as otters (<i>Lutra lutra</i>) and badgers (<i>Meles meles</i>) occur in the area. Bannow Bay to the north is designated a SPA (004033) and SAC (000697) and would be very sensitive in terms of potential HDD crossing to reach Grid Connection Zones. 	<ul style="list-style-type: none"> The beach and coastal waters at the Landfall Zone G are all designated under the Seas off Wexford SPA (004237). A scoping site visit (June 2024) noted habitats include a sand/ gravel beach, embryonic dune (east end) and sedimentary and rock cliff (west end). No breeding seabird colonies or other cliff nesting species were noted. No beach nesting species were recorded. No records of third schedule listed invasive species were noted in the landfall zone. The landfall zone is not within any pearl mussel sensitive areas. FPO 2022 mapping records of perennial glasswort (<i>Salicornia perennis</i>), and cottonweed (<i>Achillea maritima</i>) were recorded in the area. Records for other protected species in the area included badger (<i>Meles meles</i>). Bannow Bay to the north is designated a SPA (004033) and SAC (000697) and would be very sensitive in terms of potential HDD crossing to reach Grid Connection Zones.
Cultural Heritage, including Underwater Archaeology	<ul style="list-style-type: none"> Within the Copper Coast (Bunmahon / Knockmahon) ACA, as described in the WCCC Development Plan 2022 - 2028. The special character of the area relates to its 19th century industrial heritage, which is of technical, historical and social interest. WCCC will require development proposals to retain 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this Landfall Zone. However, Baginbun Martello Tower (NIAH Reg No.: 15705009) is located approximately 110m to the east. 	<ul style="list-style-type: none"> Bannow Coastguard Station: boathouse (NIAH Reg No.: 15705012) and Bannow Coastguard Station: coastguard station (NIAH Reg No.: 15705011) are located to the northwest, just outside of the boundary of the Landfall Zone. 	<ul style="list-style-type: none"> There is one built heritage asset recorded within this Landfall Zone; Slade Cottage (NIAH Reg. No.: 15704549).

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
	<p>particular features of architectural merit (including the remnants of the historic copper mining heritage and boundary walls) and avoid interference or their removal as such works would be deemed detrimental to the character of the ACA. It is unlikely that the ACA could be avoided and there is a risk that its setting could be both temporarily and/or permanently altered.</p> <ul style="list-style-type: none"> There are a number of built heritage assets recorded within Bunmahon village on the WCCC RPS within the Landfall Zone; WA750419, WA750420, WA750421, WA750423 and WA750557. These assets are also recorded in the NIAH. There are also approximately ten built heritage sites within Bunmahon village in the NIAH within the Landfall Zone. There are two recorded monuments located within the Landfall Zone to the east; Ogham stones (SMR ID: WA025-128001- and WA025-128002-). These were originally located within Knockmahon promontory fort (SMR ID: WA025-065----) and are now located within the Geological Park at Bunmahon. Recorded monuments located within the Landfall Zone to the west include; WA024-123---- (Fort), WA024-093001- (deserted medieval settlement), WA024-070----(site of a church), WA024-069---- (site of a graveyard). There are a number of townland boundaries located within the Landfall Zone (between Templyvrick, Ballynasissala, Ballynagigla and Knockmahon). The OS 1st and 2nd Edition maps indicate that the area to the centre and south of the Landfall Zone have been reclaimed from the sea and were recorded as 'Sand Hills' in the 19th century. The GSI records the underlying bedrock as Bunmahon Formation' overlain by till and alluvium. The presence of alluvium can be significant archaeologically because it can lead to a greater level of preservation of organic materials that would generally not survive, due to the anaerobic environment it creates. Ythan (W11705) wrecked in 1905 is located approximately 2km south-west of the landfall zone. 	<ul style="list-style-type: none"> There are three recorded monuments located within the Landfall Zone (to the east); Military camp (SMR ID: WX050-015003-), Battlefield (SMR ID: WX050-015006-) and Linear earthwork (SMR ID: WX050-015002-), which is a National Monument. These assets share a Zone of Notification and are associated with the 12th century Baginbun Head promontory fort (SMR ID: WX050-015001-), located approximately 245m to the east of the boundary of the Landfall Zone. As such, this area would have high archaeological potential. Objective AH13 is the WCDP (2022-2028) specifically relates to historic battlefield sites and states that WCC will ensure there is no harm to the physical character or setting of these sites. Where development is proposed within the identified battlefields, archaeological assessment and recording may be required. The Zone of Notification around these assets and the area immediately adjacent would be at risk from any proposed development and would need to be avoided. The setting of these assets could also be temporarily and/or permanently altered by any development as there is currently no screening for these assets and the landscape currently has open views. The GSI records the underlying bedrock as 'Booley Bay Formation' overlain by till. The entire Hook Head Peninsula is associated with the Anglo-Norman invasion. No evidence of ship wrecks near landfall. Potential for submerged landscape, despite rock outcropping onshore. Further study will be required if this option is brought forward to Step 4, including walkover, intertidal, geotechnical and geophysical surveys. 	<p>The OS 1stand 2nd Edition maps record the location of a Flagstaff within the Landfall Zone, associated with Bannow Coastguard Station.</p> <ul style="list-style-type: none"> There are no recorded monuments located within the Landfall Zone. The GSI records the underlying bedrock as 'Kiln Bay Formation' overlain by till. The entire Hook Head Peninsula is associated with the Anglo-Norman invasion. The Norman conquest of Ireland began in Bannow Bay in 1169, when three ships commanded by Robert Fitz-Stephen arrived at the behest of Diarmait MacMurrough to support his claim to the Kingdom of Leinster. Not researched in detail, Bannow retains high archaeological potential. No evidence of shipwrecks near landfall. Potential for submerged landscape, despite rock outcropping onshore. Further study will be required if this option is brought forward to Step 4, including walkover, intertidal, geotechnical and geophysical surveys. 	<ul style="list-style-type: none"> There are two recorded monuments located with this Landfall Zone; Ringfort - rath (SMR ID: WX045-054001-) to the east and Ritual site - holy well (SMR ID: WX045-050----) to the northwest. The Zone of Notification of Church (SMR ID: WX045-051----) is also located within the Landfall Zone. The holy well is located adjacent to the church. There are a number of townland boundaries located within the Landfall Zone (between Loftusacre, Blackhall, Ballymadder and Haggard). The entire Hook Head Peninsula is associated with the Anglo-Norman invasion. No evidence of shipwrecks near landfall. Potential for submerged landscape, despite rock outcropping onshore. Further study will be required if this option is brought forward to Step 4, including walkover, intertidal, geotechnical and geophysical surveys.
Traffic and Transport	<ul style="list-style-type: none"> Access would be from National, (N25) Regional (R675/R681) and local roads. Knockmahon National School (approximately 550m from beach) and Bunmahon Coast Guard Station on landfall zone boundary may influence timing of construction traffic movements and routing. Good road network between landfall zone and grid connection zones but may be twice as long as other options under consideration, in the context of impacts on traffic and transport. 	<ul style="list-style-type: none"> Access would be from Regional (R734/R737/RR733) and local roads. The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of cable route. Lane closures likely on regional roads. Would likely need private land if passing bays required. 	<ul style="list-style-type: none"> Access would be from Regional (R736/R733) and local roads. The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of cable route. Lane closures likely on regional roads. Would likely need private land if passing bays required. 	<ul style="list-style-type: none"> Access would be from Regional (R736/R733) and local roads. The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of cable route. Lane closures likely on regional roads. Would likely need private land if passing bays required.
Seascape, Landscape and Visual	<ul style="list-style-type: none"> Located within the 'Broad estuarine bays and complex low plateau and cliff coastline' seascape coastal type and Celtic Sea Bays and Beaches Character Area from the Regional Seascape Assessment (2020). Temporary visual effects associated with works at the landfall zone will occur during the construction phase. During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground infrastructure is anticipated to be a track and manhole type cover. 	<ul style="list-style-type: none"> Located within the 'Broad estuarine bays and complex low plateau and cliff coastline' seascape coastal type and Celtic Sea Bays and Beaches Character Area from the Regional Seascape Assessment (2020). Within Hook Head Coastal Zone and the coastal 'Distinctive Landscape Area' designation in the Wexford CDP. Temporary visual effects associated with works at the landfall zone will occur during the construction phase. During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground 	<ul style="list-style-type: none"> Located within the 'Broad estuarine bays and complex low plateau and cliff coastline' seascape coastal type and Celtic Sea Bays and Beaches Character Area from the Regional Seascape Assessment (2020). Within Bannow Bay Coastal Zone and the coastal 'Distinctive Landscape Area' designation in the Wexford CDP. The Distinctive Landscape of Keeragh Islands is located approximately 2.6 km to the south, 	<ul style="list-style-type: none"> Located within the 'Broad estuarine bays and complex low plateau and cliff coastline' seascape coastal type and Celtic Sea Bays and Beaches Character Area from the Regional Seascape Assessment (2020). Located within Cullenstown Coastal Zone and the coastal 'Distinctive Landscape Area', Bannow Bay in the Wexford CDP. The Distinctive Landscape of Keeragh Islands is located approximately 1.3 km to the south. Temporary visual effects associated with works at the landfall zone will occur during the construction phase.

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
	<ul style="list-style-type: none"> The DMAP will determine the location of the offshore wind farm to be developed by others. The OSS to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the future offshore wind farm. 	<p>infrastructure is anticipated to be a track and manhole type cover.</p> <ul style="list-style-type: none"> The DMAP will determine the location of the offshore wind farm to be developed by others. The OSS to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the future offshore wind farm. 	<ul style="list-style-type: none"> Temporary visual effects associated with works at the landfall zone will occur during the construction phase. During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground infrastructure is anticipated to be a track and manhole type cover. The DMAP will determine the location of the offshore wind farm to be developed by others. The OSS to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the future offshore wind farm. 	<ul style="list-style-type: none"> During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground infrastructure is anticipated to be a track and manhole type cover. The DMAP will determine the location of the offshore wind farm to be developed by others. The OSS to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the future offshore wind farm.
Aviation and Telecommunications	<ul style="list-style-type: none"> Bunmahon Coast Guard Station (coast and cliff rescue) on landfall zone boundary. No potential risks identified at this early stage of the project that are specific to this landfall zone. EirGrid will engage with key stakeholders such as the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops. 	<ul style="list-style-type: none"> No potential risks identified at this early stage of the project that are specific to this landfall zone. EirGrid will engage with key stakeholders such as the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops. 		
Opportunities to build better	<ul style="list-style-type: none"> Potential opportunities associated with: <ul style="list-style-type: none"> Planning application ref 2460438 in process for an Integrated Constructed Wetland. Boardwalk infrastructure. Bunmahon Health Check.¹² 	<ul style="list-style-type: none"> No obvious location specific opportunities identified at this early stage of project development. Further studies will however be undertaken in Step 4. 	<ul style="list-style-type: none"> Potential opportunities associated with Bannow Bay Equine Assisted Activities and Learning centre. 	<ul style="list-style-type: none"> No obvious location specific opportunities identified at this early stage of project development. Further studies will however be undertaken in Step 4.
MCA Ranking (Environmental)	Light Blue	Light Blue	Light Blue	Light Blue

B.3.4 Social Considerations

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Settlements and Communities (including Fishing Communities)	<ul style="list-style-type: none"> Bunmahon /Bonmahon village is located adjacent to the beach. Nearest adjacent settlement (to Bunmahon village) is Kill, approximately 4km to the north of the landfall zone. Stradbally is approximately 5km to the east along the R675. Linear housing along regional and local roads to the landfall location. Several guest houses and B&B's along these roads. Nearby amenities include a permanent caravan/mobile home holiday park and associated amenities such as car parking and children's playgrounds, sporting facilities (including astroturf), school, cafes and restaurant/pub, take-away (open during summer months) housing and one or two business premises (Bunmahon Joinery & Crowley Furniture), Bunmahon Coast Guard Station (coast and cliff rescue), all within approximately 0.5km radius from the beach. 	<ul style="list-style-type: none"> Closest settlement is Fethard-on-Sea, approximately 1km north of the landfall zone. One off housing, few houses within the landfall zone. Majorly agricultural land. Two parking areas close to the beach. Ban Milis housing estate located approximately 200m from the landfall zone. Town and surrounding beaches are very popular for local tourism¹³, hiking and birdwatching. Popular surfing spot with a surf school at the beach that provides lessons and equipment hire. It isn't used much for swimming as it has a rip current and underwater rocks. The Hook Head Peninsula is popular for diving. Significant fisheries around the landfall zone include shrimp, crab and lobster potting, and midwater trawl fishing. There are also razor clam and cockle dredge fisheries to the northeast. Spawning and nursery grounds for Herring, Horse Mackerel, Whiting, Cod. 	<ul style="list-style-type: none"> In Norman times the main settlement in the area would have been on Bannow Island. The main settlement now is the village of Carrig-on-Bannow (Danescastle) approximately 4km to the northeast. Few scattered houses and farm buildings in vicinity of the beach. Linear settlement pattern along local roads. Lands in the immediate vicinity of the beach are predominantly agricultural/consist of agricultural communities. The Hook Head Peninsula is popular for diving. Significant fisheries around Landfall Zone F include a herring fishery and spawning ground, shrimp, crab and lobster potting. There are also razor clam and cockle dredge fisheries to the west and in Bannow Bay to the North. Bannow Bay also contains a number of licensed aquaculture sites for oyster production. Spawning and nursery grounds for Herring, Whiting, Horse Mackerel, Cod. 	<ul style="list-style-type: none"> The nearest settlement is the village of Carrig-on-Bannow (Danescastle) approximately 2km to the northeast. It is also within and adjacent to Coastal and Distinctive Landscape, Bannow Bay. The landfall zone encompasses agricultural land and one-off housing, in addition to Blackhall Beach. Few scattered houses and farm buildings in vicinity of the beach. Linear settlement pattern along local roads. Land in the immediate vicinity to the beach is predominantly agricultural/ consists of agricultural communities. The Hook Head Peninsula is popular for diving. Significant fisheries around the landfall zone include shrimp, crab and lobster potting. Bannow Bay also contains a number of

¹² [Bunmahon Village Health Check.pdf \(waterfordcouncil.ie\)](https://www.waterfordcouncil.ie)

¹³ <https://www.fethardonsea.ie/amenities/> and <https://www.fethardonsea.ie/about-us/>,

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
	<ul style="list-style-type: none"> The Geopark Centre hosts a number of annual events that celebrate the local industrial heritage, geological and biodiversity aspects of the Copper Coast area and have an annual festival with a wide range of activities. Active community hosting events like clean ups, Geopark walks etc along the beach. Knockmahon National School is located approximately 550m from beach. Significant fisheries around the landfall zone include shrimp, crab and lobster potting, midwater trawl fishing, demersal net fishing. Spawning and nursery grounds for Horse Mackerel, Whiting, Cod. 			licensed aquaculture sites for oyster production. Spawning and nursery grounds for Herring, Whiting, Horse Mackerel, Cod.
Visitors and Commuters	<ul style="list-style-type: none"> Bunmahon Beach Boardwalk is popular with visitors. National Heritage Week events take place at the beach. Part of UNESCO designated Copper Coast Geopark, popular with visitors. The Geopark Centre hosts a number of annual events that celebrate the local industrial heritage, geological and biodiversity aspects of the Copper Coast area, including the Copper Coast Festival, with a wide range of activities. 	<ul style="list-style-type: none"> St Mogue's GAA grounds is located approximately 650m north of the landfall zone. Ramstown Farm is located approximately 700m north of landfall zone, which hosts a motorhome park. Baginbun Norman festival annually hosted at Fethard Castle in Fethard-on-Sea. 	<ul style="list-style-type: none"> Kerragh islands viewpoint is on the beach. Blackhall bus stop is on a local road to the beach and is used by commuters in the area. 	<ul style="list-style-type: none"> Kerragh islands can be viewed from the beach. Phil Murphy Weekend, a traditional Irish music festival, takes place in Carrig-on-Bannow annually,
Amenities, Recreation and Tourism	<ul style="list-style-type: none"> The Geopark Centre hosts a number of annual events that celebrate the local industrial heritage, geological and biodiversity aspects of the Copper Coast area and have an annual festival with a wide range of activities. Bunmahon Beach tennis club north of R675, as well as a large playground, car parking area and basketball court to the south of the R675. 	<ul style="list-style-type: none"> Fethard-on-Sea and surrounding beaches are very popular for local tourism, hiking and birdwatching. Popular surfing spot with a surf school at the beach that provides lessons and equipment hire. Sea cave kayaking popular in the area. Eurovelo Cycle Route runs along local roads to the north of the beach. 	<ul style="list-style-type: none"> The Norman Way is a heritage route that runs along the south coast of County Wexford. The Bannow Bay Equine Assisted Activities and Learning approximately 120m to the north. Bannow Bay Seaside Farm Motorhome Park is located approximately 400m to the north. A popular shore fishing beach: the slipway is tidal and parking restricted. 	<ul style="list-style-type: none"> Relatively isolated strand, but popular with families and walkers. Bannow Holiday Homes are located approximately 200m north of the beach.
Nuisance and Disturbance	<ul style="list-style-type: none"> Likely disruption along R675 during construction activities - nuisance and disruption to visitors to the beach, holiday park, B&Bs in the area; and commuters to surrounding amenities (school, retail shops, restaurants). 	<ul style="list-style-type: none"> Likely disruption along R734 during construction activities - nuisance and disruption to visitors to the beach and commuters to Fethard-on-Sea, and surrounding amenities (GAA, retail shops). 	<ul style="list-style-type: none"> Only one local road to the beach, construction phase disruptions anticipated. The Bannow Bay Equine Assisted Activities and Learning, located ca 120m to the north, may be used by persons particularly vulnerable to change, nuisance and disturbance. 	<ul style="list-style-type: none"> Only one local road to the beach, construction phase disruptions anticipated to Holiday Homes and visitors to the beach. Construction phase disruptions likely along R736 through Carrig-on-Bannow village.
Visual Effects	<ul style="list-style-type: none"> Temporary visual effects associated with works at the landfall zone will occur during the construction phase. During the operational phase visual effects at the landfall zone are expected to be limited as the infrastructure will be underground and the only associated above ground infrastructure is anticipated to be a track and manhole type cover. The DMAP will determine the location of the offshore wind farm to be developed by others. The offshore substation (OSS) to be developed by EirGrid will be much smaller in scale and its location will largely be influenced by the DMAP rather than the landfall location brought forward to Step 4. In any event the OSS would be seen in the context of the offshore wind farm 			
MCA Ranking (Social)	Light Blue	Dark Green	Light Blue	Dark Green

B.3.5 Deliverability Considerations

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Permits and Wayleaves	<ul style="list-style-type: none"> No crossing / proximity agreements envisaged at this time. 	<ul style="list-style-type: none"> Offshore proximity agreement and /or cable crossing agreement may be required for other offshore infrastructure. 	<ul style="list-style-type: none"> Offshore proximity agreement and /or cable crossing agreement may be required for other offshore infrastructure. 	<ul style="list-style-type: none"> No crossing / proximity agreements envisaged at this time.
Project Plan Flexibility	<ul style="list-style-type: none"> Wide beach with options north/west of the beach for cable to enter a Regional road, alternative option to the west. All options likely require water crossing north of the beach/landfall. Cliffs to the west with relatively flat ground. High flexibility channel through bedrock to route cable with no other infrastructure. 	<ul style="list-style-type: none"> This will most likely be via HDD under the cliff all along the zone. Option to go east or west but will likely interact with other offshore infrastructure. Relatively level ground on top of the cliffs. Landfall zone wide enough to determine optimum location. 	<ul style="list-style-type: none"> Option to go east or west of the road. Landfall is relatively flat ground. Landfall zone wide enough to determine optimum location and methodology. Low flexibility as nearshore cable will potentially share narrow trench through bedrock with other offshore infrastructure. 	<ul style="list-style-type: none"> Option to go east or west of the road. Landfall is relatively flat ground. Landfall zone wide enough to determine optimum location and methodology. High flexibility large channel through bedrock to route cable with no other infrastructure.

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Implementation Timelines	<ul style="list-style-type: none"> Short distance where no rock cutting techniques are anticipated. Assumed subsea plough operations or ROV trenching techniques, which tend to be faster than rock cutting. Long straight-line distance to Great Island Substation. Single main cable installation vessel. Area characterised by long period swell. Significant challenges include crossing the Suir and the Barrow and third-party agreements. 	<ul style="list-style-type: none"> Onshore cable routing options would be limited considering the need to avoid the Greenlink HV DC cable which is routed from the adjacent Baginbun beach up to Great Island Station. Low flexibility as nearshore transmission cable will potentially share a narrow trench through bedrock with other offshore infrastructure. Moderate distance where rock cutting may be required which is slower than subsea plough or ROV trenching techniques. Moderate straight-line distance to Great Island Substation. Single main cable installation vessel. Area characterised by long period swell. 		<ul style="list-style-type: none"> Moderate distance where rock cutting may be required which is slower than subsea plough or ROV trenching techniques. Moderate straight-line distance to Great Island Substation. Two cable installation vessel operation extends timeline. Area characterised by long period swell.
MCA Ranking (Deliverability)	Light Blue	Dark Green	Dark Green	Dark Green

B.3.6 Summary of Evaluations

Sub-Criteria	Landfall Zone D	Landfall Zone E	Landfall Zone F	Landfall Zone G
Technical	Light Green	Dark Green	Light Blue	Dark Green
Economic	Light Green	Dark Green	Light Green	Dark Green
Environmental	Light Blue	Dark Green	Light Blue	Dark Green
Social	Light Blue	Dark Green	Light Blue	Dark Green
Deliverability	Light Blue	Dark Green	Dark Green	Dark Green
Overall MCA Ranking	Light Blue	Dark Green	Dark Green	Dark Green

B.4 Evaluation of Grid Connection Zones (Waterford / Wexford / Kilkenny)

B.4.1 Technical Considerations

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
Expansion or Extendibility	<ul style="list-style-type: none"> No future expansion is available as the last spare bay at Great Island 220 kV substation would be utilised for a direct connection. As there is no requirement for a new ESB grid connection substation for a direct connection, there will be no availability of any future bay. As there is a requirement for additional spare bays for future connection, this option will not be brought forward. 					<ul style="list-style-type: none"> Single overhead line loop-into Great Island – Kellis or double overhead line loop in into Great Island – Kellis and Great Island – Lodgewood will require a minimum of an 8 bay AIS/GIS grid connection substation. There will be either 5 or 3 spare bays respectively for future expansion. 	
Constructability (Ground conditions)	<ul style="list-style-type: none"> This zone's topography based on GSI EPA shows there are areas that are quite steep by the Barrow rising to up to 30/40 m. This area is to be avoided for construction. Relatively flat in the middle of the zone. 	<ul style="list-style-type: none"> This zone's topography based on GSI EPA shows that the majority of the area is lying below 10 m with only a small section above 10 m. Area is flat. 	<ul style="list-style-type: none"> Steep inclines and hills to the east by the Barrow where both have peaks of over 100 m. This area is to be avoided for construction. Hilly with a drop in elevation from north to south above the Suir. One area of a raised bog cutaway/cutover in the north of the zone. This will require more complex design and construction methodologies if sited in this location. 	<ul style="list-style-type: none"> Generally flat with distanced contours ranging from below 10 m to above 30 m. 	<ul style="list-style-type: none"> Hilly to the east and slightly hilly with gentle contours and flatter for the rest. One area of cut - raised bog cutaway/cutover to the south of the zone and three other locations of fen peat. This will require more complex design and construction methodologies if sited in this location. 	<ul style="list-style-type: none"> Hilly in parts but generally the distance between contours is spaced out. Lowest contour is near Great Island where there are contours of between 0 - 10 m and increases to above 70 m further inland. 	<ul style="list-style-type: none"> Tinnacarrick Hill to the south is very steep. This area is to be avoided for construction. The rest is relatively flat with slight hills.
Access	<ul style="list-style-type: none"> Road to Great Island Power Station is a mix of a tight dual lane local road or single lane local road. For cable routing or traffic access, this is considered challenging. This road is a cul-de-sac with only one road into the zone and one road out where problems will arise where there will be routing of the cables in the road or for large construction traffic. Access may need to be via private land to the east. Access will be difficult with the railway to the north and associated shallow railway bridge. A 400 mm medium pressure gas pipe is laid in the road to the north of the zone. There are two Uisce Eireann pipes down the road to the entrance to the Great Island Power Station which may prove to be difficult to route cables in the road. 	<ul style="list-style-type: none"> No main or local roads in or out of this zone. The area north will likely require access from west or east via off-road routing. The area of the zone south of the railway line will require access from the railway bridge or power station. 	<ul style="list-style-type: none"> National roads in the zone include N25, N29 and regional roads include R711 and R448. Large industrial zone by Waterford Port to the south has very good access. Cable crossing of the Suir/Barrow will be considered separately in the delivery section. 	<ul style="list-style-type: none"> Zone has two regional roads, the R708 and R685. Cable crossing of the Suir/Barrow will be considered separately in the delivery section. 	<ul style="list-style-type: none"> Zone has three regional roads which intersect including R734, R735 and R733. All regional roads would provide good access. There is a wide local road to the west which may be able to provide adequate access. 	<ul style="list-style-type: none"> Zone has two regional roads which are the R734 and R733 intersecting it in limited locations. Local roads otherwise which may not provide as good access as regional roads. There is a medium pressure gas pipe in one of the local roads which may prove difficult to route cables in parallel. 	<ul style="list-style-type: none"> Zone has N25 routed through the north of the zone and the R736 which joins the N25 from the southeast. There is a local road which may not provide as good access as regional roads.
Physical Constraints	<ul style="list-style-type: none"> Greenlink HVDC cable which runs just north of the railway and crosses under a railway bridge. Railway north of the power station. High pressure gas pipe crosses the top of the zone and then goes straight down to the power station. 	<ul style="list-style-type: none"> Greenlink HVDC cable which runs just north of the railway. Railway north of the power station. 220 kV double circuit OHL for Great Island – Kellis and Great Island – Lodgewood splits into 	<ul style="list-style-type: none"> Railway goes through the middle of the zone. 220 kV single circuit overhead line is in the northeast of the zone. Multiple 110 kV overhead lines cross the top of the zone. Waterford city, Waterford Port, industrial area and multiple small towns/villages in the zone. 	<ul style="list-style-type: none"> Zone avoids public safety zones for the airport. Airport infrastructure is in this zone to the west. There are three watercourses running through the zone and a small, forested area to the south. Obstacles on routing related to this zone include crossing the 	<ul style="list-style-type: none"> A 110 kV OHL crosses the zone to the northeast. Numerous watercourses on in the zone but expected due to the size of the zone. Obstacles on routing related to this zone include crossing the Suir, Waterford City, crossing the Barrow, railway just north of Great Island Grid Connection 	<ul style="list-style-type: none"> Two 220 kV OHL circuits, into which is the proposed loop-in connection. One 110 kV circuit crosses the centre of the zone. Medium pressure gas pipeline is in the middle of a local road. 	<ul style="list-style-type: none"> Two 220 kV OHL circuits, into which is the proposed loop-in connection. Ballinaboola village is on the junction of the N25 and R736 and Cassagh village to the south.

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
	<ul style="list-style-type: none"> 220 kV double circuit OHL for Great Island – Kellis and Great Island – Lodgewood. Multiple 110 kV overhead lines circuits coming from the west and one going to the east. A 400 mm medium pressure gas pipe is laid in the road to the north of the zone and two Uisce Eireann pipes. River Barrow to the east and south. 	<ul style="list-style-type: none"> two separate OHLs here. One 38 kV OHL entering the Great Island Power Station from the southeast. Uisce Eireann infrastructure runs by the railway also. Two small EPA watercourses cut the zone in two. Nearly all of the zone is in flood zone A or B as per CDP Flood Data. 	<ul style="list-style-type: none"> Golfclub to the southwest of the zone. Numerous watercourses which go from north to south and particular focus on the southern and western sides. Obstacles on routing related to this zone include crossing the Suir, Waterford City, crossing the Barrow, railway just north of Great Island Grid Connection substation, Greenlink HV cable which runs into the Great Island substation. 	<ul style="list-style-type: none"> Suir, Waterford City, crossing the Barrow, railway just north of Great Island Grid Connection substation, Greenlink HV cable which runs into the Great Island substation. 	<ul style="list-style-type: none"> substation, Greenlink HV cable which runs into the Great Island substation. 	<ul style="list-style-type: none"> Numerous watercourses as per the EPA river layers within the zones. A railway enters runs along the south of the zone which would need to be crossed by the cable. 	<ul style="list-style-type: none"> Tinnacarrick hill is in the south centre of the zone. Numerous watercourses are present in the zone.
MCA Ranking (Technical)	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Light Green	Light Green

B.4.2 Economic Considerations

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
Capital Costs	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Moderate length cable route from nearest landfall via the EirGrid OCC Substation to Great Island. EirGrid Substation. No ESBN Substation No LCIM towers. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Moderate length cable route from nearest landfall via the EirGrid OCC Substation to Great Island. EirGrid OCC Substation. No ESBN Substation No LCIM towers Raised finish ground level. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Long length cable route from nearest landfall via the EirGrid OCC Substation to Great Island. EirGrid OCC Substation. No ESBN Substation No LCIM towers. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Long length cable route from nearest landfall via the EirGrid OCC Substation to Great Island. EirGrid OCC Substation. No ESBN Substation No LCIM towers. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Moderate length cable route from nearest landfall via the EirGrid OCC Substation to Great Island. EirGrid OCC Substation. No ESBN Substation No LCIM towers. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Minimum 8 bay AIS/GIS ESBN Substation. Moderate length cable route from nearest landfall via the substations to the OHL loop-in connection. Double or Single OHL Line Loop in. Two or four LCIM towers for transitioning from OHL to UGC. EirGrid Substation. 	<p>Capital costs will include:</p> <ul style="list-style-type: none"> Minimum 8 bay AIS/GIS ESBN Substation. Moderate length cable route from nearest landfall via the substations to the OHL loop-in connection. Double or Single OHL Line Loop in. Two or four LCIM towers for transitioning from OHL to UGC. EirGrid OCC Substation.
Lifecycle Costs	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> Moderate length onshore HV cable circuit EirGrid OCC Substation. 	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> Moderate length onshore HV cable circuit EirGrid OCC Substation. 	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> Long onshore HV cable circuit EirGrid OCC Substation. 	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> Long onshore HV cable circuit EirGrid OCC Substation. 	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> Moderate length onshore HV cable circuit EirGrid OCC Substation. 	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> ESBN Substation. Moderate length onshore HV cable circuit OHL infrastructure. EirGrid Substation. 	<p>Lifecycle costs will include:</p> <ul style="list-style-type: none"> ESBN Substation. Moderate length onshore HV cable circuit OHL infrastructure. EirGrid Substation.
MCA Ranking (Economic)	Light Green	Dark Green	Light Blue	Light Blue	Light Green	Dark Green	Light Blue

B.4.3 Environmental Considerations

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
Land use compatibility, other site users and planning policy	<ul style="list-style-type: none"> No land use zoning within the Wexford County Development relating to this Zone. Great Island Power Station (Lower Tier establishment) and associated 220 kV 	<ul style="list-style-type: none"> No land use zoning within the Wexford County Development relating to this Zone. Located adjacent to Great Island Power Station and 	<ul style="list-style-type: none"> The majority of this zone is within County Kilkenny. Land use zoning limited to residential area of Ferrybank along R711 and route of New Ross Greenway within Waterford Council administrative area. 	<ul style="list-style-type: none"> Partially located in a settlement of the Waterford County Development Plan 2022-2028 - settlement titled 'Airport' which incorporates the airport and the adjacent industrial estate. 	<ul style="list-style-type: none"> No land use zoning within the Wexford County Development relating to this Zone. Diagonally traversed by a railway line and a relatively centralised solar farm at Coolroe near Ballycullane. 	<ul style="list-style-type: none"> Significant strip of linear, ribbon development incidence of housing towards the south-eastern end of the zone an existing cluster of development relating to Horeswood Nurseries, Horeswood Church and Mann Engineering Ltd. 	<ul style="list-style-type: none"> Includes the village of Ballinaboola (a level 5 Small Village, Category 2, in accordance with the Wexford County Development Plan). This category of village acts as a place where the local rural

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
	<p>substation are located to the immediate south of this Zone (south of railway line).</p> <ul style="list-style-type: none"> Potential restrictions on use of areas immediately adjacent generation station may apply due to COMAH Regulations, however, the Zone is large and most of Zone is compatible for development, with precedent for electricity transmission infrastructure. Greenlink Convertor Station (under construction at the time of writing) to the west. Primary land use in this zone is agricultural, secondary is residential and third electrical transmission (OHLs) / public roads. Applications of note: <ul style="list-style-type: none"> KCC: 18573 - For develop at existing Grt Isl-Kk 110 kV Overhead Line. - Granted March 8 2019). WXCC 20170330: Permission for the development of a solar pv panel array comprising photovoltaic – Granted August 10, 2017. WXCC: 20220628 Permission for development which will consist of grid connection infrastructure - Granted August 8, 2022. ABP 308906: Greenlink interconnector- Granted 23/6/2021. 	<p>associated transmission infrastructure.</p> <ul style="list-style-type: none"> This Zone is separated by a railway line. Agricultural land use with transmission lines running to/from Great Island Substation (3no. OHLs). Applications of note: <ul style="list-style-type: none"> WXCC 20170330: Solar pv panel array comprising photovoltaic – granted August 10, 2017. WXCC: 20220628 Permission for Grid connection infrastructure - Granted August 8, 2022. ABP 308906: Greenlink interconnector, granted 23/6/2021. 	<p>Ferrybank is located in County Waterford).</p> <ul style="list-style-type: none"> A new Ferrybank Local Plan is under preparation (Stage 1 - issues paper) the Ferrybank LAP 2017 remains the extant plan for the area for land use zoning, the LAP includes most of this Zone. Areas with compatible zoning are identified as Port facilities & Industry or Industrial Technology Park in the townland of Gorteens to the east and west of the Port Road (N29). Includes the full extent of Belview Port and the Port of Waterford lands, the subject of a strategic masterplan. Waterford CDP identifies Belview Port as a Strategic Employment location, noting that the role and status of the port nationally and regionally. Many of the approved planning applications in this zone relate to residential and small-scale commercial developments as this is a relatively built up area. Applications of note: <ul style="list-style-type: none"> KCC: 19378 CHP plant, in lieu of boiler building from previously granted planning permission (ref 17153). KCC: 19730 for the construction of 98 no. residential units – Granted July 6, 2020. KCC: 18573 - For develop at existing Grt Isl-Kk 110 kV Overhead Line. (Granted March 8, 2019). ABP Ref: 311746, Waterford City Public Infrastructure Project - Flood Defences West. Granted 2/2/2023. ABP 308906: Greenlink interconnector - Granted 23/6/2021. 	<ul style="list-style-type: none"> Specific development objective - DO14 To support and promote the development of the Airport business and enterprise zone - relates to the industrial estate only, which is zoned principally C2.1 (Industrial, enterprise, employment) for Light Industry/ High Technology/ Manufacturing Campus Development (Zoning objective CD), and unzoned. A section of 'zone 4' is situated within the GZT zoning classification of N1.3 'Airport' - the primary purpose of which is to provide for air travel. Primary land use in this zone is agricultural, secondary is light industrial/ business park and airport related uses. No restrictions on development adjacent to the airport or business park identified in the Waterford Regional Airport & Business Park Masterplan (Vol 3, Appendix 12 of WCCDP). Section 4.0 of Appendix 1 includes the following: <i>Waterford Airport currently has an instrument approach system that comprises an Instrument Landing System (ILS) localizer and glidepath installation. The electromagnetic energy broadcast from the localiser and glidepath installations is susceptible to interference from electrical discharge and presence of large metallic objects in close proximity to the antennae. As these instruments are used for navigational guidance in critical phases of flight, the environment surrounding the antennae structures must be protected from electromagnetic interference.</i> Approved planning applications within this zone relate to the existing Airport Business Park, Killowen, including: 16392 - a ten-year planning permission for 6 no. light industrial/ warehouse - Granted September 9 2016; 20963: the construction of warehouses for the maturation of whiskey – Granted May 4 2021 	<ul style="list-style-type: none"> Primary land use is agriculture, second is residential development, which occurs along the local road network, with the settlements of Ballycullane and Campile. Ballycullane identified by Screen Wexford as a good film location due to its surrounding rustic charm and old-fashioned buildings. Majority of planning approvals within this zone relate to one-off housing and small-scale agricultural development. Application of note: <ul style="list-style-type: none"> WCXX: 20220900: Solar PV farm – Granted September 28, 2022. 	<p>Horeswood cemetery is situated between the existing OHL's.</p> <ul style="list-style-type: none"> The majority of planning approvals within this zone relate to one-off housing and small-scale agricultural development. Application of note: <ul style="list-style-type: none"> WXCC 20170330: Solar pv panel array comprising photovoltaic – granted August 10, 2017. 	<p>community gathers and supports the identity of the local community. Having regard to their status on a lower tier of the settlement hierarchy, it is particularly important to safeguard their continued existence into the future, and to ensure that growth is encouraged and facilitated in a sustainable manner.</p> <ul style="list-style-type: none"> All approved applications within this zone relate to one off housing and small agricultural development.

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
				<ul style="list-style-type: none"> Adjacent to the existing Waterford Airport runway (Extended under ABP ref: 307528, granted 2/2/2022). 			
Land, Soils, and Hydrogeology	<ul style="list-style-type: none"> Bedrock: Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate. Sub-soil: Clayey Shale till (Lower Paleozoic) Shale till (Lower Paleozoic) and bedrock outcrop distributed throughout this zone. No karst features identified. Borders EPA licensed Great Island Power Station, a gas fired and former heavy fuel oil fired power station (opened in 1967). The potential for contaminated land to be encountered would need to be considered should this zone be brought forward to Step 4. Extreme groundwater vulnerability / Rock at or near surface. Regionally Important Aquifer - Fissured bedrock. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation low to high (along the estuary). No groundwater wells identified in this zone. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate / Ordovician volcanic rocks. Sub-soil: Clayey Shale till (Lower Paleozoic) and bedrock outcrop distributed throughout this zone. No karst features identified. Includes part of the EPA licensed boundary of Great Island Power Station, a gas fired and former heavy fuel oil fired power station (opened in 1967), including assumed associated boreholes. The EPA licensed boundary would need to be removed from the zone extents should this zone be brought forward to Step 4. The potential for contaminated land to be encountered would need to be considered should this zone be brought forward to Step 4. Moderate groundwater vulnerability over most of this zone. Regionally Important Aquifer - Fissured bedrock. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is in general low. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate / Ordovician volcanic rocks / Lower-Middle Ordovician slate, sandstone, greywacke, conglomerate / ORS, sandstone, conglomerate & mudstone / Tournaisian sandstone, mudstone, limestone. Sub-soil: Clayey Shale till (Lower Paleozoic) and bedrock outcrop distributed throughout this zone. No karst features identified. Includes a number of EPA licensed facilities around the port area which would need to be removed from the zone extents should this zone be brought forward to Step 4. The potential for contaminated land to be encountered would need to be considered should this zone be brought forward to Step 4. Moderate to extreme groundwater vulnerability over a large area with rock at or near surface. Regionally Important Aquifer - Fissured bedrock / Locally Important Aquifer. No landslide events recorded in this zone. Landslide susceptibility characterisation low to high (along the estuary). No Geological Heritage Sites. No groundwater wells identified in this zone. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: Cambrian greywacke, slate, quartzite/ Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate. Sub-soil: Acid volcanic till. The potential for contaminated land to be encountered would need to be considered should this zone be brought forward to Step 4. Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. Moderate to extreme groundwater vulnerability over a large area with rock at or near surface. Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. No landslide events recorded in this zone. Landslide susceptibility characterisation low to high (along the estuary). No Geological Heritage Sites. A number of groundwater wells identified in this zone. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate / Ordovician volcanic rocks / Cambrian greywacke, slate, quartzite. Sub-soil: Clayey Shale till (Lower Paleozoic) / Acid volcanic till / Bedrock at Surface. Review of land use history does not indicate potential to encounter contaminated land. Low to extreme groundwater vulnerability with rock at or near surface. Regionally Important Aquifer - Fissured bedrock / Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. Bannow Bay, south of this zone, is a Geological Heritage site. Includes a number of groundwater boreholes. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is in general low. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate / Ordovician volcanic rocks. Sub-soil: Clayey Shale till (Lower Paleozoic) / Bedrock at Surface. Land use history does not indicate potential to encounter contaminated land. Low to extreme groundwater vulnerability with rock at or near surface. Regionally Important Aquifer - Fissured bedrock. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is in general low. No Groundwater drinking water protection areas identified in this zone. 	<ul style="list-style-type: none"> Bedrock: Middle-Upper Ordovician slate, sandstone, greywacke, conglomerate / Ordovician volcanic rocks / Lower-Middle Ordovician slate, sandstone, greywacke, conglomerate. Sub-soil: Clayey Shale till (Lower Paleozoic) / Bedrock at Surface. Land use history does not indicate potential to encounter contaminated land. Low to extreme groundwater vulnerability with rock at or near surface. Regionally Important Aquifer - Fissured bedrock / Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. Includes a small section of Carrigadaggan Geological Heritage Site. Includes a number of groundwater boreholes and wells. No Geological Heritage Sites. No landslide events recorded in this zone. Landslide susceptibility characterisation is in general low. No Groundwater drinking water protection areas identified in this zone.
Water Resources	<ul style="list-style-type: none"> Zone is adjacent to River Barrow and River Nore SAC. No EPA referenced watercourses in this zone 	<ul style="list-style-type: none"> Includes Hill Camlin_010, with a number of drains discharging into it. According to EPA data 2016-2021 the status of Hill Camlin_010 is Moderate. 	<ul style="list-style-type: none"> Includes Luffany_010 in zone (five tributaries which discharge into the Lower River Suir SAC Blackwater (Kilmacow)_050, west of zone, discharges into the Lower River Suir SAC. According to EPA data 2016-2021 the status of both 	<ul style="list-style-type: none"> Includes Kilmacleague_West and Ballygarran and Ballygunnmore_010, all draining to Tramore Dunes and Backstrand SAC / Tramore Back Strand SPA. According to EPA data 2016-2021 the status of all three is Moderate and the status of Tramore Back Strand is High. 	<ul style="list-style-type: none"> Multiple water courses in this zone According to EPA data 2016-2021 the status of:- <ul style="list-style-type: none"> Carrowanree_010 is Poor. Discharges into Barrow Suir Nore Estuary (Moderate). Curraghmore_010 is Moderate. Discharges 	<ul style="list-style-type: none"> A number of water courses in this zone. According to EPA data 2016-2021 the status of:- <ul style="list-style-type: none"> Carrowanree_010 is Poor. Barrow Suir Nore Estuary is Moderate. Owenduff (Wexford)_010 is Moderate. 	<ul style="list-style-type: none"> A number of water courses in this zone. According to EPA data 2016-2021 the status of:- <ul style="list-style-type: none"> Bergerin Stream_010 is Moderate. Owenduff (Wexford)_010 - is Moderate.

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
			Luffany_010 and Blackwater (Kilmacow)_050 is Moderate.		<ul style="list-style-type: none"> into Barrow Suir Nore Estuary (Moderate). – Battlestown Stream_010 is Good. Discharges into Bannow Bay Coastal waterbody (Moderate). – Tintern Abbey Stream_010 is Poor. Discharges into Barrow Suir Nore Estuary (Moderate). – Owenduff (Wexford)_010 is Moderate/Good. – Ballycullane (Wexford)_010 is Moderate. – Corock Estuary Transitional waterbody is Moderate. 	– Heathpark Stream_010 is Moderate.	
Climate, including flood risk and Sustainable Development	<ul style="list-style-type: none"> Areas identified as being at risk of flooding to the west and east. Northern section also identified as being at risk of flooding (part of Benefitting Lands of the Kilmannock Drainage District), but this area can be avoided. 	<ul style="list-style-type: none"> Almost entirely located within an area identified as being at risk of flooding (part of Benefitting Lands of the Kilmannock Drainage District). It would not be possible to avoid these areas. The first step in The Planning System and Flood Risk Management - Guidelines for Planning Authorities (2009) is to avoid sites which are at risk of flooding. Electrical infrastructure is classified as highly vulnerable by the Guidelines 	<ul style="list-style-type: none"> Some localised areas identified as being at risk of flooding along the Luffany River to the east and the Blackwater [Kilmacow] River to the west 	<ul style="list-style-type: none"> The western section of this zone includes industrial type buildings, likely associated with Waterford Airport. Two rivers traverse the centre of the zone. The Ballygunnmore River traverses the northwestern section of the zone and the immediate surrounding area is identified as being at risk of flooding. This areas can be avoided 	<ul style="list-style-type: none"> Large zone that includes localised areas at risk of flooding associated with watercourses such as the Owenduff [Wexford] River, Tintern Abbey (Stream), Battlestown (Stream) and the Ballyvelig River. These localised areas of flood risk can be avoided 	<ul style="list-style-type: none"> Includes localised areas at risk of flooding associated with watercourses such as the Ballysop River and the Carrowanree River. These localised areas of flood risk can be avoided 	<ul style="list-style-type: none"> Includes localised areas at risk of flooding associated with watercourses such as Begerin Stream and Heathpark Stream. These localised areas of flood risk can be avoided, including north-eastern section surrounding Heathpark Stream.
Biodiversity	<ul style="list-style-type: none"> Zone overlaps with the edge of River Barrow and River Nore SAC and the Barrow Estuary pNHA on the northern border, and the western border. Works within the designated sites can be avoided. No watercourses identified within the Zone; however the western border abuts the River Barrow. Drainage ditches will connect directly to European sites. Habitats appear to be largely agricultural grassland of relatively small fields with boundary habitats consisting of treeline/hedgerows, and a number of pockets of woodland and scrub. Records of FPO species Borrer's Saltmarsh-grass 	<ul style="list-style-type: none"> Zone overlaps with the River Barrow and River Nore SAC and the Barrow Estuary pNHA in the southern portion of the Zone. Works within the designated sites can be avoided. Hill Camlin_010 located within the zone with a number of drains discharging into it. Ultimately the watercourses discharge into the River Barrow and River Nore SAC. Habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders, and a single large block of plantation woodland at the northern end. 	<ul style="list-style-type: none"> Zone overlaps with the River Barrow and River Nore SAC and the Barrow Estuary pNHA on the southern and eastern boundaries. Works within the designated sites can be avoided. Numerous watercourses (7 EPA streams) with connectivity to the SAC drain south into the River Nore estuary. Partially urban at south. Greenfield habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders, numerous pockets of woodland/scrub and a fringe of woodland is present along the edge of the SAC. A larger area of semi natural woodland, wetland, scrub, grassland and plantation occurs at Kilmurray evaluated 	<ul style="list-style-type: none"> Zone does not overlap with any designated sites. Closest sites to the Zone (Tramore Dunes and Backstrand SAC (000671), Tramore Back Strand SPA (004027), Tramore Dunes and Backstrand pNHA (000671), Tramore Backstrand Ramsar site (835)) are located 0.32km to the south-east. Several watercourses identified, these all discharge into the transitional waters associated with the above designated sites. Habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders, two stands of plantation woodland noted. Records of wild asparagus (<i>Asparagus prostratus</i>) from FPO 2022 records in the area. Likely associated with habitats 	<ul style="list-style-type: none"> Zone overlaps with the Bannow Bay pNHA (000697) and Bannow Bay SAC (000697) in SE corner. Zone includes Boley Fen (pNHA) (000699). Additional designated sites (Bannow Bay SPA (004033), Bannow Bay Ramsar site (840)) are located 0.25km to the east of the zone. Works within the designated sites can be avoided. This is a large zone with multiple watercourses which discharge into designated sites. Predominant land use looks to be agricultural grassland with typical treeline/hedgerow borders. Linear strips of woodland noted to the south of the Zone with connectivity to the SAC. 	<ul style="list-style-type: none"> Partially overlaps with the River Barrow and River Nore SAC (002162), and the Barrow River Estuary (000698). Numerous watercourses within the zone discharge into the above designated sites. Habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders, pockets of woodland noted in several locations. Records of FPO species Borrer's Saltmarsh-grass (<i>Puccinellia fasciculata</i>), and meadow barley (<i>Hordeum secalinum</i>) in the area. Not within any pearl mussel sensitive areas. One third schedule species recorded within the zone, Himalayan balsam (<i>Impatiens glandulifera</i>). 	<ul style="list-style-type: none"> Zone does not intersect with any designated sites. Closest is located approximately 5.4km to the east (River Barrow and River Nore SAC (002162)). Several watercourses within the zone discharge into designated sites downstream (Bannow Bay SAC (000697)). Habitats appear to be largely agricultural grassland with typical treeline/hedgerow borders, pockets of woodland noted in several locations. Records of divided sedge (<i>Carex divisa</i>), meadow barley (<i>Hordeum secalinum</i>), Borrer's salt marsh grass (<i>Puccinellia fasciculata</i>), clustered clover

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
	<p>(<i>Puccinellia fasciculata</i>), and meadow barley (<i>Hordeum secalinum</i>) from the area.</p> <ul style="list-style-type: none"> No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>) and marsh fritillary (<i>Euphydryas aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<ul style="list-style-type: none"> The Priesthaggard (EPA 14P28) watercourse bisects this Zone and drains to the River Barrow and Nore SAC. Records of FPO species Borrer's Saltmarsh-grass (<i>Puccinellia fasciculata</i>), divided sedge (<i>Carex divisa</i>), clustered clover (<i>Trifolium glomeratum</i>), and meadow barley (<i>Hordeum secalinum</i>) from the area No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>), grey seal (<i>Halichoerus grypus</i>), and marsh fritillary (<i>Euphydryas aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<p>as County Importance (Source: Wetland Surveys Ireland map).</p> <ul style="list-style-type: none"> Records of FPO species Borrer's Saltmarsh-grass (<i>Puccinellia fasciculata</i>) in the area. No records of invasive species within the Zone. Partially within the Suir catchment which is a Margaritifera sensitive area categorised as catchments with previous records of Margaritifera but current status unknown. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), pine marten (<i>Martes martes</i>), grey seal (<i>Halichoerus grypus</i>), marsh fritillary (<i>Euphydryas aurinia</i>), and a number of bat species in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<p>outside of the Zone (dune habitat).</p> <ul style="list-style-type: none"> No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>) and marsh fritillary (<i>Euphydryas aurinia</i>) in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<ul style="list-style-type: none"> Records of Borrer's Saltmarsh-grass (<i>Puccinellia fasciculata</i>), clustered clover (<i>Trifolium glomeratum</i>), chives (<i>Allium schoenoprasum</i>), and wild betony (<i>Betonica officinalis</i>) in the area. Not within any pearl mussel sensitive areas. One third schedule species recorded within the zone, Japanese knotweed (<i>Fallopia japonica</i>). Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), and multiple bat species. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<ul style="list-style-type: none"> Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), grey seal (<i>Halichoerus grypus</i>), marsh fritillary (<i>Euphydryas aurinia</i>), and a number of bat species in the area. Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures. 	<p>(<i>Trifolium glomeratum</i>) in the area.</p> <ul style="list-style-type: none"> No records of invasive species within the Zone. Not within any pearl mussel sensitive areas. Records of protected animal species including badger (<i>Meles meles</i>), otter (<i>Lutra lutra</i>), and pine marten (<i>Martes martes</i>). Ecological constraints identified appear to be readily dealt with via avoidance and standard mitigation measures.
Cultural Heritage, including Underwater Archaeology	<ul style="list-style-type: none"> There are two built heritage assets within this DC Zone; Kilmokea House (NIAH Reg No.: 15703907) and Great Island Cemetery (NIAH Reg No.: 15703909). There are a number of recorded monuments within this DC Zone. These include two Bullaun Stones (SMR ID: WX039-018003- and WX039-018005-), three enclosures (SMR ID: WX039-018001-, WX039-018011 and WX039-018012-), Cross - High cross (SMR ID: WX039-018004-), Headstone (SMR ID: WX039-088----) and Church (SMR ID: WX039-018002-). These monuments are concentrated around and associated with early ecclesiastical site and the parish church of Kilmokea. There is also a moated site (SMR ID: WX039-019----) located in close proximity. There is another concentration of recorded monuments, including a 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this DC Zone. However, there are three built heritage assets recorded close to the DC Zone boundary; Hill House (NIAH Reg No.: 15703911) is located c. 220m to the east, Kilmannock House Walled Garden (NIAH REG No.: 15703913) is located c. 150m to the north and Kilmannock House (NIAH Reg. No.: 15703912) is located c. 170m to the north. Hill House and Killmannock House are also recorded on the RPS. There are two recorded monuments located with this Landfall Zone; Ringfort - rath (SMR ID: WX039-072----) and Water mill - unclassified (SMR ID: WX039-091----) to the northwest. The Zone of Notification of Moated site (SMR ID: WX039-019----) is also located within the Zone. 	<ul style="list-style-type: none"> There are a number of architectural or built heritage assets recorded within this DC Zone, mainly concentrated within the portion of the DC Zone that is located within the northern side of Waterford City. These include the group of assets that are part of Plunket Railway Station; Signal Box (RPS ID: WA730571 and NIAH Reg No.: 22500027), Platform (NIAH Reg. No.: 22500033), Post Box (RPS ID: WA731036), Canopy (RPD ID: WA730709) and the station itself (NIAH Reg No. 22500032). There are also a number of assets recorded within the dock including, Crane (NIAH Reg No.: 22500042) and R. and H. Hall (NIAH Reg No. 22900908). There are a further nine assets recorded within the NIAH which are recorded within the boundary of Waterford City (five of these are also recorded within the RPS) and three assets within the RPS. 	<ul style="list-style-type: none"> There are no architectural or built heritage assets recorded within this DC Zone. The closest built heritage asset is Thatch House (RPS ID: WA750968), located c. 1.3km to the west of the DC Zone boundary. There are two recorded monuments within this DC Zone boundary; Ecclesiastical enclosure (SMR ID: WA027-003010-) and Well (SMR ID: WA027-003005-). There is a townland boundary within this DC Zone, between Killowen and Ballygarran. The closest archaeological excavation was undertaken approximately 620m to the east of the DC Zone boundary (03E1195). No finds or features of archaeological significance were uncovered. The GSI records the underlying bedrock as 'Booley Bay Formation' overlain by till. 	<ul style="list-style-type: none"> There are approximately 30 architectural or built heritage assets recorded within this DC Zone, mainly concentrated within the portion of the DC Zone that is located within Campile, Ballycullane and Ramsgrange. These are all recorded with the NIAH. There are no RPS assets within this DC Zone. There are c. 95 recorded monuments located within the DC Zone. These are evenly distributed throughout the DC Zone and indicate that the archaeological potential is medium in areas with no previous disturbance and this area appears to have been settled and altered by human activity from the Neolithic to the present day. There are a number of townland boundaries located within the DC Zone. Six archaeological excavations have taken place within this DC Zone. These include Licence Nos. 00E0503, 03E0953, 12E150 and ext., 20E0090, and 21E0097, which 	<ul style="list-style-type: none"> There are 11 architectural or built heritage assets recorded within this Loop-in Zone, concentrated within the portion of the Loop-in Zone that is located within Campile. These are all recorded with the NIAH. There are no RPS assets within this Loop-in Zone. There are 21 recorded monuments within this Loop-in Zone boundary; Ringfort - rath (SMR ID: WX039-077----), Fulacht fia (SMR ID: WX039-022----), Water mill - horizontal-wheeled (SMR ID: WX039-059----), Ringfort - rath (SMR ID: WX039-073----), Road - road/trackway (SMR ID: WX039-080----), Bawn (SMR ID: WX039-024001-0), House - 17th century (SMR ID: WX039-024002-), Bullaun stone (SMR ID: WX039-023003-), Graveyard (SMR ID: WX039-023002-), Enclosure (SMR ID: WX039-071----), Ringfort - rath (SMR ID: WX039-075----), Standing stone (SMR ID: WX039-025----), Mass-rock (SMR ID: WX039-026----), Mound (SMR ID: 	<ul style="list-style-type: none"> There are seven architectural or built heritage assets recorded within this Loop-in Zone. These include Carnagh Graveyard/ Cemetery (NIAH Reg No.: 15703505), Carnagh House (NIAH Reg No.: 15703504), Ballinaboola House (NIAH Reg No.: 15703507), Mill (NIAH Reg No.: 15703506), Saint Mary's Catholic Church (NIAH Reg No.: 15703501), Saint Mary's Catholic Church Curate's House (NIAH Reg No.: 15703502) and Post Box (NIAH Reg. No.: 15703503). There are 20 recorded monuments within this Loop-in Zone boundary; Moated site (SMR ID: WX034-042----), Church (SMR ID: WX035-035001-), Graveyard (SMR ID: WX035-035002-), Field boundary (SMR ID: WX035-085----), Church (SMR ID: WX035-034001-), Graveyard (SMR ID:

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
	<p>Leper Hospital (SMR ID: WX039-028005-), burial (SMR ID: WX039-028006-), Castle - ringwork (SMR ID: WX039-028001-), Castle - unclassified (SMR ID: WX039-028003-) and Enclosure - large enclosure (SMR ID: WX039-028004-). These monuments are concentrated around and associated with the 13th century Anglo-Norman castle, Castle - Anglo-Norman masonry castle (SMR ID: WX039-028002-).</p> <ul style="list-style-type: none"> The areas in and around these concentrations of monuments will need to avoided and they indicate the potential for further unrecorded and/or buried archaeology at this location. There is also a Bullaun stone recorded at along the western boundary of the DC Zone (SMR ID: WX039-092- ---). A number of excavations have taken place in Kilmokea previously, within the DC Zone (07E1072, 10E0126, 11E0339, 11E0342, 12E0392, 12E0393 and 12E0122). Excavation licence no. 12E0356 revealed two pits, one with prehistoric pottery pieces, and two post-holes were found and three burnt stone deposits and a trough were excavated under licence no. 12E0392. A further two sites were recorded during monitoring of topsoil stripping for the Bord Gáis Networks Gas to Great Island scheme. Area 34-2 of excavation licence no. 12E0396 contained burnt stone spreads, a trough and a pit and Area 34-3 burnt stone spreads, a trough, five pits, a pit/post-hole, a gully and twenty stake-holes. Excavation licence no. 12E0395 revealed a prehistoric hearth or pit, a post-hole and eight stake-holes in Site 34-1 of the same scheme. Agricultural furrows and a ditch that are of likely 	<ul style="list-style-type: none"> There are a number of townland boundaries located within the Zone (between Ballyedock, Kilmannock and Greatisland). The excavations outlined for Great Island DC Zone 1 (GI-DC01); 12E0392 and 12E0393, are located within the boundary of this DC Zone The OS 1st Edition map indicates that the area to the centre and south of the DC Zone have been reclaimed from the sea and were recorded as 'Marsh' and 'Mud' in the early 19th century. The GSI records the underlying bedrock as 'Campile Formation' overlain by till. 	<p>Beyond this, there are three assets recorded within the NIAH located in/ adjacent to the townland of Newrath to the north-west of the DC Zone; Granny Bridge (NIAH Reg No.: 12404314), Worker's House (NIAH Reg No.: 12404323) and Mullinabro House (NIAH Reg No.: 12404315). Finally, there is a single asset recorded at the centre of the DC Zone, Catholic Church of the Assumption (NIAH Reg No. 12404321) and three to the southeast, Snowhill House Gates/Railings/Walls (NIAH Reg No.: 12404405) and Gate Lodge (NIAH Reg No.: 12404404) and Tunnel (NIAH Reg No.: 12404403).</p> <ul style="list-style-type: none"> This DC Zone is located approximately 190m to the north/ northeast of the Waterford City ACA (across the River Suir). There are approximately 54 recorded monuments located within this DC Zone. These include a number of prehistoric monuments recorded to the south and southwest of Waterford Golf Club, two assets recorded within Waterford City and c. 16 monuments recorded to the north of Waterford City. There are a number of monuments recorded in/ around the N29 and R448. This would indicate that the archaeological potential is medium in areas with no previous disturbance and this area appears to have been settled and altered by human activity from the Neolithic to the present day. There are a number of townland boundaries located within the DC Zone (between Newrath, Mountmisery, Mountsion, Rockshire, Abbeylands, Christendom, Newtown, Rathculliheen, Belmont, Ballinvoher, Ballyrobin, Mullinabro, Cloone, Killaspy, Ballynamona, Kilmurry, Rathpatrick, Luffany, Gorteens, Drumdowney Upper, Murtaghstown, Ballinlaw and Curraghmore). 		<p>uncovered no features of archaeological significance. Licence no. 03E1448 ext. revealed an occupation deposit and several archaeological features are present in the interior of the monument. Three of the deposits contained sherds of coarse pottery. The GSI records the underlying bedrock as 'Booley Bay Formation' overlain by till.</p>	<p>WX039-016----), Ringfort - rath (SMR ID: WX039-066----), Bullaun stone (SMR ID: WX039-027----), Ringfort - rath (SMR ID: WX039-076----), Ringfort - rath (SMR ID: WX039-079----), Church (SMR ID: WX034-051----), Burnt mound (SMR ID: WX034-070001-) and Burnt mound (SMR ID: WX034-070002-).</p> <ul style="list-style-type: none"> There are a number of townland boundaries located within the Loop-in Zone (between Killmanock, Ballyedock, Ballynamona, Coolerin South, Horeswood, Ballykeeroge, Ballykeeroge Beg, Ballykeerogemore, Garryduff, Aclamon, Corderraun, Dunmain, Tellarough and Nash). Two archaeological excavations have taken place within this Loop-in Zone. These include E004584 and 03E0376 ext. Apart from a single fragment of possible dressed stone recovered from the fabric of the demolished wall, nothing of archaeological significance was noted. The GSI records the underlying bedrock as 'Campile Formation' overlain by till and areas of alluvium. The presence of alluvium can be significant archaeologically because it can lead to a greater level of preservation of organic materials that would generally not survive, due to the anaerobic environment it creates. 	<p>WX035-034002-), Ringfort - rath (SMR ID: WX035-080-- --), Moated site (SMR ID: WX035-019----), Moated site (SMR ID: WX035-018-- -), Ringfort - rath (SMR ID: WX035-017----), Moated site (SMR ID: WX034-025--- -), Ritual site - holy well (SMR ID: WX035-020----), Burnt mound (SMR ID: WX035-076----), Ringfort - rath (SMR ID: WX035-013-- --), Moated site (SMR ID: WX035-009----), Ringfort - rath (SMR ID: WX035-008-- --), Enclosure (SMR ID: WX035-007----), Ringfort - rath (SMR ID: WX035-002-- --), Slab-lined burial (SMR ID: WX030-051----), Ringfort - unclassified (SMR ID: WX035-005----).</p> <ul style="list-style-type: none"> There are a number of townland boundaries located within the Loop-in Zone (between Cassagh, Carnagh, Tellarought, Mylerspark, Kilsclanlan, Tinnacarrick, Cushestown, Rochestown, Blalynabola, Carrigadaggan, Moorfields, Millquarter, Begerin, Courthoyle Old and Rathnageeragh). One archaeological excavation was undertaken within the Loop-in Zone boundary; 97E0054 - where no archaeological remains were encountered during pre-development testing. The GSI records the underlying bedrock as 'Campile Formation' and 'Ballylane Formation' overlain by till and areas of alluvium. The presence of alluvium can be significant archaeologically because it can lead to a greater level of preservation of organic materials that would generally not survive, due to the anaerobic environment it creates.

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
	<p>modern origin were also examined.</p> <ul style="list-style-type: none"> The GSI records the underlying bedrock as 'Campile Formation' overlain by till. 		<p>Those located within Waterford City have likely already been altered/ removed.</p> <ul style="list-style-type: none"> A number of excavations have taken place within this DC Zone. These are concentrated within the boundary of Waterford City and there were numerous excavations carried out as part of investigation work for the N25 Waterford Bypass. The results of these excavations are too numerous to list here, but they also confirm that the archaeological potential of this DC Zone is medium in areas with no previous disturbance. The GSI records the underlying bedrock as 'Ross Member', 'Ballylane Formation', 'Campile Formation', 'Carrigmaclea Formation' overlain by till, with sections of alluvium running north to south and along the norther bank of the River Suir. The presence of alluvium can be significant archaeologically because it can lead to a greater level of preservation of organic materials that would generally not survive, due to the anaerobic environment it creates. 				
Traffic and Transport	<ul style="list-style-type: none"> Access to this zone is poor, with a single access road, there are no obvious diversion routes available. Two HGV's cannot pass on the local roads so traffic disruption is likely. There are however no schools, hospitals churches etc local to the zone that would be particularly disaffected by transport and traffic effects, other than Great Island Power Station. 	<ul style="list-style-type: none"> Access to this zone is poor, with a single access road, there are no obvious diversion routes available. Two HGV's cannot pass on the local roads so traffic disruption is likely. There are however no schools, hospitals churches etc local to the zone that would be particularly disaffected by transport and traffic effects, other than Great Island Power Station. 	<ul style="list-style-type: none"> Access in this zone including the N25, N29, R864, R448. Diversion routes available. Potential for construction phase traffic to effect use of the port would require further consideration if this option is brought forward to Step 4. 	<ul style="list-style-type: none"> Access in this zone includes the R708 and the R685. Diversion routes available. As the R685 provides access to the Airport, traffic disruptions on this road may have significant effects on the operation of the airport. Extensive and early engagement with Waterford Airport, the Irish Aviation Authority (IAA) and the Irish Coastguard would be required if this option is brought forward to Step 4. 	<ul style="list-style-type: none"> Access in this zone includes the R734, R735, R733. Diversion routes available. Agricultural land uses would require further consideration is this option is brought forward to Step 4. 	<ul style="list-style-type: none"> Access in this zone includes the R734, R733 and local roads. Diversion routes available. Agricultural land uses would require further consideration is this option is brought forward to Step 4. 	<ul style="list-style-type: none"> Access in this zone includes the N25, R736 and local roads. Diversion routes available. Agricultural land uses would require further consideration is this option is brought forward to Step 4.
Seascape, Landscape and Visual	<ul style="list-style-type: none"> This zone is within the River Valleys Landscape Character Area (LCA) described in the Wexford CDP 2022, when compared to Lowlands LCA, as 'more scenic appearance due to the presence of the rivers and their associated riparian 	<ul style="list-style-type: none"> This zone is within the River Valleys Landscape Character Area (LCA) described in the Wexford CDP 2022, when compared to Lowlands LCA, as 'more scenic appearance due to the presence of the rivers and their associated 	<ul style="list-style-type: none"> This zone is within the Upland Landscape Character Type as described in Kilkenny City and County Council CDP 2021. It is an objective of Kilkenny City and County Council to:- 	<ul style="list-style-type: none"> Waterford CDP 2022 Landscape and Seascape Character Assessment for this zone is Low Sensitive - A common character type with a potential to absorb a wide range of new developments. 	<ul style="list-style-type: none"> This zone is within the Lowlands Landscape Character Area (LCA) described in the Wexford CDP 2022 as having 'characteristics which have a higher capacity to absorb development without it causing significant visual intrusion although, care still 	<ul style="list-style-type: none"> This zone is within the Lowlands Landscape Character Area (LCA) described in the Wexford CDP 2022 as having 'characteristics which have a higher capacity to absorb development without it causing significant visual intrusion although, care still 	<ul style="list-style-type: none"> This zone is within the Lowlands Landscape Character Area (LCA) described in the Wexford CDP 2022 as having 'characteristics which have a higher capacity to absorb development without it causing significant visual

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
	<p>and woodland habitats. This unit is very sensitive to development.'</p> <ul style="list-style-type: none"> Development in this zone would be viewed from County Kilkenny, County Waterford and County Wexford, however, those views would be seen in the context of the long-established energy infrastructure in this zone. Waterford City and County CDP 2022 Landscape and Seascape Character Assessment for the coastal area of Cheekpoint is 'Most Sensitive.' Kilkenny City and County Council CDP 2021 includes a number of protected views from elevated lands and describes the area along the River Barrow as Upland Landscape Character Type. 	<p>riparian and woodland habitats. This unit is very sensitive to development.'</p> <ul style="list-style-type: none"> Development in this zone would be viewed from County Kilkenny, County Waterford and County Wexford, however, those views would be seen in the context of the long-established energy infrastructure in this zone. Waterford City and County CDP 2022 Landscape and Seascape Character Assessment for the coastal area of Cheekpoint is 'Most Sensitive.' Kilkenny City and County Council CDP 2021 includes a number of protected views from elevated lands and describes the area along the River Barrow as Upland Landscape Character Type. 	<ul style="list-style-type: none"> ensure that development in upland areas or on steep slopes will not have a disproportionate. or dominating visual impact (due to excessive bulk, scale or inappropriate siting) and will not significantly interfere or detract from scenic upland vistas, or when viewed from public areas, scenic routes, viewpoints or settlements. to have particular regard to the potential impacts of new development on sensitive upland areas, and to materially consider the difficulty of establishing and maintaining screening vegetation when assessing development proposals in these areas. The elevated lands within this zone and surroundings areas could be expected to offer views over a wide area. That said, there may be local visual absorption opportunities in this zone to locate the infrastructure in proximity to industrial type uses so that it would be viewed in that context. Those opportunities would however necessitate early engagement with stakeholders such as Port Authorities, should this option be brought forward to Step 4. 	<ul style="list-style-type: none"> There are potentially local visual absorption opportunities in this zone to locate the infrastructure in proximity to existing industrial type uses. 	<p>needs to be taken on a site-by-site basis, particularly to minimise the risks of developments being visually intrusive.'</p> <ul style="list-style-type: none"> The potential for views from distinctive landscapes such as Slieve Coiltia and Tinnacarrick are of note, in addition to the current agricultural land use (pastures) across the majority of this zone. 	<p>needs to be taken on a site-by-site basis, particularly to minimise the risks of developments being visually intrusive.'</p> <ul style="list-style-type: none"> The potential for views from distinctive landscapes such as Slieve Coiltia and Tinnacarrick and to / from the JFK Arboretum are of note, in addition to the current agricultural land use (pastures) across the majority of this zone. While these views would be seen in the context of existing electricity transmission infrastructure (OHL's), they will require further consideration if this option is brought forward to Step 4 	<p>intrusion although, care still needs to be taken on a site-by-site basis, particularly to minimise the risks of developments being visually intrusive.'</p> <ul style="list-style-type: none"> The potential for views from distinctive landscapes such as Slieve Coiltia and Tinnacarrick and Carrickbyrne are of note, in addition to the current agricultural land use (pastures) across the majority of this zone. These views would however be seen in the context of existing electricity transmission infrastructure (OHL's)
Aviation and Telecommunications	<ul style="list-style-type: none"> No potential risks identified at this early stage of the project that are specific to this zone. 			<ul style="list-style-type: none"> Extensive and early engagement with Waterford Airport, the Irish Aviation Authority (IAA) and the Irish Coastguard would be required if this option is brought forward to Step 4 	<ul style="list-style-type: none"> No potential risks identified at this early stage of the project that are specific to this zone. 		
Opportunities to build better	No obvious location specific opportunities identified at this early stage of project development. Further studies will however be undertaken in Step 4.						New developments in this zone will be required to contribute to the protection and enhancement of amenities, heritage, green infrastructure and biodiversity and recreation and open spaces.
MCA Ranking (Environmental)	Light Green	Dark Blue	Dark Green	Light Blue	Dark Green	Light Green	Light Green

B.4.4 Social Considerations

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
Settlements and Communities	<ul style="list-style-type: none"> No CSO settlements within the zone. The majority of land within this zone consists of agricultural land, however the lands are adjacent to long-established energy infrastructure with multiple OHL's traversing the zone. 		<ul style="list-style-type: none"> Two CSO settlements within the zone, Waterford City and suburbs, and Slieverue. Ferrybank, suburb of Waterford City, is within the zone and hosts churches, school, retail shops, community centre, pitch and putt, parks, community centres, AFC soccer club, primary care centre. Slieverue hosts a national school, GAA club, retail shops and a graveyard. There are also smaller villages/ localities consisting of few residential properties. Land within this zone predominantly consists of agricultural communities. In the south of the zone a few industries are noted, in and around the Belview Port. 	<ul style="list-style-type: none"> The majority of land within the zone includes industrial type buildings associated with Waterford Airport, also includes Irish Coast Guard Station - Rescue 117 (SAR), with a few one-off houses. 	<ul style="list-style-type: none"> There are two CSO settlements within the zone, Ballycullane and Campile. Campile hosts retail shops, guest houses, petrol station and post office. Ballycullane hosts sports complex, church, cemetery, post office, national school, petrol station. There are also villages with few residential properties. Linear housing along regional roads, local roads. Gusserane includes a national school, cemetery, church and GAA pitch. Ramsgrange includes a community school and cemetery. Coolroe Solar Farm in Ballycullane is also within the zone, however, Ballycullane is a rural setting where infrastructure of the nature proposed may not be in keeping with the sense of place. 	<ul style="list-style-type: none"> There is one CSO settlement within the zone, Campile which hosts retail shops, guest houses, petrol station and post office. Few villages as well with clusters of residential properties. The majority of land within this zone consists of agricultural land which is likely to be used by agricultural communities for business. The Thistledown Stud stable farm (which it is understood is currently closed) and The Goat Farm are located within this zone. Significant strip of linear, ribbon development housing towards the south-eastern end of the zone relating to Horeswood Nurseries, Horeswood Church and Mann Engineering Ltd., Horeswood cemetery. 	<ul style="list-style-type: none"> No CSO settlement within the zone. Ballinaboola village within the zone with clusters of residential properties. The majority of land within this zone consists of agricultural land which is likely to be used by agricultural communities for business.
Visitors and Commuters	<ul style="list-style-type: none"> Kilmokea Country Manor and Gardens within the zone. Employees at and service providers for Great Island Power Station just south of the zone employees likely use the L4033 to commute to the station. 	<ul style="list-style-type: none"> Zone is traversed by a railway line. Commuters can be expected to have views of the infrastructure. 	<ul style="list-style-type: none"> Belview Port is located within this zone. It includes ca.23 businesses and over 600 employees. Celtic Anglican Water is a large water utility company located within this zone, employing approximately 100 employees. These provide a potential hotspot for commuters. Glanbia Ireland Belview (corporate office) is also located within this zone. Whitehorse Trail, a biking and hiking trail, is in the north-east of the zone. Waterford golf club within the zone Waterford train station/freight depot within the zone, to the south. Potential for traffic impacts along the R711, N25 and N29 that may affect key commuter routes in the zone. 	<ul style="list-style-type: none"> Visitors to Waterford airport, and commuters to Tramore, Waterford city and Dunmore East. Regional roads R708 and R685 pass through the zone. The R708 connects Waterford city and Waterford airport and further connect to R685 connecting Tramore and Dunmore East. 	<ul style="list-style-type: none"> Commuters to schools, churches, retail shops in the area may be affected. 	<ul style="list-style-type: none"> Employees at and service providers for Great Island Power Station just south of the zone employees likely use the R733 to commute to this station. The Horsewood Catholic Church is located within the zone, along R733. Potential traffic impacts along the R733, R734 might affect key commuter routes in the zone. 	<ul style="list-style-type: none"> Rathgarogue Cushinstown GAA Club located south of Ballinaboola. St. Marys church located along N25. Cushenstown NS along L8057. Potential traffic impacts along the R736, N25 may affect key commuter routes in the zone.
Amenities, Recreation and Tourism	<ul style="list-style-type: none"> Kilmokea Country Manor and Gardens within the zone which host festivals and events, including an annual traditional Irish music festival. 	<ul style="list-style-type: none"> No amenities, recreation, tourism receptors identified within the zone. Dunbrody Abbey is just outside the zone to the east, includes the Dunbrody Abbey Garden and a Visitor Centre. It features a wide range of activities including a maze and tea rooms. 	<ul style="list-style-type: none"> Ferrybank hosts several amenities and recreational facilities like churches, school, retail shops, community centre, pitch and putt, parks, community centres, AFC soccer club, primary care centre. 	<ul style="list-style-type: none"> Waterford airport within the zone which attracts tourists. The Coastal Route cycling route runs along R685 to the south of the zone. 	<ul style="list-style-type: none"> This zone includes Rathumney Castle. Dunbrody Abbey just outside the zone to the west, includes the Dunbrody Abbey Garden and a Visitor Centre. It features a wide range of activities including a maze and tea rooms. Tintern Woods is to the south of the zone. Amenities and recreational facilities within the zone include Saint Leonards National School, Sheillbagan Convent 	<ul style="list-style-type: none"> No tourism social receptors within the zone. Dunbrody Abbey is just outside this zone to the south, includes the Dunbrody Abbey Garden and a Visitor Centre. It features a wide range of activities including a maze and tea rooms. The Thistledown Stud and The Goat Farm are located within this zone. It 	<ul style="list-style-type: none"> Amenities and recreational facilities and tourism within the zone include Rathgarogue Cushinstown GAA Club, Thistledown Stud stable farm and The Goat Farm. There are three cemeteries/graveyards within the zone including Ballykerogure cemetery,

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
			<ul style="list-style-type: none"> Slieverue hosts a national school, GAA club, retail shops and a graveyard. 		<ul style="list-style-type: none"> National School, Ramsrange Community School, Gusserane O'Rahilly's GAA, St Leonard's FC, Gusserane National School, Ballycullane National School, Church of the Holy Spirit, St Martin's Catholic Church, Tintern Court and Sports Complex, Ramsgrange New cemetery, Rathimney graveyard, Kinnagh graveyard. Ballycullane Ploughing Association hosts events and festivals in Ballycullane village and Screen Wexford has identified Ballycullane as a potential filming location. Consequently, Ballycullane village and the immediate surrounding area would not be suitable for infrastructure of the type proposed and should not be brought forward to Step 4 	<p>is understood that Thistledown Stud is closed.</p> <ul style="list-style-type: none"> John F Kennedy Arboretum located outside of this zone but directly to the north. There are three cemeteries/graveyards within the zone including Ballykerogure cemetery, Horsewood cemetery, Carnagh cemetery. 	<p>Horsewood cemetery, Carnagh cemetery.</p> <ul style="list-style-type: none"> The Horse and Hound Hotel in Ballinaboola village hosts occasional gigs and events.
Nuisance and Disturbance	<ul style="list-style-type: none"> Predominantly rural and sparsely populated. Potential for nuisance and disturbance to the local population during the construction phase. 	<ul style="list-style-type: none"> Potential for nuisance and disturbance to the local population associated with traffic during the construction phase. 	<ul style="list-style-type: none"> Potential traffic impacts along the R711, R448, N29 might affect commuters to Waterford, Belview Port and surrounding areas. There are several schools, churches, parks, GAA, retail centres and shops, and businesses. Potential for construction phase nuisance and disruption. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for visitors to the airport, Tramore and Dunmore East. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population, schools, recreational facilities etc within this zone 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population. 	<ul style="list-style-type: none"> The construction phase has potential to result in disruptions and nuisance for the local population.
Visual Effects	<ul style="list-style-type: none"> The potential development would be viewed in the context of the long-established energy infrastructure in the area. 		<ul style="list-style-type: none"> While the potential development would be viewed in the context of the long-established energy and port infrastructure in the area, local populations may be disaffected. 	<ul style="list-style-type: none"> The potential development would be viewed in the context of existing industrial type structures in the area. 	<ul style="list-style-type: none"> Infrastructure of the nature proposed may not be in keeping with the rural setting of particular sections of this zone. If GI-DC05 is brought forward to Step 4 the extent of the zone would be amended so that Ballycullane and surrounding areas are removed. 	<ul style="list-style-type: none"> While the potential development would be viewed in the context of the long-established transmission infrastructure in the area (OHL's), local populations may be disaffected. John F Kennedy Arboretum is a popular landscape-based tourism / recreation feature located to the north of this zone, viewpoints from within John F Kennedy Arboretum may be impacted. 	<ul style="list-style-type: none"> While the potential development would be viewed in the context of the long-established transmission infrastructure in the area (OHL's), local populations may be disaffected.
MCA Ranking (Social)	Light Green	Light Green	Dark Green	Light Green	Dark Green	Dark Green	Dark Green

B.4.5 Deliverability Considerations

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
Dependence on other projects and outages	<ul style="list-style-type: none"> Great Island station is anticipated to have a number of projects which would co-ordination. Getting an outage of the 220 kV Aghada-Knockraha double circuit OHL will be very challenging considering a potential outage duration up to a number of months. This is not a differentiator for Cork. 					<ul style="list-style-type: none"> A Great Island - Kellis 220 kV OHL line uprate projects is planned which would require co-ordination. Great Island - Lodgewood has one project planned on the OHL and this would need to be co-ordinated with. Loop-ins will be challenging considering the requirement of up to a number of months outages of 	

Sub-Criteria	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
						either one single circuit OHL or two separate single circuit OHLs.	
Permits and Wayleaves	<ul style="list-style-type: none"> Moderate length underground cable routing will be required from the ESBN Substation and EirGrid Substation to the nearest landfall. Cable joint bays and passing bays will likely be required within private land holdings for inroad cable routing to these zones. There will likely be short cable routing cross country within private land holdings from the EirGrid OCC Substation into the Great Island Power Station which will be in parallel with other electrical infrastructure. A HDD is likely to be required for crossing the railway line north of the Great Island Power Station. 		<ul style="list-style-type: none"> Long underground cable routing will be required from the ESBN Substation and EirGrid OCC Substation to the nearest landfall. Cable joint bays and passing bays will likely be required within private land holdings for inroad cable routing to these zones. There will likely be short cable routing cross country within private land holdings from the EirGrid OCC Substation into the Great Island Power Station which will be in parallel with other electrical infrastructure. A HDD is likely to be required for crossing the railway line, the Suir and Barrow rivers. 		<ul style="list-style-type: none"> Moderate underground cable routing will be required from the ESBN Substation and EirGrid OCC Substation to the nearest landfall. Cable joint bays and passing bays will likely be required within private land holdings for inroad cable routing to these zones. There will likely be Moderate cable routing cross country within private land holdings from the EirGrid OCC Substation into the Great Island Power Station which will be in parallel with other electrical infrastructure. A HDD is likely to be required for crossing the railway line, the Suir and Barrow rivers. 	<ul style="list-style-type: none"> Moderate length underground cable routing will be required from the ESBN Substation and EirGrid OCC Substation to the nearest landfall. Cable joint bays and passing bays will likely be required within private land holdings for inroad cable routing to these zones. Very short OHL or underground cable routing will be required from the existing overhead lines to the ESBN Substation and EirGrid Substation. OHL or cable routing, joint bays and passing bays will likely be required within private land holdings within these zones. A HDD is likely to be required for crossing the railway line. 	
Project Plan Flexibility	<ul style="list-style-type: none"> Small zone with very limited locations for the substation due to physical constraints. Cable route will likely need to be off-road to get into Great Island substation which would have very limited options with regard to the likely HDD crossing of the railway. Difficult to get into this zone by cable routing in road due to the road width, cul-de-sac and existing utilities. Obstacles on routing include the railway just north of Great Island Substation, Greenlink HV cable which runs into the Great Island substation, the flood zone to the east of Great Island substation and Campile River estuary. 		<ul style="list-style-type: none"> Large zone so there will likely be a number of sites available within this zone. Cable route will likely need to be off-road to get into Great Island substation which would have very limited options with regard to the likely HDD crossing of the railway. Cable would need to cross the Barrow and the Suir most likely by HDD. This will be complex for both, but in particular for the Barrow. Further obstacles on routing include Waterford City, the railway line crossing and Greenlink HV cable which runs into the Great Island substation. 	<ul style="list-style-type: none"> Small zone so there may not be a lot of sites available within this zone and therefore flexibility. Cable route will likely need to be off-road to get into Great Island substation which would have very limited options with regard to the likely HDD crossing of the railway. Cable would need to cross the Barrow and the Suir most likely by HDD. This will be complex for both, but in particular for the Barrow. Further obstacles on routing include Waterford City, the railway line crossing and Greenlink HV cable which runs into the Great Island substation. 	<ul style="list-style-type: none"> Large zone so there will likely be a number of sites available within this zone. Cable route will likely need to be off-road to get into Great Island substation which would have very limited options with regard to the likely HDD crossing of the railway. Obstacles on routing related to this zone include the railway just north of Great Island Grid Connection substation, Greenlink HV cable which runs into the Great Island substation, the flood zone to the east of Great Island substation, Campile River estuary. 	<ul style="list-style-type: none"> Medium sized zone so there will be a number of sites available within this zone and therefore flexibility. Cable route will likely have multiple options of getting into this zone. Obstacles on routing the railway line crossing. 	
Implementation Timelines	<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the ESBN Substations and access. Landowner engagement for the cable routes from the Great Island Station to the EirGrid OCC Substation and landfall. Planning consent for new infrastructure. Ongoing projects at Great Island and coordination of associated outages. Construction of EirGrid OCC Substation and the moderate length HV cable routing. 		<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the ESBN Substations and access. Landowner engagement for the cable routes from the Great Island Station to the EirGrid OCC Substation and landfall. Planning consent for new infrastructure. Ongoing projects at Great Island and coordination of associated outages. Construction of EirGrid OCC Substation and the long HV cable routing. 		<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the ESBN Substations and access. Landowner engagement for the cable routes from the Great Island Station to the EirGrid OCC Substation and landfall. Planning consent for new infrastructure. Ongoing projects at Great Island and coordination of associated outages. Construction of EirGrid OCC Substation and the moderate length HV cable routing. 	<p>The programme for the grid connection zone will be dictated by:</p> <ul style="list-style-type: none"> Landowner engagement for the EirGrid and ESBN Substations and access. Landowner engagement for OHL/cable routes from the existing overhead lines to the ESBN Substation, EirGrid Substation and landfall. Planning consent for new infrastructure. Outages of one or two separate 220 kV single circuit OHLs Construction of moderate length HV cable routing, EirGrid and ESBN Substations and OHL interconnection infrastructure. 	
MCA Ranking (Delivery)	Light Blue	Light Blue	Dark Green	Light Blue	Light Green	Dark Green	Dark Green

B.4.6 Summary of Evaluations

Criterion	GI-DC01	GI-DC02	GI-DC03	GI-DC04	GI-DC05	GI-OHL01	GI-OHL02
Technical	Blue					Light Green	
Economic	Light Green	Green	Light Blue	Light Green	Green	Light Blue	
Environmental	Light Green	Blue	Green	Light Blue	Green	Light Green	
Social	Light Green		Green	Light Green	Green		
Deliverability	Light Blue		Green	Light Blue	Light Green	Green	
Overall MCA	Blue					Green	

