Step 4A Emerging Best Performing Options

Powering Up Offshore South Coast

September 26

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Powering Up Offshore South Coast

September 26

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Glossary of Terms and Acronyms

Glossary of Terms

Term	Definition
Air Insulated Switchgear (AIS) substation	An AIS substation uses air as the main insulation for the exposed electrical conductors.
Applicant	EirGrid plc.
Aquifer	An aquifer is an underground layer of water-bearing, permeable rock, gravel, sand, or silt.
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.
Competent Authority	The statutory decision-maker charged with examining an Environmental Impact Assessment report and/or Natura Impact Statement, carrying out the Environmental Impact Assessment and / or Appropriate Assessment, and making the final decision on whether to issue development 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.
Dangerous Wreck	A wreck which is classified as such by the UK hydrographic office. The definition is "a wreck which is considered to be dangerous to surface navigation". It may have to do with the depth in which the wreck is, whether it has tall masts or points which a sailing vessel can collide with, whether it carries explosives or other toxic loads etc.
Decommissioning Phase	The period when the proposed development comes to the end of its operational life and is decommissioned / dismantled.
Designated Activity Company (DAC)	A Designated Activity Company (DAC) is a type of private company limited by shares or guarantee in Ireland, introduced by the Companies Act 2014.
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.

Term	Definition
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 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. ● Special Areas of Conservation (SAC) are designated wildlife conservation areas, considered to be important on a European as well as an Irish level. ● Special Protection Areas (SPA) are designated conservation sites classified under the European Birds Directive, considered to be important on a European as well as an Irish level. A competent authority cannot grant consent for a project if doing so would adversely affect the integrity of a protected site (e.g., SACs or SPAs).
Framework for Grid Development (FGD)	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'.
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 EirGrid's 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 and electrical equipment is housed within a building.
Grid Connection Zone	Potential area where onshore grid connection infrastructure may be developed.
Grid Connection Subzone	Potential area within the Step 3 Grid Connection Zone where onshore grid connection infrastructure may be developed.
Horizontal Directional Drilling (HDD)	A trenchless crossing technique whereby a hole is drilled out to a predetermined position to allow a duct to be pulled through.
Irish Coastal Protection Strategy Study (ICPSS) erosion hazard mapping	This mapping illustrates the predicted location of the coastline in 2050.
Important Marine Mammal Areas (IMMA)	Important Marine Mammal Areas (IMMAs) are defined as discrete portions of habitat, important to marine mammal species, that have the potential to be delineated and managed for conservation. These are non-statutory designations defined by the International Union for Conservation of Nature (IUCN) Marine Mammal Protected Areas Task Force
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.

Term	Definition
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 administrating 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.
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 Substation (OSS) interconnection cables	High voltage cables connecting the two Offshore Substations.
Offshore Transmission Cable	The submarine cables which bring electricity from the offshore substation(s) to the Transition Joint Bay.
Onshore Cable	The underground cable on land which 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.
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 (but unsurfaced). 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 undertaken in line with the Framework for Grid Development.

Term	Definition
Settlement	Population classifications, as set out by the Central Statistics Office (CSO): ● 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 For the purpose of this report, settlements are as identified in open-source mapping data for 'Census towns'.
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
Traffic Separation Scheme (TSS)	Route that shipping is required to navigate, with specific rules on where to go and where not to go, and how to cross the lanes, which are perpendicular to the flow direction they dictate.
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.
Zone of Notification (ZoN)	Designated area highlighting known or potential archaeological remains.

Glossary of Acronyms

Acronym	Term
AA	Appropriate Assessment
AAP	Area / feature of archaeological potential
ABP	An Bord Pleanála
ACP	An Coimisiún Pleanála
ACA	Architectural Conservation Area
AEZ	Archaeological Exclusion Zone
AIS	Air Insulated Switchgear
AoGS	Area of Greater Sensitivity
BPO	Best Performing Option
CAP	Climate Action Plan
CDP	County Development Plan
CLO	Community Liaison Officer
CCC	Cork County Council
cSAC	candidate Special Area of Conservation
CSO	Central Statistics Office
DAC	Designated Activity Company
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
FOC	Fibre optic cables
GHG	Greenhouse gas
GIS	Gas Insulated Switchgear
GNI	Gas Networks Ireland
GSI	Geological Survey Ireland
GW	Gigawatt
GWTDE	Groundwater dependent ecosystems
Ha	Hectares
HDD	Horizontal Directional Drilling

Acronym	Term
HV	High Voltage
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
HVL	High Value Landscape
IAA	Irish Aviation Authority
ICUN	International Union for Conservation of Nature
IEEZ	Irish Exclusive Economic Zone
IMMA	Important Marine Mammal Areas
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
IPCC	Intergovernmental Panel on Climate Change
ISRA	Important Shark and Ray Area
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

Acronym	Term
pNHAs	Proposed Natural Heritage Areas
pSAC	Proposed Special Area of Conservation
pSPA	Proposed Special Protection Area
PUOSC	Powering Up Offshore South Coast
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
SAR	Search and Rescue
SCA	Seascape Character Assessment
SCI	Special Conservation Interest
SLIA	Seascape / Landscape Impact Assessment
SMR	Sites and Monuments Records
SPA	Special Protection Area
TAO	Transmission Asset Owner
TII	Transport Infrastructure Ireland
TJB	Transition Joint Bay
TSO	Transmission System Operator
TSS	Traffic Separation Scheme
UGC	Underground Cable
UK	United Kingdom
UN	United Nations
WCCC	Waterford City and County Council
WFD	Water Framework Directive
WCC	Wexford County Council
WT	Wind Turbine
XLPE	Cross-linked polyethylene
ZoI	Zone of Influence
ZoN	Zone of Notification

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"). 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) the Electricity Supply Board Networks (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 wind farms, EirGrid is responsible for connecting electricity generation infrastructure, such as offshore and onshore wind farms, into our national electricity transmission system.

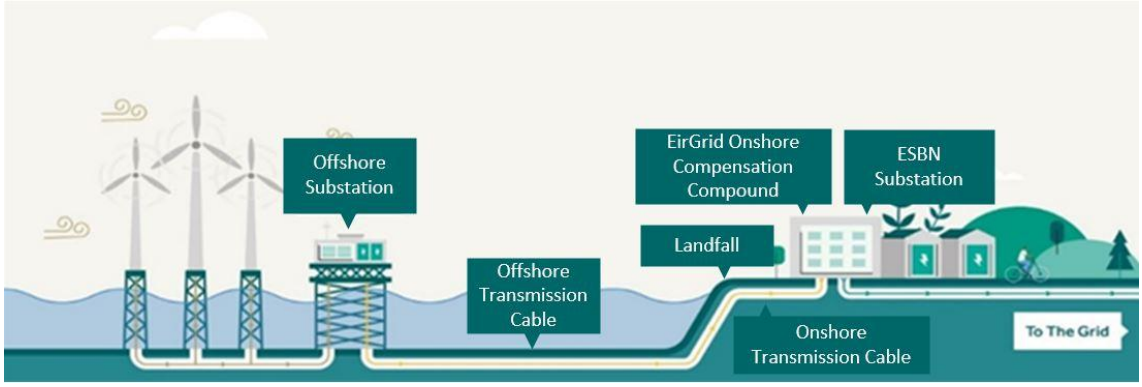
As set out in the Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System (Department of the Environment, Climate and Communications, DECC, 2021)[1], the Government (of Ireland) has designated EirGrid, under its license as TSO as the offshore asset owner and system operator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

Figure 1-1: Typical Offshore Wind Farm and Electricity Transmission System



Source: EirGrid

1.2 What is Tonn Nua, Maritime Area A?

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. 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. Maritime 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 built 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 Project.[3]

The Powering Up Offshore South Coast (PUOSC) project, the subject of this Step 4A Report, relates to the Tonn Nua (Area A) of the SC-DMAP only.

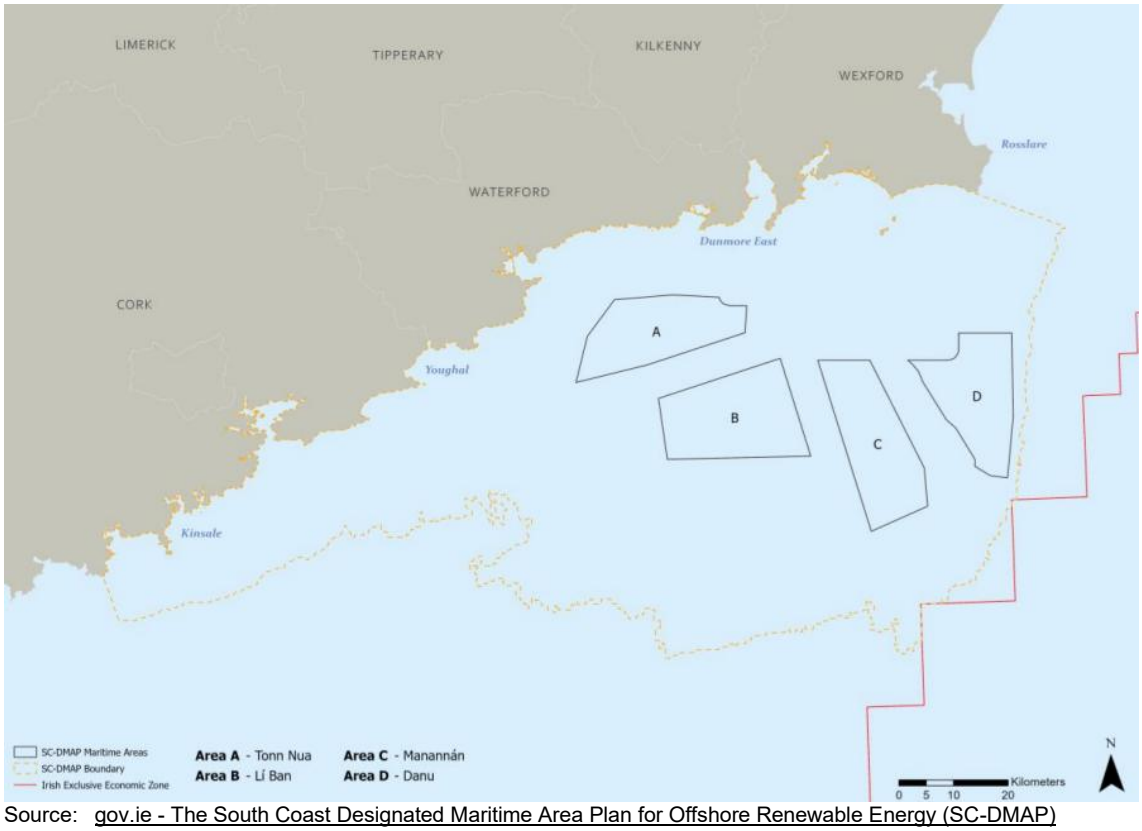
The Offshore Renewable Electricity Support Scheme (ORESS) Tonn Nua auction was administered by EirGrid on behalf of the Department of Climate, Energy and the Environment (DCEE).

In November 2025, a joint venture partnership between ESB and Denmark-based renewable energy developer Orsted, was the successful bidder at the Tonn Nua auction. This joint venture is also known as Tonn Nua.

The SC-DMAP and Maritime Area A (Tonn Nua) are shown in Figure 1-2.

[2] gov.ie - The South Coast Designated Maritime Area Plan for Offshore Renewable Energy (SC-DMAP)
[3] 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 PUOSC[4], EirGrid plans to develop offshore electricity substations and associated offshore (electricity) transmission cables. This new infrastructure will bring the power generated by offshore wind farms into our national electricity transmission system.

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

- Two offshore substation (OSS) platforms within Tonn Nua. OSS interconnection cables are expected to connect the two OSS platforms.
- Offshore transmission cables connecting the offshore substations to landfalls.
- Transition Joint Bays at the landfalls connecting offshore transmission cables and onshore transmission cables.
- 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.

[4] 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[5]'. Each step has a distinct purpose with defined objectives. These are presented at a high-level in Figure 1-3.

Figure 1-3: EirGrid's Six-step Framework for Grid Development

Source: EirGrid

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

The PUOSC project is now in Step 4A of the Framework for Grid Development. This is the first phase of Step 4.

During Step 2[6], EirGrid identified that the current capacity of the national grid required the electricity generated by the proposed offshore wind farm in Tonn Nua (Maritime Area A) to be split equally between two grid interface points, one in the Cork region and one in the Waterford / Wexford regions.

During Step 3, EirGrid evaluated a long list of Landfall Zones and Grid Connection Zones and identified the Step 3 short list of options to bring forward to Step 4A. The Step 3 short-list of options is presented in Table 1.1 and Figure 1-4 and Figure 1-5.

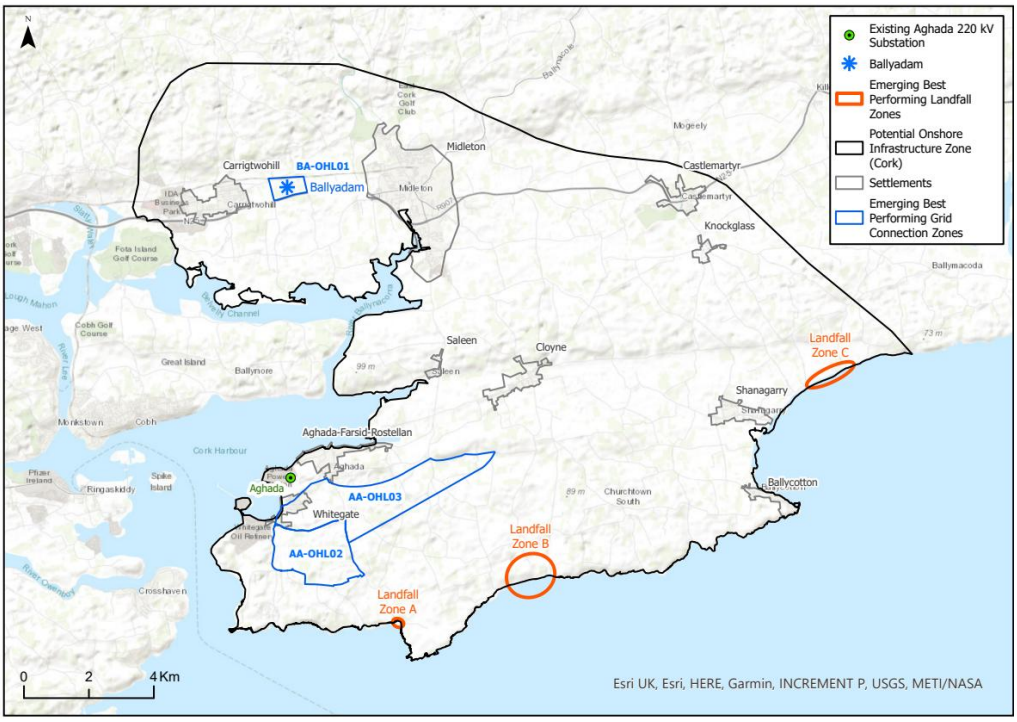
Table 1.1: Step 3 Short List of Landfall Zone and Grid Connection Zone Options

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

[5] EirGrid-Have-Your-Say_May-2017.pdf (eirgridgroup.com)

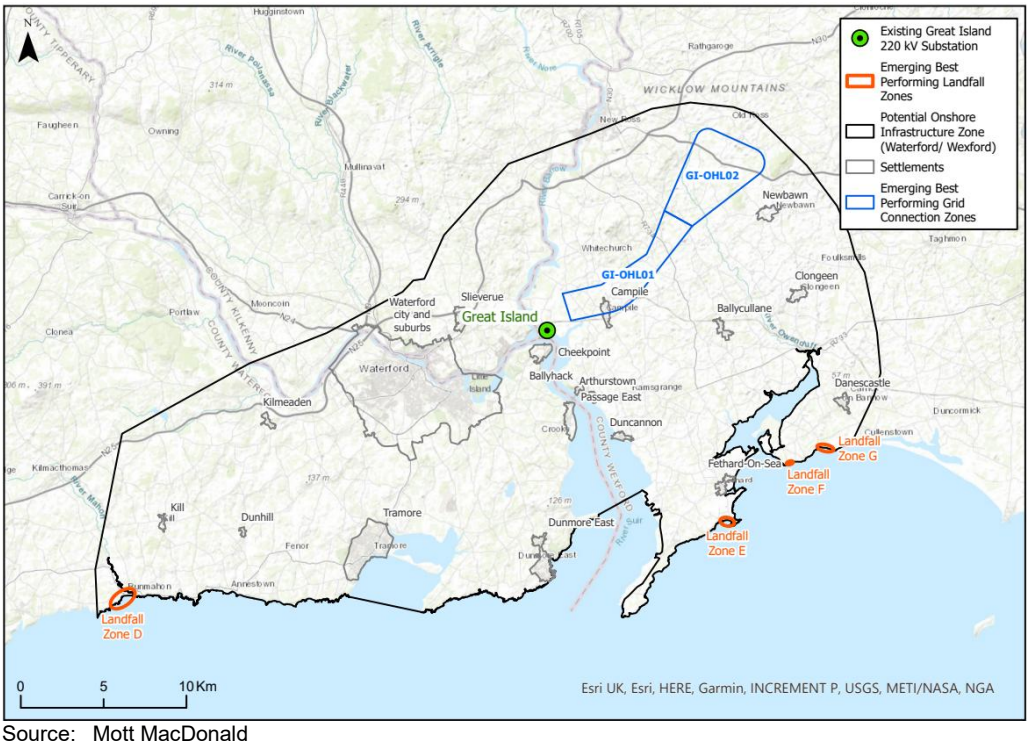
[6] Powering Up Offshore South Coast - Update Report

Figure 1-4: Step 3 EBPO in East Cork



Source: Mott MacDonald

Figure 1-5: Step 3 EBPO in County Waterford and County Wexford



Source: Mott MacDonald

The Step 3 Report[7] was published in November 2024.

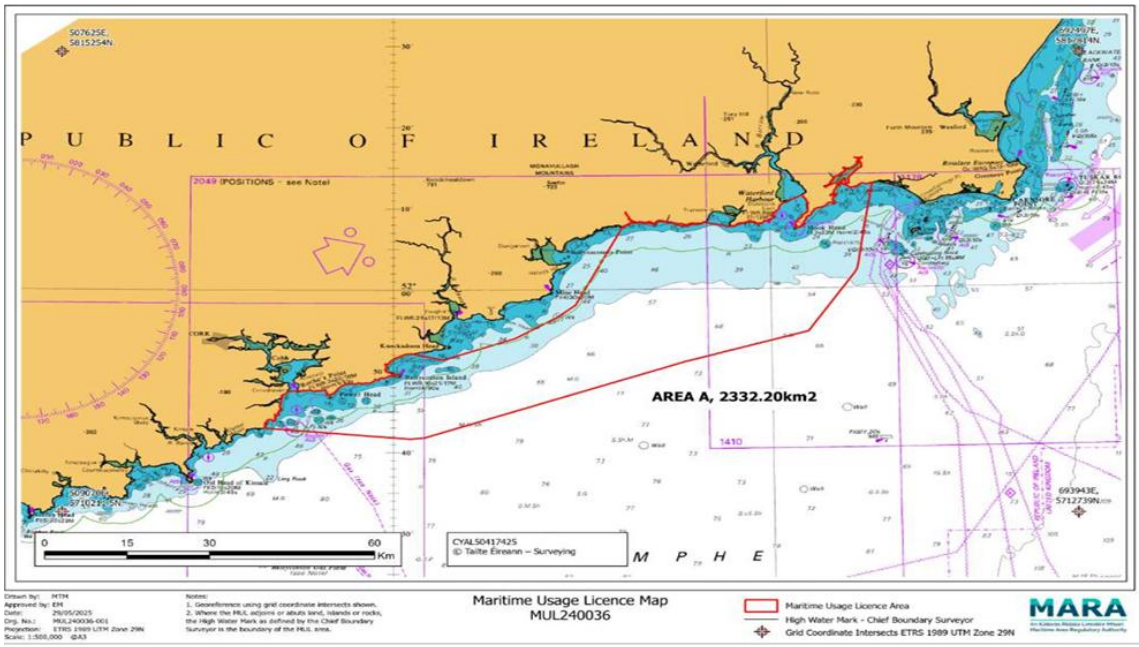
The first phase of maritime surveys of Offshore Transmission Cable Route Corridors between the Landfall Zones identified in Step 3 and Tonn Nua (Maritime Area A) were carried out in 2025 under Maritime Usage Licence (MUL) 240036[8].

MUL 240036 was granted by the Maritime Area Regulatory Authority (MARA) on 10 July 2025, the MUL licence area is illustrated in Figure 1-6.

The findings of those surveys have been assessed to inform the options evaluated in this Step 4A Report and to inform further surveys to be undertaken in 2026 and 2027. These ongoing and future surveys will further inform the identification of the best performing options at the end of Step 4.

The MUL was subsequently amended on 6 Jul 2026 (MUL240036MA), to amend Specific Condition 32 (relating to in-combination underwater noise effects).

Figure 1-6: MUL Licence Area 240036



Source: MARA

The Step 4A Areas of Focus for Landfall Zones, Offshore Transmission Cable Route Corridors and Grid Connection Subzones are as presented in Table 1.2 and in Figure 1-7 to Figure 1-9.

Table 1.2: Step 4A Long List of Landfall Zone and Associated Offshore Transmission Cable Corridor and Grid Connection Subzone Options

Landfall Zone Options including offshore transmission cable	Grid Connection Subzone Options
• Landfall Zone B (in Cork) and potential Offshore Transmission Cable Route Corridor B (previously referred to as Cork 2).	• CRK-01 (AA-OHL02) County Cork • CRK-02 (AA-OHL03)_County Cork • CRK-03 (AA-OHL03)_County Cork • CRK-04 (AA-OHL03)_County Cork

[7] Powering-Up-Offshore-South-Coast-Step-3-Emerging-Best-Performing-Options-Report.pdf

[8] MUL240036 - MARA - Maritime Area Regulatory Authority

Landfall Zone Options including offshore transmission cable	Grid Connection Subzone Options
● Landfall Zone C (in Cork) and potential Offshore Transmission Cable Route Corridor C (previously referred to as Cork 1). ● Landfall Zone C (in Cork) and potential Offshore Transmission Cable Route Corridor C1 (alternative cable route corridor).	
● Landfall Zone E (in Wexford) and potential Offshore Transmission Cable Route Corridor E (previously referred to as WE3A) and Wexford OSS. ● Landfall Zone F (in Wexford) and potential Offshore Transmission Cable Route Corridor F (previously referred to as WE2A) and Wexford OSS. ● Landfall Zone G (in Wexford) and potential Offshore Transmission Cable Route Corridor G (previously referred to as WE1A) and Wexford OSS.	● WXD-01 (GI-OHL02)_County Wexford ● WXD-02 (GI-OHL02)_County Wexford ● WXD-03 (GI-OHL02)_County Wexford ● WXD-04 (GI-OHL02)_County Wexford ● WXD-05 (GI-OHL01)_County Wexford ● WXD-06 (GI-OHL01)_County Wexford ● WXD-07 (GI-OHL01)_County Wexford ● WXD-08 (GI-OHL01)_County Wexford ● WXD-09 (GI-OHL01) County Wexford

Landfall Zone A (County Cork) has not been brought forward to Step 4A primarily due to landfall constraints associated with existing infrastructure (a disused gas pipeline) and the extent of rock outcropping on approach.

As detailed in the Step 3 Report, Landfall Zone D had the most favourable marine approach for offshore cable installation but performed poorly on environmental, social and onshore cable installation deliverability criteria compared to the alternatives. Landfall Zone D (County Waterford) will therefore only be brought forward to Step 5 for planning if no other options are available and has not been considered in this Step 4A Report.

Grid Connection Zone BA-OHL01 (Ballyadam, County Cork), though not considered in this Step 4A Report, remains a potential Grid Connection Zone option.

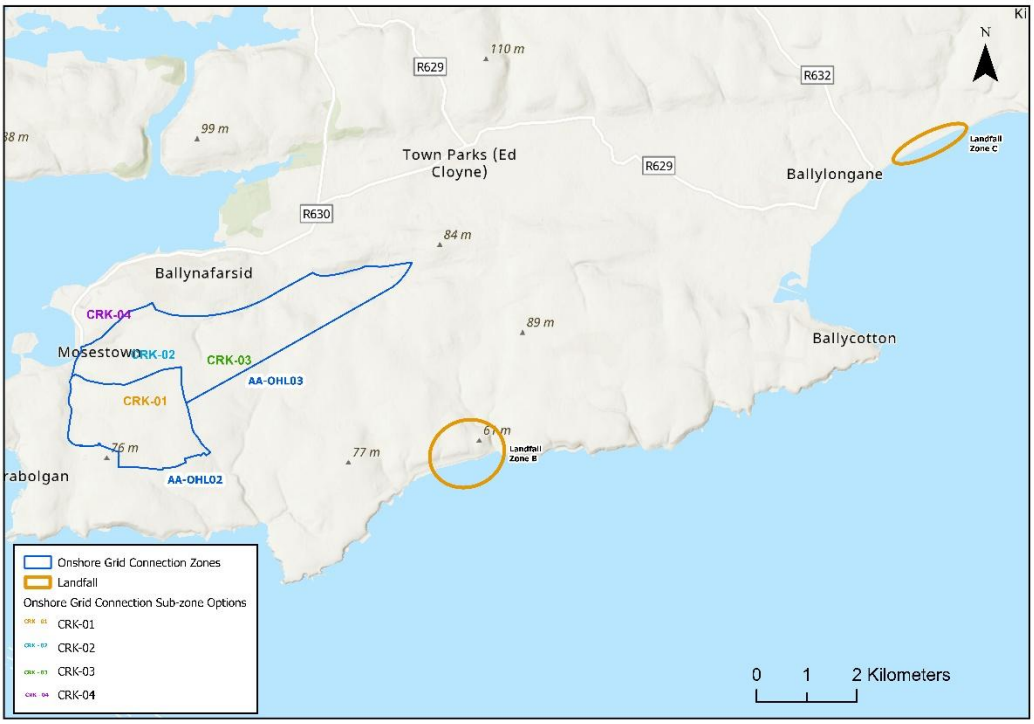
Further information on the identification of the OSS Zones is provided in Section 3.2 of this report.

Further information on the identification of Offshore Transmission Cable Route Corridors is provided in Section 3.3 of this report.

Further information on the identification of Grid Connection Sub-zones is provided in Section 3.4 of this report.

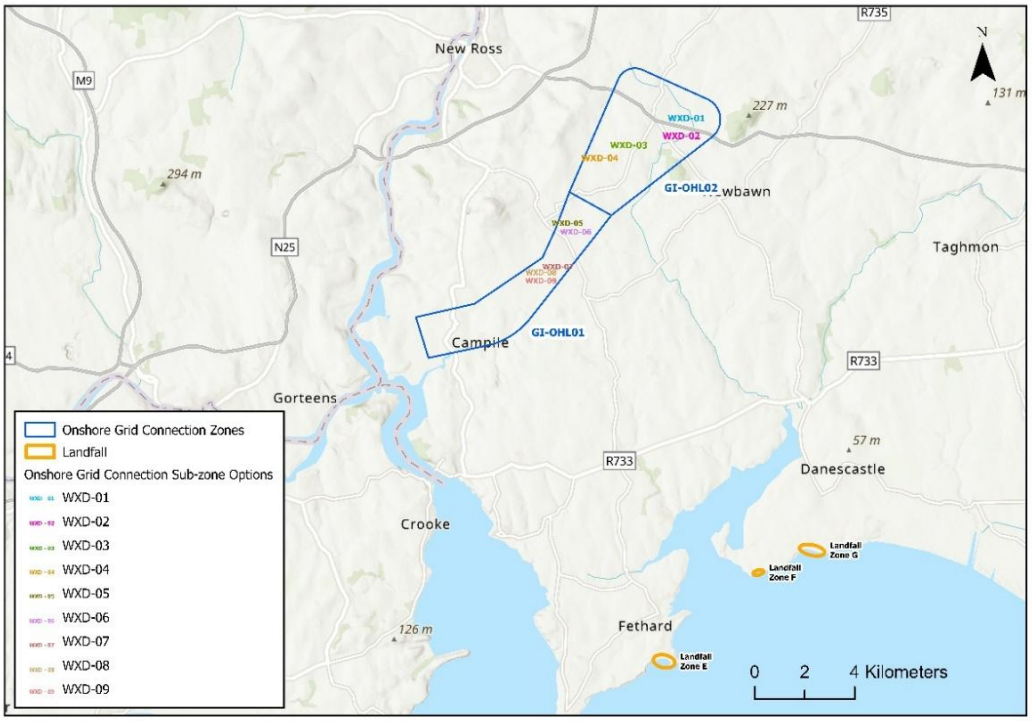
Further to the identification of the Emerging Best Performing Landfall Zones in Cork and Wexford, indicative Onshore Cable Route Corridor options were identified, and these are also presented in Figure 1-9. Further information on the identification of Onshore Transmission Cable Route Corridors is provided in Section 3.5 of this report.

Figure 1-7: Step 4A Long List of Onshore Options (County Cork)



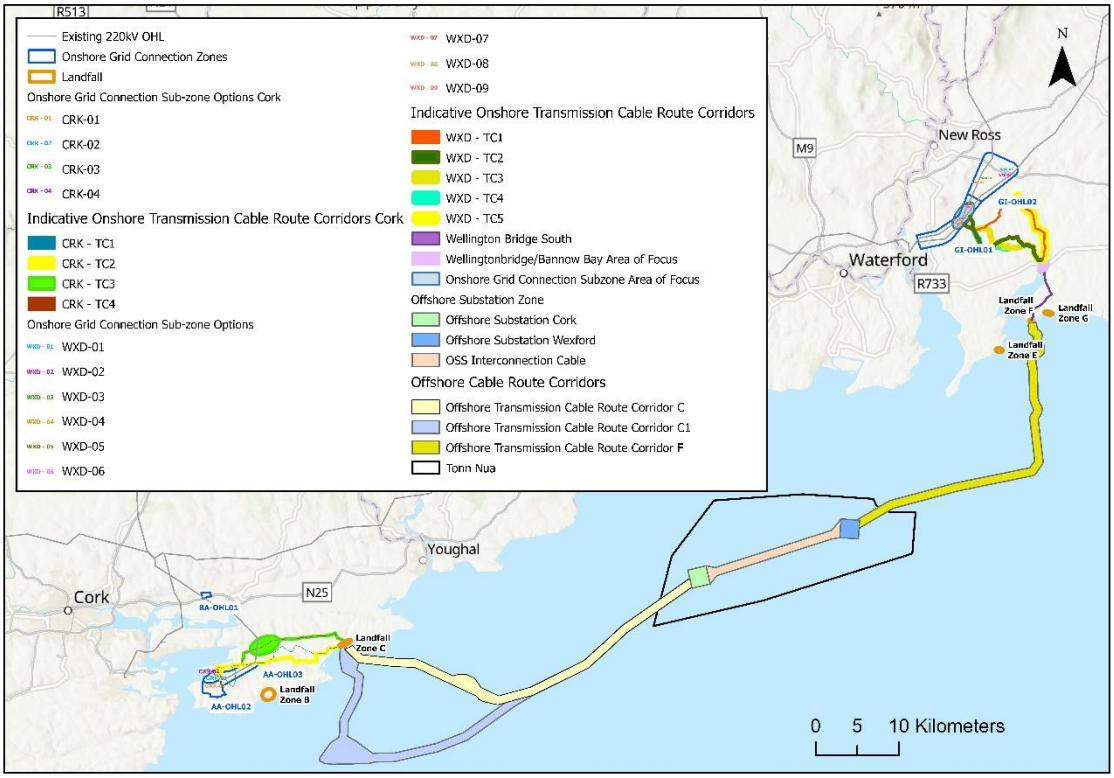
Source: Mott MacDonald

Figure 1-8: Step 4A Long List of Onshore Options (County Wexford)



Source: Mott MacDonald

Figure 1-9: Step 4A Long List of Onshore and Offshore Options



Source: Mott MacDonald

1.6 What is the aim of this Step 4A Report?

The aim of this Step 4A Report is to present a Multi Criteria Analysis (MCA) of feasible Landfall Zone including Offshore Transmission Cable Corridors and OSS zones, Grid Connection Subzone options and Onshore Transmission Cable Route Corridors to identify Emerging Best Performing Options (EBPOs) for both Cork and Wexford i.e.:

- EBPO for Landfall Zones (and associated Offshore Transmission Cable Corridor and OSS)
- EBPO for Grid Connection Subzones
- EBPO for Onshore Transmission Cable Route Corridors.

The criteria evaluated in the MCA comprise:

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

Descriptions of the considerations (sub-criteria) that have informed the MCA are provided in Appendix A. Only sub-criterion that inform a comparative evaluation have been brought forward to the MCA.

Further information on PUOSC (the Proposed Development) is provided in Chapter 2 of this report.

Chapter 3 of this report presents the Step 4A options and sets out the approach and methodology applied to the identification of the EBPOs to be brought forward to Step 4B.

Chapter 4 presents a high-level characterisation of the identified Step 4A options.

The MCA of the Step 4A options is included in Appendix B and Appendix C of this report.

Chapter 5 and Chapter 6 present a summary of the findings of the MCA.

Chapter 7 presents Next Steps.

1.7 Stakeholder Consultation and Engagement

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

- Tonn Nua, the developers of the associated wind farm who are a Joint Venture (JV) partnership between ESB and Ørsted, a Danish renewable energy company. EirGrid works closely with Tonn Nua, both from a public engagement and project perspective, to ensure optimum project coordination.
- Department of Climate, Energy and the Environment regarding development of the Tonn Nua-DMAP.
- Industry stakeholders including utilities, transport operators, fisheries representatives, maritime users, prescribed bodies and business groups.
- Public stakeholders including local authorities and elected members in the project areas. Also, individuals, residents, communities, landowners and local groups who may be affected by, interested in, or wish to comment on the project.

1.7.1 Public Consultation

Between November 2024 and January 2025 EirGrid held its 'Powering Up Offshore - South Coast Step 3 Public Consultation', to invite stakeholder feedback to further inform the project. This consultation focussed on two key elements of the project:

1. The Landfall Zones under consideration
2. The onshore Grid Connection Zones under consideration

A range of communication methods were adopted to promote the consultation, including multi-channel advertisements, direct email contact with registered stakeholders, social media promotion, radio promotion and promotion on the project website. An outline of the comprehensive programme of engagements conducted during this consultation period included:

- Eight public events across counties Cork, Waterford and Wexford, where members of the public could meet members of the team, view the information on display and provide feedback.
- Two public webinars held on 28 November 2024 and 13 January 2025, the content of which can be found here.
- 12 in-person fisheries briefings in Cork, Wexford and Waterford.
- Briefings to community representative organisations, the fishing industry, maritime stakeholders and elected representatives.
- A project update brochure which provided the key summary details of Step 3 and details of consultation events.
- A media campaign in regional press and radio, social media.

- Updates on the dedicated project web pages.

Consultation responses were accepted via an online consultation portal, by email and by post, and members of the public could make enquiries by contacting the Public Engagement team by phone or email. 33 formal consultation responses were received during the consultation period. These included responses from local residents, fishers, community groups, state bodies, business and other representative bodies.

Following this consultation, a Step 3 Engagement & Consultation Report was published on the EirGrid website in March 2025. This Report provided an overview of all responses and feedback received during the engagement and consultation period. Submissions received via the formal consultation channels were analysed, as well as feedback and queries noted at the public information events, webinars and stakeholder briefings. In response to the questions and comments raised over the course of the Powering Up Offshore – South Coast Project Step 3 Consultation, a Frequently Asked Questions Document was published on the project website.

1.7.2 Survey Information Campaigns

The first phase of marine and coastal surveys took place between July and November 2025. These included comprehensive marine geophysical, metocean and environmental surveys, as well as intertidal non-intrusive landfall investigations. The data acquired informed the schedule of surveys which will take place in 2026.

To ensure stakeholders were informed in advance of the works, EirGrid implemented a comprehensive communications and engagement programme, including engagement with local authorities, landowners, community stakeholders and marine environment users. These engagements were supported by project communications, media coverage and updates on the project website detailing the purpose and timelines of the surveys.

EirGrid began Phase 2 of PUOSC'S marine and landfall surveys in April 2026. Prior to the commencement of this phase of surveys, EirGrid's public engagement team conducted a wide range of engagements across the project areas to provide information about the upcoming surveys and to answer any queries from stakeholders. They visited towns in Cork, Wexford and Waterford with EirGrid's mobile information unit. Their fisheries liaison officer also facilitated in-person fisheries meetings in Dunmore East, Helvick Head, Fethard-on-Sea and Ballycotton during March 2026, supported by key members of the PUOSC project team.

The survey information campaign concluded on 23 April 2026 with a webinar presentation and Q&A, with panellists from EirGrid's public engagement and project teams.

1.7.3 Ongoing Project Updates

Regular project updates are issued to the project stakeholder list and published on the project website. In addition, our dedicated agricultural, community and fisheries liaisons remain available for any stakeholder queries.

2 The Proposed Development

2.1 Introduction

The design of the PUOSC 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 4A Report evaluates Landfall Zone (and associated Offshore Transmission Cable Corridor and OSS Zone) and Grid Connection Subzone options and Onshore Transmission Cable Route Corridors.

The location of the Tonn Nua Offshore Wind Farm within Tonn Nua will be developed by the successful bidder at the auction, also known as Tonn Nua.

2.2 Design Principles and Assumptions

The PUOSC project will require:

- Offshore substation (OSS) platforms located within Tonn Nua connecting to offshore transmission cables. OSS interconnection cables are also expected to connect the two offshore substation platforms.
- Offshore transmission cables connecting the offshore substations to landfalls.
- Landfall Zones (Transition Joint Bays) connecting offshore transmission cables and onshore transmission cables.
- Onshore transmission cables connecting the TJBs and onshore transmission infrastructure.
- Onshore Compensation Compound (OCC) Substations in proximity to new Onshore Substations for a loop-in connection to existing overhead line(s).
- Loop-in connections to the existing electricity transmission network from the new substations by either underground cables or overhead lines.

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

2.2.1 Offshore Substation (OSS) Platform

An OSS is an offshore platform connecting the offshore transmission cable (part of PUOSC) and the offshore array cables (part of the Phase 2 offshore wind farm to be developed by Tonn Nua).

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 farm 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.

The OCC will be supported by a four-legged steel framework (known as a jacket foundation) that is permanently fixed to the seabed. The structure elevates the substation platform above sea level and is designed to withstand waves, tides and wind conditions.

Scour protection is anticipated to be required and can include rock bagging, rock placement and mattressing. The type of scour protection to be employed is subject to ongoing studies and

surveys. These include 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.

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

The OSS is expected to be unmanned. A typical OSS platform is presented in Figure 2-1.

Figure 2-1: Typical OSS Platform

Source: Kent | Berwick Bank Wind Farm (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. Installation techniques may include:

- Simultaneous cable lay and burial utilising a seabed plough or mechanical trencher; or
- Surface laid on the seabed and post lay burial using remotely operated vehicles (ROVs).
- 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, mattressing or specialist cable protection systems such as

protective cable sleeves may be required. 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)

The offshore transmission cable system will comprise a 275 kV high-voltage alternating current (HVAC) subsea cable, formed as a bundled three-core design with integrated fibre optic cables (FOC) for communication and monitoring. Each core will be insulated using cross-linked polyethylene (XLPE) and the overall cable will be armoured to provide mechanical protection and durability in the marine environment.

2.2.3 Landfall Zones (Transition Joint Bays)

The offshore transmission cables and the onshore transmission cables will connect at TJBs at the proposed landfall in Cork and the proposed landfall in Wexford. The TJB will be underground and will consist of concrete chambers which will house the joints between the offshore transmission cables and the onshore transmission cables.

A construction compound will be required to facilitate installation of the transmission joint bay and cables. A permanent security fence may be installed around the ‘manhole’ like cover for the TJB. A permanent access road to the TJB may also be required for access for maintenance. Joint bays associated with onshore underground cable are discussed in Section 2.2.5.

2.2.4 Onshore Grid Connection

To facilitate connection to the national electricity transmission network, a new EirGrid OCC Substation and a new ESBN Substation, will be required.

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.

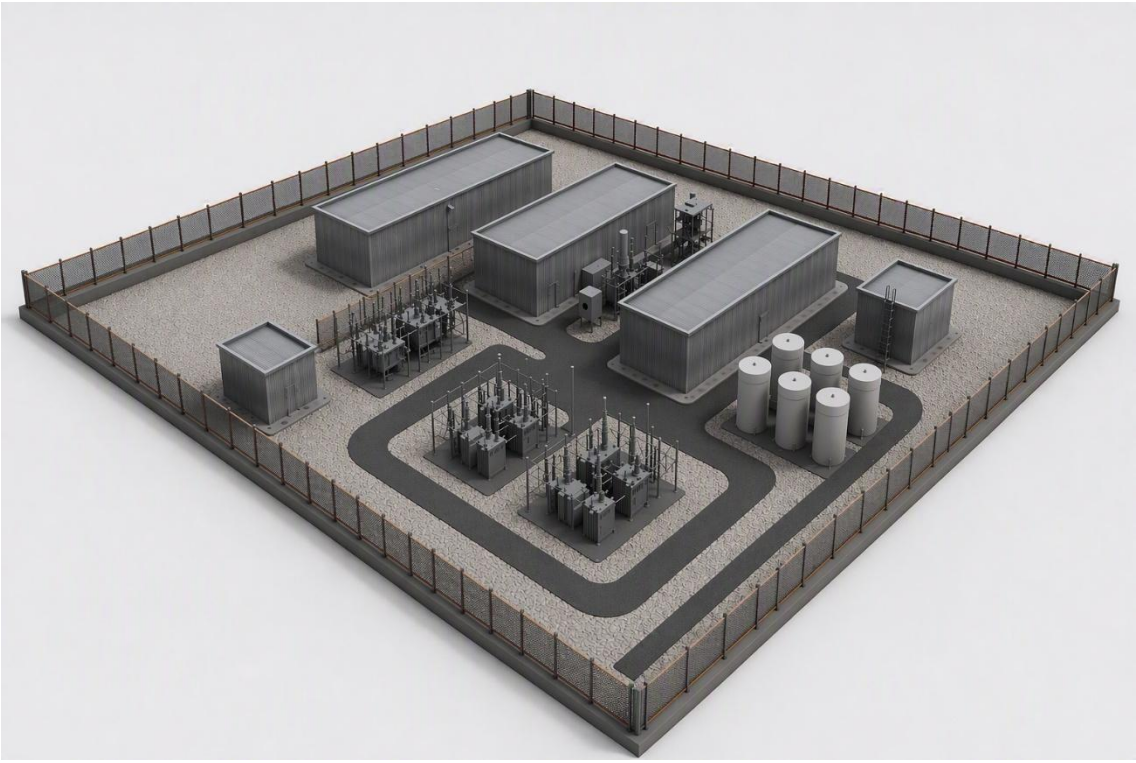
The connection to the national electricity grid will be by 'loop-in' connections between the new ESBN Substation and existing overhead lines (OHLs). A loop-in connection to an existing OHL will necessitate works along a short section of an existing OHL, the installation of new OHL structures / Line Cable Interface Masts (LCIMs) / underground cable (UGC) and a new ESBN Substation.

EirGrid has determined that Gas Insulated Switchgear (GIS) is the preferred technology solution over Air Insulated Switchgear (AIS). This determination has been made due to the substantial difference in land take (GIS requires approximately four times less land than AIS) and due to established precedent on many other similar substations assessments on EirGrid projects.

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

An illustration of a typical GIS based OCC and ESBN substation is provided in Figure 2-3.

Figure 2-3: Illustration of a GIS Based Onshore Compensation Compound and ESBN Substation



Source: Mott MacDonald

2.2.5 Onshore Underground Cable

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

The onshore transmission cable system will comprise 275 kV high-voltage alternating current (HVAC) cables, laid as three single cables, one cable per phase. Each cable will be insulated

using cross-linked polyethylene (XLPE) with armouring to provide mechanical protection and durability.

The cables will be routed within cable ducts configured in either trefoil or flat formation dependent upon the installation conditions, within a cable trench. The typical cable trench width for installation of the cable ducts will have a width of ca. 1.5m with a minimum depth of 1.3m, however wider and/or deeper cable trenches will be necessary for navigation of utilities and constraints. Separate fibre optic cables will be included within the trench for communication and monitoring.

Given the distance between landfalls and the points of connection, several crossings such as those for watercourses and utilities may be required. These crossings will 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 will be delivered to site on drums. Joint bays will be required to be installed at regular intervals along the cable route to join consecutive lengths of cable and to facilitate cable pulling. These will 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 2-4 and Figure 2-5.

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

Figure 2-4: A typical cable duct installation in the road

Source: North-Connacht-Brochure-Autumn-Update-2021.pdf (eirgrid.ie)

Figure 2-5: A typical jointing bay where cables are connected

Source: North-Connacht-Brochure-Autumn-Update-2021.pdf (eirgrid.ie)

2.3 EirGrid's Biodiversity Strategic Plan 2025-2035

In 2025 EirGrid published the EirGrid Biodiversity Strategic Plan 2025-2035[9]. The plan aligns with the National Biodiversity Action Plan (NBAP)[10]. The NBAP advocates a 'Whole of Government, Whole of Society' approach to biodiversity action. Acknowledging this duty, this Plan demonstrates how EirGrid will mainstream biodiversity action on nature business wide. The objectives and policies of EirGrid's Biodiversity Strategy Plan 2025-2035 also align with the All-Ireland Pollinator Plan[11]. A core policy of EirGrid's strategic plan is a commitment to No Net Loss of biodiversity, if not Biodiversity Net Gain, unless where constrained by external factors.

[9] cms.eirgrid.ie/sites/default/files/publications/EirGrid-Biodiversity-Strategic-Plan-2025-2035.pdf

[10] National Biodiversity Action Plan | National Parks & Wildlife Service

[11] All-Ireland Pollinator Plan » All-Ireland Pollinator Plan

EirGrid's plan represents its commitment to biodiversity, aligning with the relevant national plans, demonstrating corporate responsibility, effective communication of results and commitment to long term ecological value.

EirGrid is committed to measurable increases in long-term biodiversity value.

3 Approach and Methodology

3.1 Introduction

This chapter sets out the approach and methodology applied to the identification of the Step 4A short-list of options and the EBPOs to be brought forward to Step 4B.

3.2 Identification of Step 4A Potential Offshore Substation Zones

Potential OSS Zones were initially identified off the coasts of Cork, Waterford and Wexford based on a preliminary ground model developed in 2023. Further to the publication of the SC-DMAP in 2024, four OSS Zones were identified within Tonn Nua initially based on a review of available geophysical datasets, including datasets provided by the Marine Institute (MI) of the Tonn Nua site in 2024. The four OSS Zones are presented in Figure 3-1.

The initial selection criteria for the identification of the OSS Zones included:

- Water depth <60 m LAT
- Minimising overall offshore transmission cable length (onshore and offshore)
- High-level view of potential wind farm layouts surrounding each OSS Zone within Tonn Nua
- Ground conditions
- Foundation suitability.

Initially the OSS Zones were 2 km^2 in area.

The most westerly OSS zone, OSS-1 was selected as the Cork OSS Zone primarily due to technical constraints associated with HVAC transmission cable lengths over approximately 80 km. OSS-2, OSS-3 and OSS-4 were identified as potential Waterford / Wexford OSS Zones.

The ground models were re-run in March 2025 on the depth to seismic bedrock across the four identified OSS zones, each representing a 5 km^2 area.

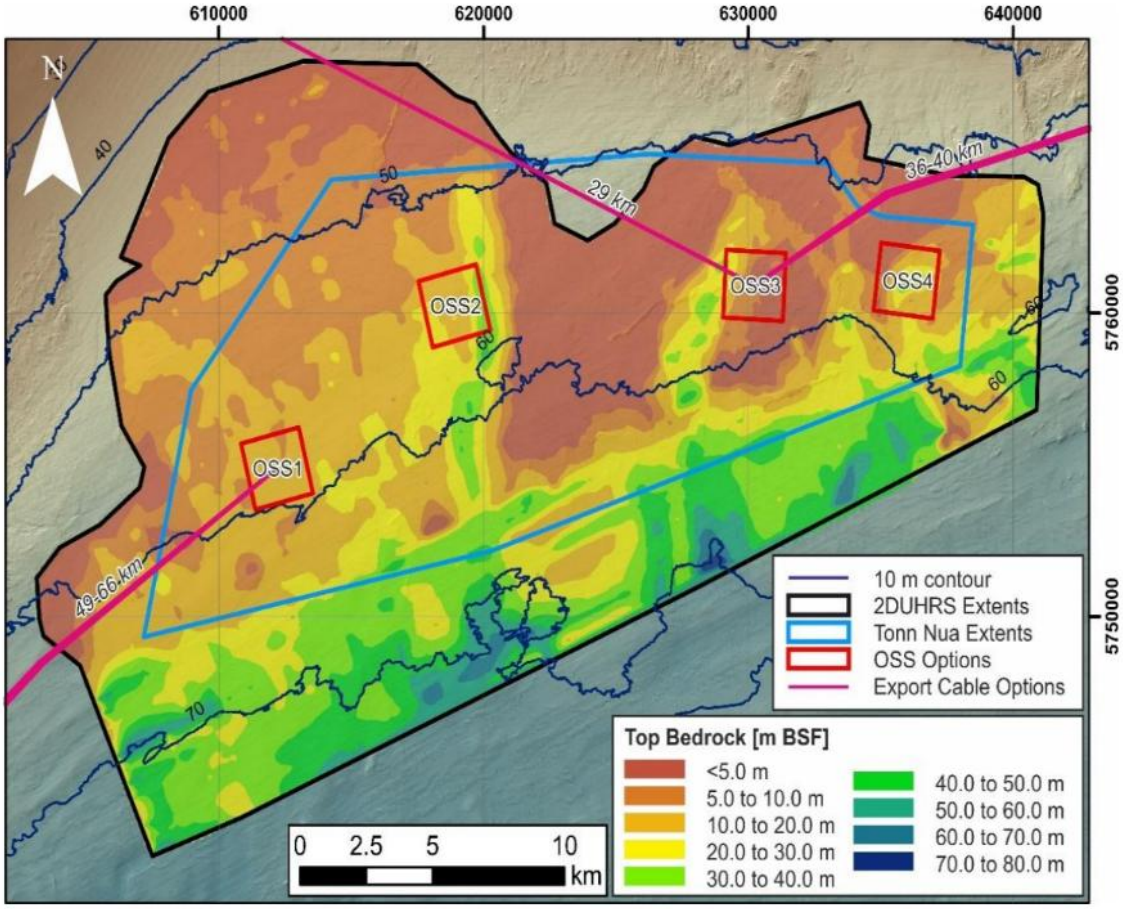
The interpretation of that (March 2025) model concluded that OSS-3 is predominantly exposed to shallow outcrop of bedrock outcrops while OSS-2 and OSS-4 show similar technical characteristics to OSS-1.

The four OSS Zones were subject to a MCA which re-confirmed OSS-1 for the Cork area and identified OSS-3 for the Waterford / Wexford area as the EBPOs for the OSS Zones.

The technical evaluation concluded that while geotechnical information available at the time suggested OSS-2 may be more favourable than OSS-3 due to a lower risk of foundation drilling, the comparative MCA recommended OSS-3 for the Waterford / Wexford area. The recommendation was primarily driven by the shorter OSS-3 cable, expected to deliver economic benefits that outweigh the potential cost and risk of foundation installation. OSS-3 also provided greater spatial separation from OSS-1, offering a better energy yield compared to the closer proximity between OSS-1 and OSS-2. The environmental and socio-economic MCA concluded that there were no significant environmental or socio-economic constraints identified which may stop the development of any of the four options. OSS-1 and OSS-3 will be surveyed in 2026.

The MCA is included in Offshore Substation (OSS) Zone Assessment Report (OCDP-EIR-P03-RP-PM-0001, Turner & Townsend and Doris, 2026), in Appendix D of this report.

Figure 3-1: Offshore Substation Zones within Tonn Nua (Area A)



Source: Offshore Substation (OSS) Zone Assessment Report (OCDP-EIR-P03-RP-PM-0001, Turner & Townsend and Doris, 2026)

The Cork Offshore Transmission Cable Route Corridor options will connect to the Cork OSS Zone, and the Wexford Offshore Transmission Cable Route Corridor options will connect to the Wexford OSS Zone.

As the OSS Zones are currently common to the Cork and Wexford Landfall Zone and associated Offshore Transmission Cable Route Corridors, they have not been considered further in this report.

3.3 Identification of Step 4A Potential Offshore Transmission Cable Route Corridors

Like the process undertaken for the identification of the OSS Zones, the preliminary ground model developed in 2023 to identify offshore transmission cable route corridors was re-run in 2024, further to the publication of the SC-DMAP and again in 2025 to reflect the available geophysical data at that time.

Potential offshore transmission cable route corridors of 1km width were identified between the OSS locations and the (Step 3) Landfall Zones based on the preliminary ground model and criteria including:

- Shortest cable distance.
- Minimised installation in areas of outcropping bedrock and minimized rock cutting.

- Avoidance in so far as possible of third-party infrastructure.
- Avoidance of known wreck sites.

Three initial Cork route corridor options, Cork 1 (Landfall Zone C), Cork 2 (Landfall Zone B), and Cork 3 (Landfall Zone A) were identified, with all three options initially converging at a common Cork route corridor heading towards OSS1. Each option included areas of outcropping bedrock.

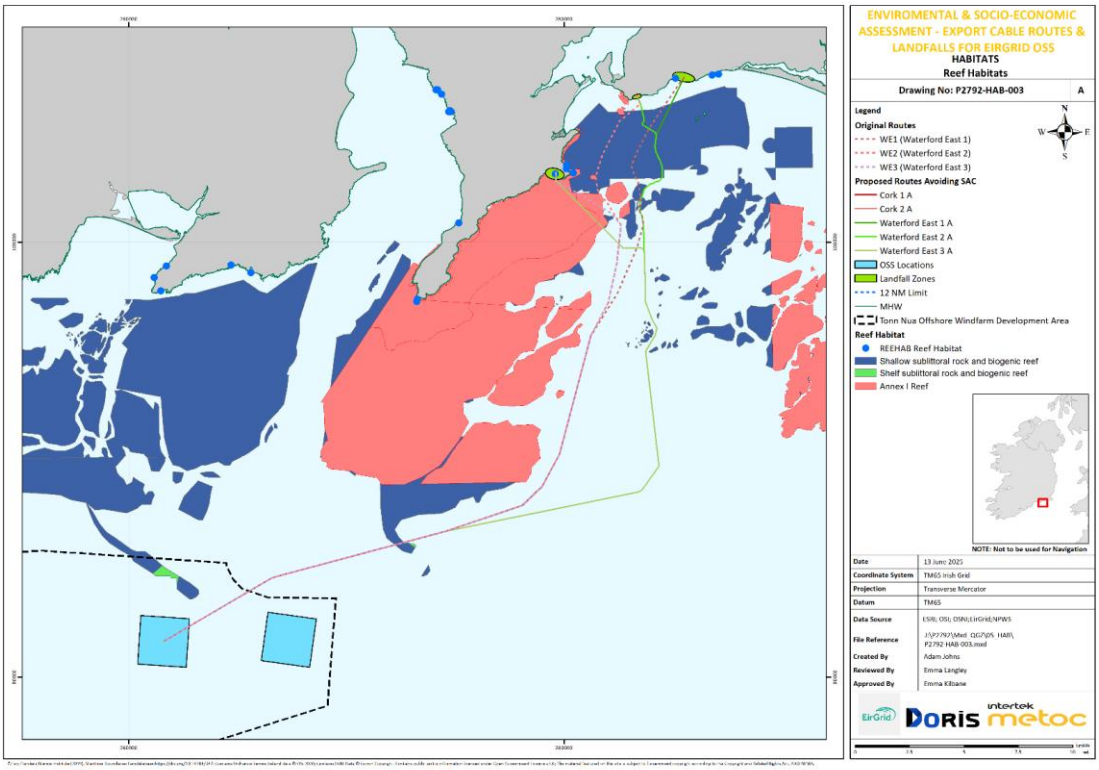
Cork 3 (to Landfall Zone A) was not brought forward due to the constraints associated with Landfall Zone A as discussed in Section 1.5 of this report.

Preliminary Waterford / Wexford routes were initially identified. Three Initial Wexford corridor options were developed WE1 (Landfall Zone G), WE2 (Landfall Zone F) and WE3 (Landfall E), all three options converging in a common corridor connecting to OSS3. One corridor was identified to Waterford, WW1 (Landfall Zone D). Subsequently, alternative corridor options were developed to avoid or limit the footprint in the Hook Head SAC. These are denoted as WE1A, WE2A and WE3A, as illustrated in Figure 3-2.

An additional option east of Hook Head, was also considered but discounted primarily due to navigational and technical risks associated with dredging activities, and risks associated with fisheries and spawning grounds.

Further detail, including the MCA of alternative options considered, is included in Offshore Transmission Cable Route Corridor Assessment Report (OCDP-EIR-P03-RP-CL-0004, Turner & Townsend and Doris, 2026), in Appendix E of this report.

Figure 3-2: Offshore Transmission Cable Route Corridor Options Considered for Waterford / Wexford

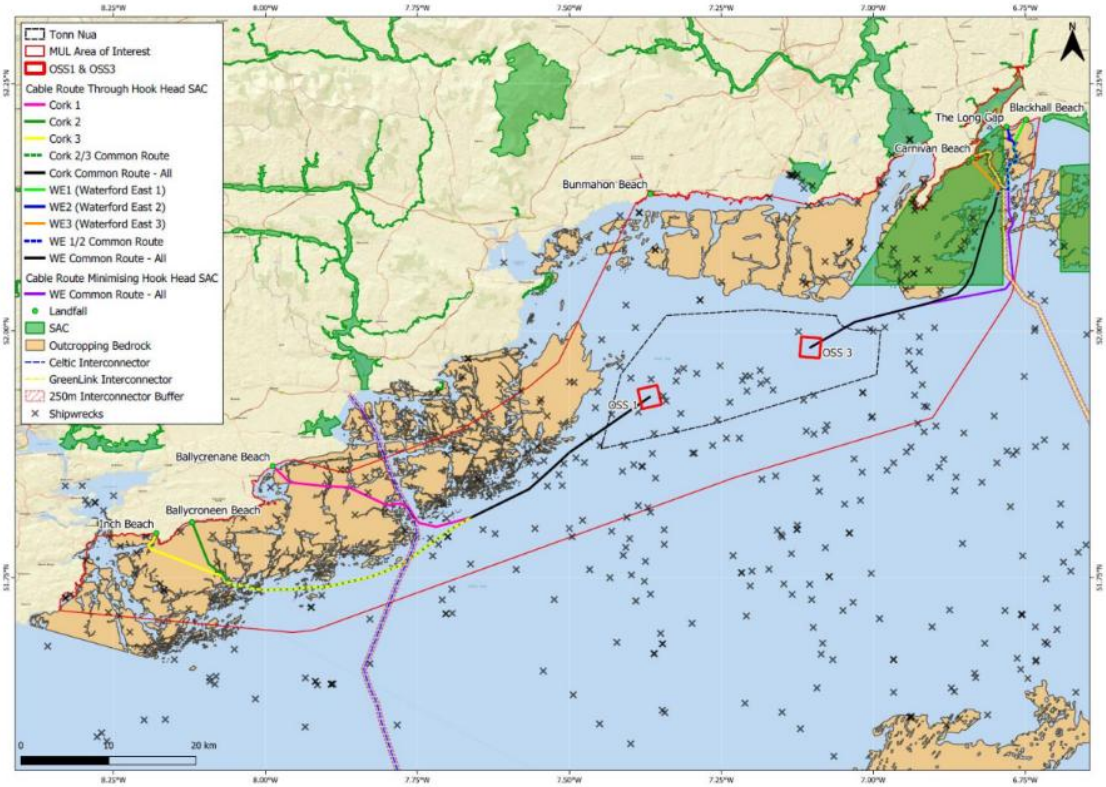


Source: Offshore Transmission Cable Route Corridor Assessment Report (OCDP-EIR-P03-RP-CL-0004, Turner & Townsend and Doris, 2026)

In advance of the first phase of maritime surveys in 2025 a decision was made that Landfall Zone D (WW1) would only be brought forward if no other options are available, as discussed in Section 1.5 of this report and in the Step 3 Report[12].

Corridors WE1, WE2, WE3 were therefore selected for surveys in 2025. The maritime surveys undertaken for PUOSC in 2025 confirmed the presence of Qualifying Interests (QIs) associated with Hook Head SAC within the common corridor for Landfall Zones E, F and G identified in Figure 3-3.

Figure 3-3: Offshore Transmission Cable Route Corridor Options



Source: Offshore Transmission Cable Route Corridor Assessment Report (OCDP-EIR-P03-RP-CL-0004, Turner & Townsend and Doris, 2026)

The risk associated with disturbance or permanent removal of Annex 1 Qualifying Interest Reef was deemed too high for the project. A revised common corridor for Landfall Zones E, F and G has therefore been brought forward to Step 4A and will be surveyed in 2026.

The 2025 maritime surveys also confirmed that Offshore Transmission Cable Route Corridor C (formerly named Cork 1), crosses extensive shallow bedrock, rock and mixed substrate, with sediment that is thin, discontinuous, or locally absent which would require extensive rock cutting to install a cable.

An alternative Offshore Transmission Cable Route Corridor for Landfall Zone C, Corridor C1, was subsequently identified. Offshore Transmission Cable Route Corridor C1 appears to comprise a sediment-filled channel along much of the route, providing continuous and locally thick sediment cover. Offshore Transmission Cable Route Corridor C1 will be surveyed in 2026. Both offshore transmission cable route corridors C and C1 have been considered in this report.

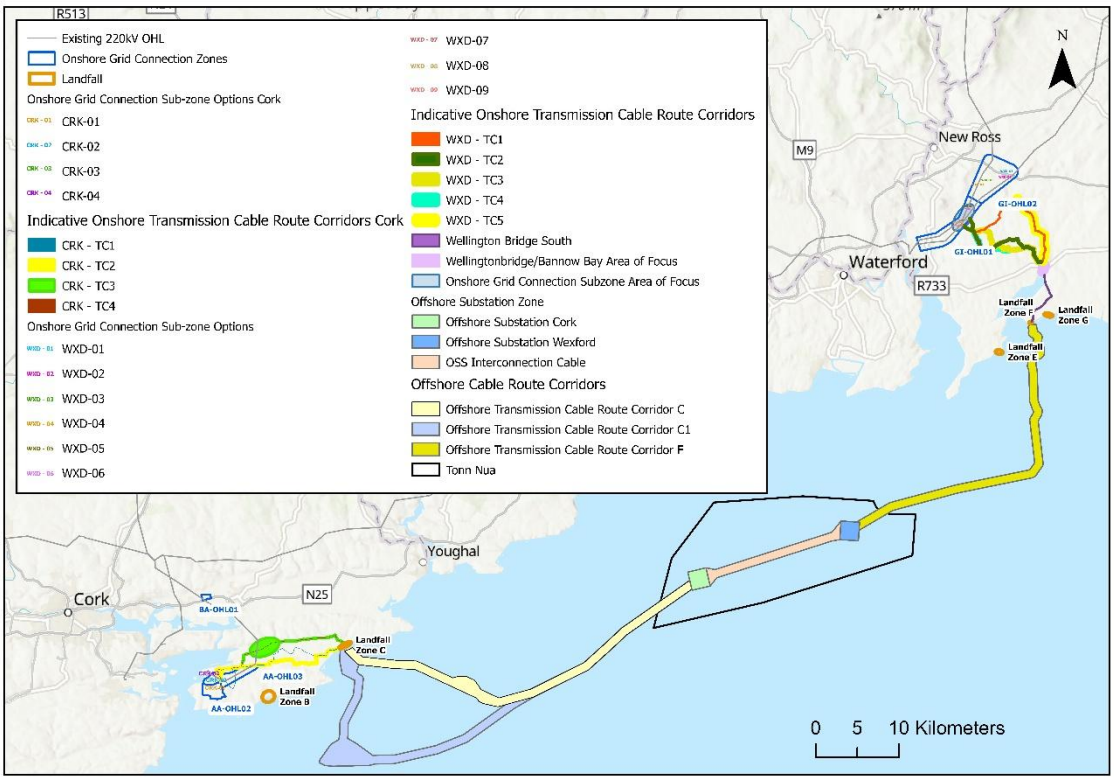
[12] Powering-Up-Offshore-South-Coast-Step-3-Emerging-Best-Performing-Options-Report.pdf

The MCA included in Appendix B and C of this report consequently considers the potential offshore transmission cable route corridors associated with each of the Landfall Zones under consideration, as presented in Section 3.3 and Figure 3-4 i.e.:

- Landfall Zone B (in County Cork) and potential Offshore Transmission Cable Route Corridor B (previously referred to as Cork 2).
- Landfall Zone C (in County Cork) and potential Offshore Transmission Cable Route Corridor C (previously referred to as Cork 1).
- Landfall Zone C (in County Cork) and potential Offshore Transmission Cable Route Corridor C1 (alternative cable route corridor).
- Landfall Zone E (in County Wexford) and potential Offshore Transmission Cable Route Corridor E (previously referred to as WE3A).
- Landfall Zone F (in County Wexford) and potential Offshore Transmission Cable Route Corridor F (previously referred to as WE2A).
- Landfall Zone G (in County Wexford) and potential Offshore Transmission Cable Route Corridor G (previously referred to as WE1A).

The siting of the Tonn Nua wind farm within in Tonn Nua is independent of PUOSC and is being developed by others.

Figure 3-4: Landfall Zone Options and potential offshore transmission cable route corridors and OSS Zones



Source: Mott MacDonald

3.4 Identification of Step 4A Potential Grid Connection Subzones

As detailed in Section 1.5, and as presented in Table 1.1 and Figure 1-4 and Figure 1-5, Grid Connection Zones were identified in Step 3 that incorporate two 220kV OHLs to allow for loop-in connections between the new ESBN Substation and existing overhead lines (OHLs).

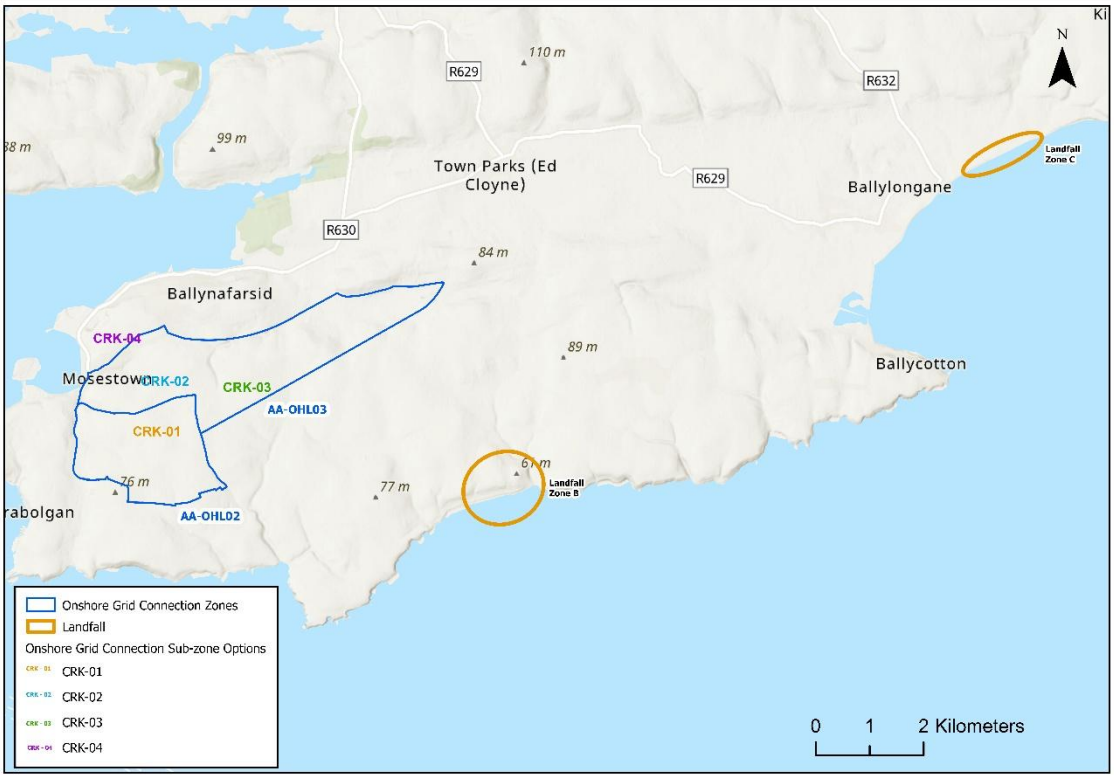
This Step 4A Report identifies potential Grid Connection Subzones within the Step 3 Grid Connection Zones, defining more focussed areas for the siting of the new EirGrid OCC Substation and adjacent ESBN Substation to loop-in to the existing 220kV OHLs.

Lands with a slope of <4% were identified inside the Step 3 Grid Connection Zones based on their size and ability to accommodate the onshore grid infrastructure. Constraints such as roads, dwellings and areas identified as being at risk of flooding within these areas were identified. Potential Grid Connection Subzones were prioritised based on proximity to the 220kV OHLs (to facilitate loop-in connections), extent of land <4% slope, state-owned land, suitability of the road network to access the subzone and anticipated construction phase requirements.

This was followed by a planning, environmental and social constraints screening and a geotechnical screening exercise. The assessment was based on desktop information supported by windscreen surveys to validate the desktop findings.

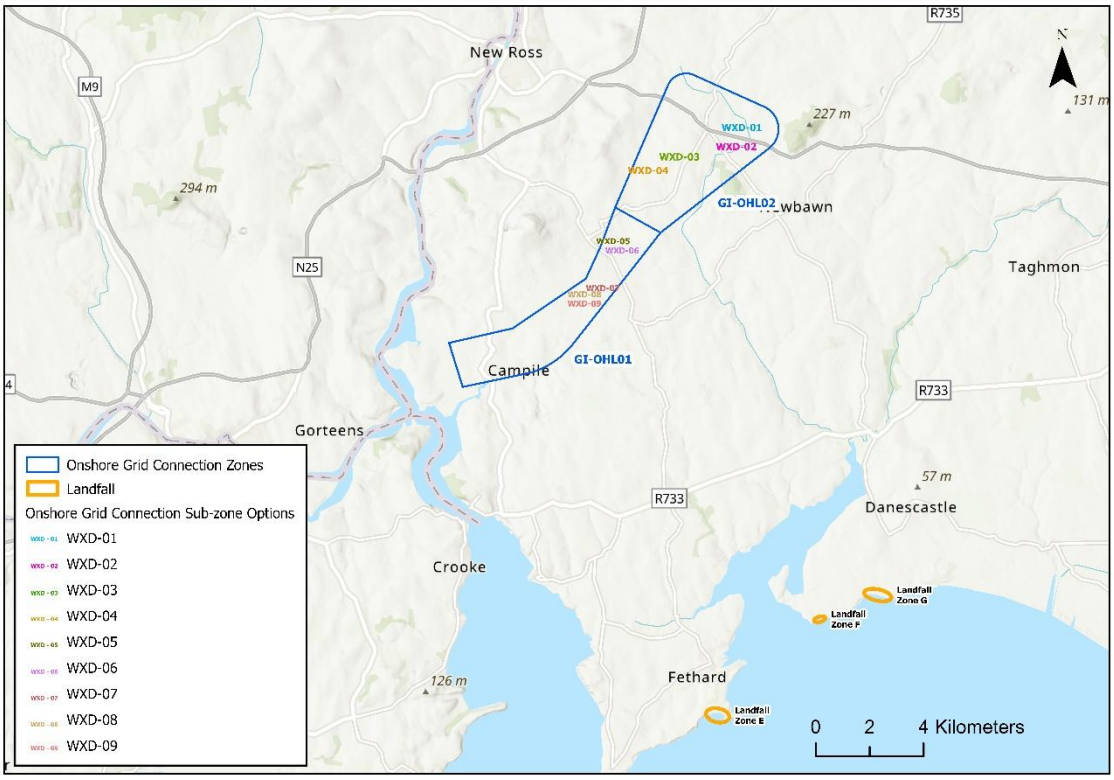
Additional subzones which emerged through the stakeholder engagement process, undertaken following the shortlisting assessment, were also incorporated into the Step 4A MCA. The MCA included in Appendix B and C of this report considers the potential Grid Connection Subzones under consideration, as presented in Figure 3-5 and Figure 3-6.

Figure 3-5: Step 4A Potential Grid Connection Subzones (County Cork)



Source: Mott MacDonald

Figure 3-6: Step 4A Potential Grid Connection Subzones (County Wexford)



Source: Mott MacDonald

3.5 Identification of Step 4A Potential Onshore Transmission Cable Route Corridors

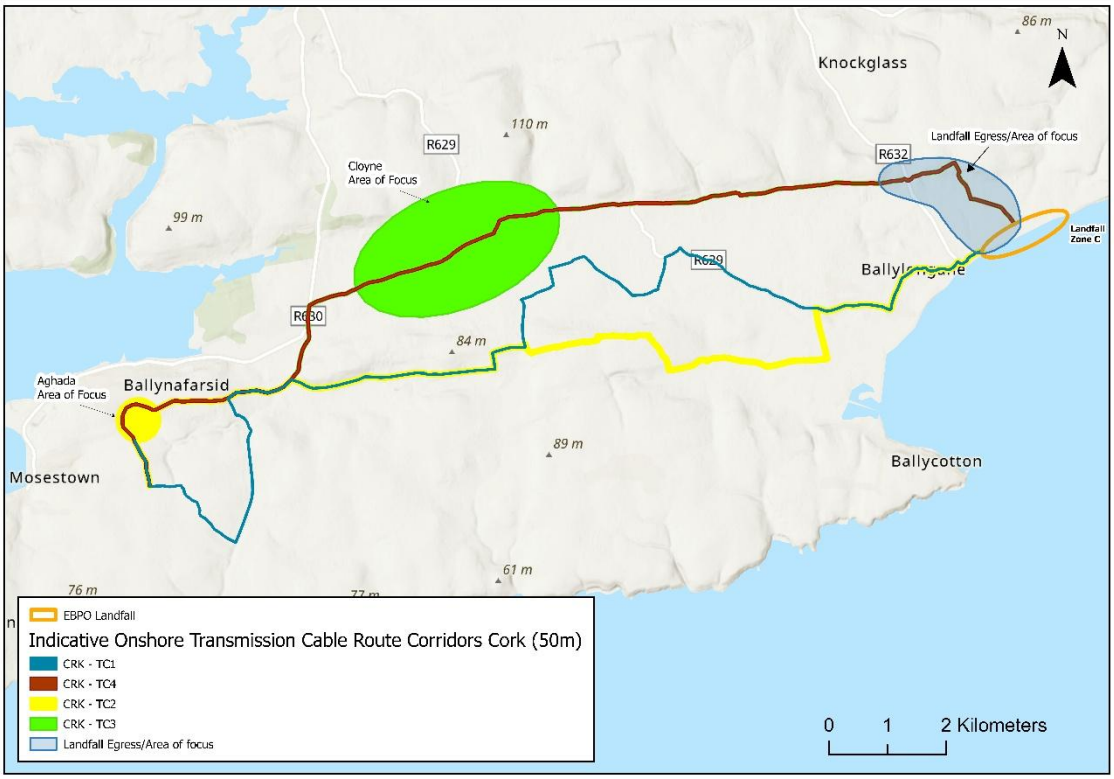
Following identification of the Emerging Best Performing Landfall Zones identified in Section 5.2 and Section 6.2 of this report. i.e. Landfall Zone C in Cork and Landfall Zone F in Wexford, indicative onshore transmission cable route corridors of 50m width have been identified, to allow for consideration of both on-road and off-road routing options, connecting the two Landfall Zones and the area of the Step 3 Grid Connection Zones.

The options considered in this Step 4A Report were identified by following the existing road network corridor from the landfall zone to the next junction in the direction of the Step 3 Grid Connection Zones. Screening of route corridor sections was undertaken to identify the potential route corridor options considered in this report. The screening assessment was based on desktop information supported by windscreen surveys to validate the desktop findings. The assessment considered identification of areas of opportunity and constraints including known buried services and utilities, watercourse crossings, urban areas, access, topography along with areas of environmental, social or cultural sensitivities.

In Cork, several potential route corridors have been identified between Landfall Zone C and the Grid Connection Zones, and these have been subject to a MCA as presented in Appendix B of this report. Having regard to constraints, both on-road and off-road options have been considered.

These indicative areas of focus are presented in in Figure 3-7, and will be subject to further study, stakeholder consultation and evaluation in Step 4B.

Figure 3-7: Step 4A Potential Onshore Transmission Cable Route Corridors (County Cork)



Source: Mott MacDonald

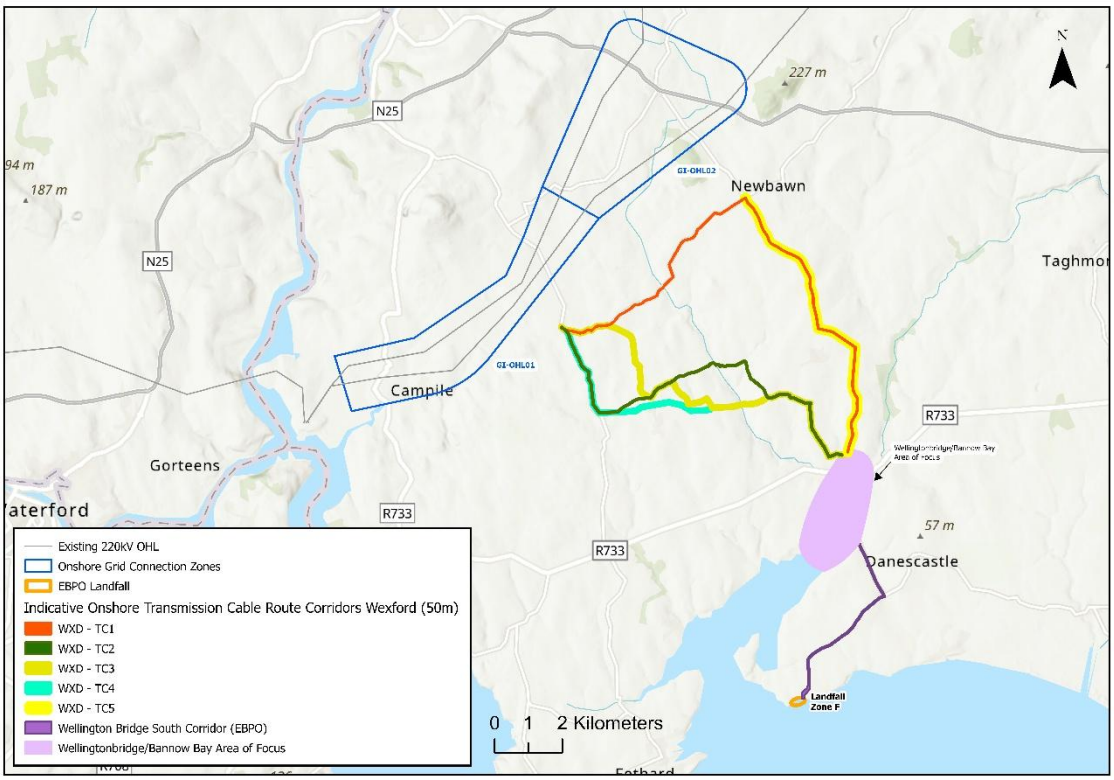
In Wexford, a single route corridor ("Wellingtonbridge South Route") has been identified between Landfall Zone F and Bannow Bay / Wellingtonbridge. The Wellingtonbridge South Route runs north from Landfall Zone F within private land for a distance of ca. 1km before connecting with the L3069, the main road connecting the Graigue Hill area to the R736. All alternative road-based routes from Landfall Zone F to the R736 were screened out due to their unsuitable characteristics. These routes are generally very narrow, winding, single-lane roads bordered by hedgerows or trees, with some sections containing central grass strips. As a result, they would provide severely constrained access for construction traffic. In addition, some tree removal may be required on certain routes for health and safety reasons, where construction activities could disturb ground stability and damage root systems. For these reasons, access to any off-road options would be equally limited.

The corridor then turns north along the R736 which runs towards Wellingtonbridge. Constraints within this area include a bridge (Waterloo Bridge) which is surrounded by woodland, the navigation of which requires further assessment, including consideration of offroad routing or in-line HDD installation. Further along this route is the abandoned Barrystown mine and recorded cultural heritage site (WX045-055----) whose shafts are understood to run to the east, with further studies required to confirm its extents. A culvert crossing in the same location would restrict the cable to an in-road route along this section. The final route will be confirmed in Step 4B, further to additional studies.

Potential crossing locations linking the Wellingtonbridge South and North routes are presented as an Area of Focus in Figure 3-8 and require further study, where the onshore transmission cable route will necessitate crossing either Bannow Bay SPA / SAC or Wellingtonbridge.

Several cable corridor options have been identified between Wellingtonbridge and common confluence points for the potential Grid Connection Subzones. The cable corridors to the west of Wellingtonbridge converge at an intersection of the R734 and the R735 regional roads. The cable corridor to the north of Wellingtonbridge follows the R736. These identified options are presented in Figure 3-8 and have been subject to a MCA as presented in Appendix C of this report.

Figure 3-8: Step 4A Potential Onshore Transmission Cable Route Corridors (County Wexford)



Source: Mott MacDonald

3.6 Step 4A Identification of Emerging Best Performing Options

3.6.1 Information Gathering.

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

Table 3.1 presents the data sources used to inform this report.

Table 3.1: Key Desktop Data Sources

Data source used	Date of data source / Date open-source data accessed	Data contents and what data input to
Ballycotton Surf Forecast and Surf Reports (Cork, Ireland)	Accessed 16/03/2026	Tourism
Cork County Development Plan 2022-2028	Accessed 26/02/2026	Flooding, zoning etc
Coull, K.A., Johnstone, R., and S.I. Rogers. 1998. Fisheries Sensitivity Maps in British Waters.	1998. Accessed 2026	Broad scale maps of spawning and nursery grounds
Drone video flyover https://screenwexford.com/location/beaches/blackhall-strand-kerragh-islands-2/	Accessed 27/02/2026	Landfall Zone F
Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. 2012. Spawning and nursery grounds of selected fish species in UK waters. Sci. Ser. Tech. Rep., Cefas Lowestoft, 147: 56 pp.	2010. Published 2012. Accessed 2026.	Broad scale maps of spawning and nursery grounds
EMSA AIS dataset	2019	Shipping and Navigation
EPA Maps	Accessed 19/02/2026	2019-2024 WFD status
European Marine Observation and Data Network (EMODnet) - https://emodnet.ec.europa.eu/geoviewer/#	Accessed 02/03/2026	• Shipping and Navigation (Route Density Map at 1 km resolution created by EMSA in 2019. Dredging dataset created in 2014 by AZTI for the European Marine Observation and Data Network (EMODnet). • Cables (Power Cables, Telecommunication Cables) • European Sites • Geology, Seabed Substrate, Multiscale - folk 7
Excavations Bulletin (www.excavations.ie)	Accessed 2026	Cultural heritage
Fethard on Sea Amenities	Accessed 02/03/2026	https://www.fethardonsea.ie/amenities/ and https://www.fethardonsea.ie/about-us/),
Flood maps .ie	Accessed 26/02/2026	Flood Risk
National Monuments Service, Historic Shipwreck Inventory,	Accessed 2026	Cultural heritage
IE GSI Geoscience Spatial Resources	Accessed 26/02/2026	Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes
IE GSI Aquifers Ireland (ROI) ITM Download opendata	Accessed 11/03/2026	Landfall Zones
IE GSI Landslide Data Viewer Ireland ITM	Accessed 13/03/2026	Landfall Zones

Data source used	Date of data source / Date open-source data accessed	Data contents and what data input to
Irish Coastal Protection Strategy Study Phase 2 - South East Coast Work Packages 2, 3 & 4A - Appendix 8 - Erosion Mapping IBE0104/June 2010 (https://assets.gov.ie/static/documents/appendix-8-erosion-mapping.pdf)	2010 (accessed 19/02/2026)	Coastal Erosion
ICPSS 2050 Erosion Line (2010 - 2014)_Coastal Map - Floodinfo.ie	2014 (accessed 19/02/2026)	Coastal Erosion
logainm.ie | Bunachar Logainmneacha na hÉireann	Accessed 2026	Cultural heritage
Marine Institute (2026). Ireland's Marine Atlas	Various. Accessed 2026.	Maps of herring spawning beds and grounds, and Nephrops grounds.
National Coastal Flood Depths 2021 (https://www.floodinfo.ie/map/coastal_map/#)	Accessed 19/02/2026	Coastal flooding
NPWS SPA Conservation Objectives and supporting documentation- https://www.npws.ie/protected-sites/spa	Accessed 2026	SPA Conservation Objectives and supporting documentation used to inform Intertidal Ornithology MCA, including potential for connectivity to SPAs and qualifying species populations.
NPWS SAC Conservation Objectives and supporting documentation - Special Areas of Conservation (SAC) | National Parks & Wildlife Service	Accessed 2026	Conservation Objectives for SACs
National Parks and Wildlife Service (NPWS) (2019) – Irish Wildlife Manual No.150: Reef Habitat in Irish Intertidal and Near-shore Waters	2019	National review of reef habitat distribution and characteristics in Irish waters. Used to inform interpretation of potential Annex I "Reef" habitat occurrence and ecological sensitivity of rocky shore and hard substrate habitats identified within the study area.
National Inventory of Architectural Heritage (NIAH) Building Survey	Accessed 2026	Cultural heritage
Ordnance Survey First and subsequent editions	Accessed 2026	Cultural heritage
Open Nautical Chart (https://opennauticalchart.org/)	Accessed 02/03/2026	Shipping and Navigation
Marine Atlas https://atlas.marine.ie/#?c=51.6150:-8.6274:12	Accessed 09/03/2026	Maritime activities, infrastructure, general environmental baseline
C-Map Nautical Charts - free version, for review only. https://appchart.c-map.com/core/map	Accessed 02/03/2026	Shipping and Navigation
4c-Offshore - Offshore renewables map - free version, for review only - (https://map.tgs4c.com/offshorewind/)	Accessed 02/03/2026	Shipping and Navigation
Open-source seabed habitat mapping (INFOMAR / EMODnet Seabed Habitats)	Accessed 2026	Regional seabed habitat mapping including EUNIS habitat classifications. Used to provide contextual information on benthic habitat distribution and suitability of grounds for fish utilisation within the study area and support interpretation of survey data.

Data source used	Date of data source / Date open-source data accessed	Data contents and what data input to
Record of Monuments and Places	Accessed 2026	Cultural heritage
Sites and Monuments Record (SMR)	Accessed 2026	Cultural heritage
Tailte Eireann Landcover 2018 (https://experience.arcgis.com/experience/ca514d04c83c453e9469d0263d30a72c/page/Viewer?views)	Accessed 2026	Land use compatibility, other site users and planning policy
Wexford County Development Plan 2022-2028	Accessed 26/02/2026	Flooding, zoning etc
WRECKSITE - EXETER TRAWLER 1897-1941	Accessed 2026	Shipping and Navigation (Dangerous Wreck)

3.6.2 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.

3.6.3 Evaluation of Potential Infrastructure Zones

As set out in Section 1.6 of this report, the aim of this Step 4A Report is to present a MCA of options discussed in Chapter 4 of this report to identify EBPOs.

The criteria evaluated in the MCA are defined in Appendix A of this report, 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 Subzones.

The MCA criteria evaluated comprise:

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

A risk ranking has been assigned to each criterion for each option in line with the approach set out in Table 3.2, based on professional judgement and experience, and having regard to the sub-criteria presented in Appendix A.

Table 3.2: 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 4 of this report presents a high-level characterisation of the identified zone.

Key constraints and considerations for each option under consideration are set out in Appendix B and Appendix C of the report, with associated risk rankings as set out in Table 3.2.

The conclusions of the MCA (identifying the EBPOs) are presented in Chapter 5 and Chapter 6. Next Steps are set out in Chapter 7.

4 Potential Infrastructure Zones under Consideration

4.1 Introduction

This chapter presents an introduction to the Potential Infrastructure Zones under consideration as presented in Table 4.1 and Table 4.2 and Figure 3-4 to Figure 3-8. These zones have been the subject of the MCA included in Appendix B and Appendix C of this report.

The MCA includes additional detail and information on challenges, risks and opportunities associated with each of the options under consideration. The values and details described in the MCA are indicative only at this stage of project development and in advance of further surveys and studies. The specific proposed locations of the infrastructure will be subject to further studies and evaluations in Step 4B.

Table 4.1: Step 4A Long List of Landfall Zone and Grid Connection Subzone Options

Landfall Zone Options	Grid Connection Subzone Options
• Landfall Zone B (in Cork) and potential Offshore Transmission Cable Route Corridor B and Cork OSS. • Landfall Zone C (in Cork) and potential Offshore Transmission Cable Route Corridor C and Cork OSS. • Landfall Zone C (in Cork) and potential Offshore Transmission Cable Route Corridor C1 and Cork OSS.	• CRK-01 (AA-OHL02) County Cork • CRK-02 (AA-OHL03) County Cork • CRK-03 (AA-OHL03) County Cork • CRK-04 (AA-OHL03) County Cork
• Landfall Zone E (in Wexford) and potential Offshore Transmission Cable Route Corridor E and Wexford OSS. • Landfall Zone F (in Wexford) and potential Offshore Transmission Cable Route Corridor F and Wexford OSS. • Landfall Zone G (in Wexford) and potential Offshore Transmission Cable Route Corridor G and Wexford OSS.	• WXD-01 (GI-OHL02) County Wexford • WXD-02 (GI-OHL02) County Wexford • WXD-03 (GI-OHL02) County Wexford • WXD-04 (GI-OHL02) County Wexford • WXD-05 (GI-OHL01) County Wexford • WXD-06 (GI-OHL01) County Wexford • WXD-07 (GI-OHL01) County Wexford • WXD-08 (GI-OHL01) County Wexford • WXD-09 (GI-OHL01) County Wexford

4.2 Potential Landfall Zones and Associated Offshore Transmission Cable Route Corridors

Table 4.2: Characterisation of Step 4A Landfall Zones (County Cork)

Landfall Zone	Characteristics of Landfall Zone and associated Offshore Transmission Cable Route Corridor and OSS
Landfall Zone B (in Cork) and potential Offshore Transmission Cable Route Corridor B and Cork OSS	• Landfall Zone B is located within the townlands of Shanahee, Ballybranagan, Ballycroneen West, Ballyrobin South and Ballycroneen East and extends between Ballycroneen beach and Ballybranagan beach incorporating cliff faces. • The associated offshore cable corridor crosses extensive shallow bedrock, rock and mixed substrate. Intertidal surveys show a rocky foreshore with confirmed sensitive biogenic reef habitat. Nearshore and offshore geophysical interpretation, benthic survey data, and national seabed mapping show that the associated offshore cable corridor crosses extensive shallow bedrock, rock and mixed substrate, with limited and locally discontinuous sediment cover in the nearshore section. • There are no designated sites near this Landfall Zone and / or offshore transmission cable route corridor. The closest designated site to the Landfall Zone is the Ballycotton, Ballynamona and Shanagarry pNHA located approximately 5km to the east.
Landfall Zone C (in Cork) and potential Offshore Transmission Cable Route Corridor C and C1 and Cork OSS	• Landfall Zone C and Landfall Zone C1 represent alternative Offshore Transmission Route Corridor options for the same Landfall Zone, Landfall Zone C. – Offshore Transmission Corridor C: Intertidal surveys show a sediment-dominated shoreline (sand, muddy sand, gravel) with no rocky shore and no confirmed intertidal reef at the landfall itself. However, nearshore and offshore geophysical interpretation, benthic survey data, and national seabed mapping consistently show that the associated offshore cable corridor crosses extensive shallow bedrock, rock and mixed substrate, with sediment that is thin, discontinuous, or locally absent. – Offshore Transmission Corridor C1: Intertidal surveys show a sediment-dominated shoreline (sand, muddy sand, gravel) with no rocky shore, no confirmed reef habitat and no biogenic reef structures at the landfall. Nearshore and offshore geophysical interpretation identifies a sediment-filled channel along much of the C1 corridor, providing continuous and locally thick sediment cover. • This Landfall Zone is located within the townlands of Garryvoe Lower, Ballybutler and Ballycrenane. • The Landfall Zone is designated, in part, as Ballycotton, Ballynamona and Shanagarry pNHA. Ballycotton Bay SPA adjacent to the western boundary. Neither Offshore Transmission Cable Route Corridor passes through a designated site. C1 is located ca 1km from Ballycotton Bay SPA. • Submerged landscape, which is of high archaeological potential, has been observed in this area.

Table 4.3: Characterisation of Step 4A Landfall Zones (County Wexford)

Landfall Zone	Characteristics of Landfall Zone and associated Offshore Transmission Cable Route Corridor and OSS
Landfall Zone E and potential Offshore Transmission Cable Route Corridor E and Wexford OSS	● Landfall Zone E is located within the townland of Ramstown. This sandy beach is surrounded by cliffs and includes small dunes. ● The entire beach and coastal waters at Carnivan are all designated under the Seas off Wexford SPA (004237), and Hook Head Special Area of Conservation (SAC, Site Code 000764). The centre of the Landfall Zone (the coastal fringe including the beach) is also designated as Hook Head pNHA (000764). Hook Head SAC Qualifying Interests (QIs) comprise large shallow inlets and bays, reefs, vegetated sea cliffs of the Atlantic and Baltic coasts, Common Bottlenose Dolphin and Harbour Porpoise. ● Offshore Transmission Cable Route Corridor E crosses Hook Head SAC. Extensive hard substrate along the corridor with potential to qualify as geogenic reef; no confirmed *Sabellaria alveolate* reef was recorded during intertidal survey. ● Baginbun Head and surrounding areas are of high archaeological potential due to the historical and archaeological significance of the Norman landing.
Landfall Zone F and potential Offshore Transmission Cable Route Corridor F and Wexford OSS	● Landfall Zone F is located within the townland of Bannow. The Bannow Bay Equine Assisted Activities and Learning centre is located in proximity to this landfall ● 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). Onshore Transmission Cable Routing will necessitate crossing either Bannow Bay SPA / SAC or Wellingtonbridge. ● Offshore Transmission Cable Route Corridor crosses reef-forming substrate with intertidal surveys noting extensive *Sabellaria alveolate* habitat including at the survey corridor centreline (though not to the same extent as Landfall Zone G). ● In Norman times the main settlement in the area was on Bannow Island.
Landfall Zone G and potential Offshore Transmission Cable Route Corridor G and Wexford OSS	● Landfall Zone G is located within the townlands of Blackhall, Haggard, Ballymadder, Loftusacre. Kerragh islands can be viewed from the beach. ● 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). ● Biogenic reef and hard substrate are crossed by the potential Offshore Transmission Cable Route Corridor. Intertidal survey confirms extensive *Sabellaria alveolate* reef. ● There is a lack of recorded archaeological sites within this zone and it holds potential for unknown archaeology.

4.3 Potential Grid Connection Subzones

Table 4.4: Characterisation of Step 4A Grid Connection Subzones (County Cork)

Grid Connection Subzone Options	Characteristics of Grid Connection Subzone Options
CRK-01	Within zoned Special Policy Area WG-X-01 Whitegate / Aghada (Area with potential for major, large-scale energy and renewable energy related development, including port-related activities and bulk liquid storage and processing activities) and Step 3 Grid Connection Zone AA-OHL02. The nearest settlement is Ballinookera, located to the northeast of this subzone. Located in the townlands of Ballynookery. Ballyhook and Ardnabourkery.
CRK-02	This subzone is traversed by a 220kV OHL and is in the townland of Ballynookery and within Step 3 Grid Connection Zone AA-OHL01. The nearest settlement is Ballinookera, located to the east of this subzone
CRK-03	This subzone is traversed by a 220kV OHL. It is located ca. 1.8km south of Aghada in the townlands of Ballyosavane, Buckstown and Balinbeg and within Step 3 Grid Connection Zone AA-OHL01.
CRK-04	Located outside of Step 3 Grid Connection Zone AA-OHL01, south of the Aghada 220kV Substation in the townlands of Aghada and Ballincarroonig. This subzone is traversed by 220kV, 110kV and 20kV OHLs, and two high pressure gas transmission lines. Located outside of Step 3 Grid Connection Zone AA-OHL01, south of the Aghada 220kV Substation in the townlands of Aghada and Ballincarroonig. Within lands zones WG-X-01 Industry and encompasses lands zoned WG-GC-07 Green Infrastructure to the southwest. The zoning objectives of WG-X-01 and WG-GC-07 are: ● WG-I-01: 'Development of small to medium scale energy related uses, including research and development, maintenance and transport uses. Any development proposals shall provide for the upgrading of the county road adjoining the site up to the junction with the R630 regional road.' ● WG-GC-07: 'Retain open space where existing land uses will remain largely unchanged. This zone is adjacent to Cork Harbour Special Protection Area and is not suitable for development. The area makes a significant contribution to the attractiveness of longer distance views from the Cobh area and provides important visual and physical separation between the village of Whitegate and industrial areas to the north and east.' Section 15.7.7 of the Cork County Development Plan 2022-2028 states: 'A key aim of the Council's Green Infrastructure policy is to manage the green infrastructure assets of the County to protect and enhance biodiversity'.

Table 4.5: Characterisation of Step 4A Grid Connection Subzones (County Wexford)

Grid Connection Subzone Options	Characteristics of Grid Connection Subzone Options
WXD-01	Within State-owned and densely forested site adjacent the N25 National Road, in the townland of Ballynabola, within Step 3 Grid Connection Zone GI-OHL02.
WXD-02	This subzone is located to the south of the N25 National Road, in the townland of Ballynabola, within Step 3 Grid Connection Zone GI-OHL02.
WXD-03	This subzone is in the townland of Cushenstown, within Step 3 Grid Connection Zone GI-OHL02.
WXD-04	This subzone is partially located within State-owned and forested lands in the townlands of Cushenstown, Mylerspark and Carnagh. It is traversed by a 220kV OHL and is within Step 3 Grid Connection Zone GI-OHL02.
WXD-05	This subzone is in the townland of Tellarought and is within Step 3 Grid Connection Zone GI-OHL01. It is traversed by a 220kV OHL.
WXD-06	This subzone is in the townland of Tellarought and is within Step 3 Grid Connection Zone GI-OHL01. It is traversed by two 220kV OHLs.
WXD-07	This subzone is in the townlands of Garryduff and Aclamon and is within Step 3 Grid Connection Zone GI-OHL01. It is traversed by a 220kV OHL.
WXD-08	This subzone is in the townland of Garryduff and is within Step 3 Grid Connection Zone GI-OHL01. It is traversed by two 220kV OHLs.
WXD-09	This subzone is also in the townland of Garryduff and is within Step 3 Grid Connection Zone GI-OHL01. It is traversed by two 220kV OHLs and within lands associated with the proposed Shelbourne Solar Farm (Planning Application Reference 20251333).

4.4 Potential Onshore Transmission Route Corridors

Emerging Best Performing Landfall Zones are identified in Section 5.2 and Section 6.2 of this report. i.e. Landfall Zone C in Cork and Landfall Zone F in Wexford, as presented in Figure 3-7 and Figure 3-8.

Indicative onshore transmission cable route corridors associated with these (Landfall Zone) EBPOs are presented in Table 4.6 to Table 4.8 of this report. These corridors have been the subject of the MCA included in Appendix B and Appendix C of this report. As detailed in Section 3.5, the single route corridor between Landfall Zone F and Bannow Bay, Wellingtonbridge South, is common to all options and has not been subject to a MCA.

Table 4.6: Step 4A Long List of Onshore Transmission Cable Route Corridor Options

Cork	Wexford
CRK_TC1	WXD_TC1
CRK_TC2	WXD_TC2
CRK_TC3	WXD_TC3
CRK_TC4	WXD_TC4
	WXD_TC5

Table 4.7: Characterisation of Step 4A Onshore Transmission Route Corridors (County Cork)

Onshore Transmission Cable Route Corridors	Characteristics of Onshore Transmission Cable Route Corridor Options
CRK_TC1	The principal concept of this option is routing within the R632 and R629 regional roads from the landfall through Shanagarry to the southeast of Cloyne and in the local public road network thereafter towards the Grid Connection Zones. From Landfall Zone C, this corridor passes through the settlement of Shanagarry, within 1km of Cloyne, within 500m of Aghada-Farsid-Rostellan, and within 1.4km of Aghada Upper.
CRK_TC2	The principal concept of this option is routing within the R632 and R629 regional roads from the landfall through Shanagarry to the southeast of Cloyne and in the local public road network thereafter towards the Grid Connection Zones. From Landfall Zone C, this corridor passes through the settlement of Shanagarry, within 500m of Aghada-Farsid-Rostellan and in proximity to Aghada Upper.
CRK_TC3	The principal concept of this option is routing within the R632 regional road network from the landfall through Shanagarry, in the R629 south of Shanagarry and in the local public road network thereafter towards the Grid Connection Zones. From Landfall Zone C, this corridor follows a northern route before turning eastwards, bypassing urban areas and passing within 500m of Aghada-Farsid-Rostellan and adjacent to Aghada Upper.
CRK_TC4	The principal concept of this option is routing within the local public road network from the landfall to the regional R631 road east of Cloyne, through Cloyne along the R631 to the R630 junction, then within the local public road network through Aghada and towards the Grid Connection Zones. From Landfall Zone C, this corridor follows a northern route before turning eastwards through the settlement of Cloyne, within 500m of Aghada-Farsid-Rostellan and through Aghada Upper.

Table 4.8: Characterisation of Step 4A Onshore Transmission Route Corridors (County Wexford)

Onshore Transmission Cable Route Corridors	Characteristics of Onshore Transmission Cable Route Corridor Options
WXD_TC1 and WXD_TC5	WXD_TC1: The principal concept of this option is routing within the R736 and R735 regional road network. WXD_TC5: The principal concept of this option is routing within the R736 regional road. WXDTC1 and WXDTC5 follow the R736 north of Wellingtonbridge to the east of Clongeen. At Newbawn WXDTC1 continues in a Westerly direction along through Gusserane to the R734, while WXDTC5 continues along the R736 towards Ballinaboola (Ballynabola).
WXD_TC2 and WXD_TC3 and WXD_TC4	These route corridors follow the L3037 in a north westerly direction north of Wellingtonbridge, before turning in a Westerly direction north of Ballycullane, before turning northward to the convergence of the R734 and R735: ● WXD_TC2: The principal concept of this option is routing within the local public road network from Wellingtonbridge to the intersection of the railway line with the R734 and thereafter along the R734 towards the Grid Connection Zones. WXD_TC2 is mostly in-road with two off-road sections to facilitate watercourse crossing HDDs and one off-road section to connect the L4038 to R734. ● WXD_TC3: The principal concept of this option is routing within the local public road network from Wellingtonbridge to the R735 at Rathumney. Ca. 65% of WXD_TC3 is in-road and runs parallel to a railway line for short sections before turning northwards, west of Boley, before turning in a north-westerly direction at Rathumney. ● WXD_TC4: The principal concept for this cable route option is off-road routing parallel to the railway line from Loughnageer to the R734 intersection and thereafter along the R734 towards the subzone with the initial section from Wellingtonbridge being on local public roads. Ca. 50% of WXD_TC4 is off-road with a section running parallel to a railway line, prior to joining the R734.

5 Emerging Best Performing Options (County Cork)

5.1 Introduction

This chapter presents the Step 4A EBPO for Landfall Zones (and associated Offshore Transmission Cable Route Corridors and OSS) and Grid Connection Subzones and Onshore Transmission Cable Route Corridors in County Cork, based on the detail provided in the MCA included in Appendix B of this report.

The Step 4A EBPO for Landfall Zones, Grid Connection Subzones and Onshore Transmission Cable Route Corridors in County Cork are presented in Figure 5-1 and Figure 5-2.

5.2 Emerging Best Performing Landfall Zone and Associated Offshore Transmission Cable Route Corridor

Landfall Zone B has overall, extreme elevation changes and onshore spatial constraints. These conditions are expected to necessitate complex engineering solutions for both HDD and open-cut options, resulting in increased design complexity and potentially prohibitive construction costs. The challenges are further compounded by limited availability of suitable locations for the HDD construction compound

Landfall B also has associated offshore elements include confirmed habitats of high ecological sensitivity (biogenic reef habitat) and extensive hard substrate. Avoidance of impacts on this habitat is unlikely to be achievable due to the anticipated need for rock cutting and habitat replacement. Landfall Zone B is also of high archaeological potential due to the number of cultural heritage sites within the area.

Although the overall route for Offshore Transmission Corridor C is shorter than that of C1, the approach to Landfall C along Offshore Transmission Corridor C presents challenges which may present risks in terms of installation timelines due to the extended rock exposure.

Anchorage along the approach to Landfall C along Offshore Transmission Corridor C1 could introduce both deliverability and operational risks.

A submerged landscape of high archaeological potential is located at Landfall Zone C / C1. The extent of that landscape requires further investigation.

Although the intertidal area of Landfall Zone C is of low benthic sensitivity, Offshore Cable Route Corridor C presents a fundamental and unavoidable benthic ecological constraint due to extensive shallow bedrock, rock and mixed substrate, with sediment that is thin, discontinuous, or locally absent along the corridor. Available data suggests that Offshore Cable Route Corridor C1 is characterised by a sediment-filled channel along much of the corridor, providing continuous and locally thick sediment cover and presenting a low benthic ecological constraint.

Further surveys will be undertaken in 2026 along Offshore Cable Route Corridor C1 to confirm the baseline. For this reason, both Landfall Zone C and Landfall Zone C1 have been identified as EBPOs to be brought forward to Step 4B.

Table 5.1: Emerging Best Performing Landfall Zone and Associated Offshore Cable Route Corridor (County Cork)

Criteria	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Technical			
Economic			
Environmental			
Social			
Deliverability			
EBPO(s)		**EBPO**	**EBPO**

5.3 Emerging Best Performing Grid Connection Subzones

CRK-01 is located within zoned Special Policy Area WG-X-01 Whitegate / Aghada, an area with the potential for major large-scale energy and renewable energy related development including port related activities and bulk liquid storage and processing activities. These lands may therefore be optioned for other developments. The connection from the subzone's ESBN substation to the 220kV OHL loop-in has extreme challenges. Four 220kV cable circuits would be required to be routed approximately 1km navigating two 110kV OHLs, a gas transmission line, a roadway, residential properties with the majority of the route requiring private land wayleaves. A separate LCIM compound would also be required near the 220kV OHL.

The 220kV double-circuit OHL traverses the CRK-02 subzone which facilitates the loop-in connection. Several unused farm buildings are located on the eastern side of the subzone which may require enabling works. Nevertheless, the relatively level topography will help minimise the cut-and-fill works while the subzone area allows for design flexibility. CRK-02 has been identified as an EBPO to be brought forward to Step 4B.

CRK-03 includes two recorded cultural heritage sites which will need to be avoided, thereby limiting flexibility for siting within this option.

CRK-04 is mainly located within lands zoned WG-X-01 Industry and partially, in the southwest section of the subzone, encompasses lands zoned WG-GC-07 Green Infrastructure.

As detailed in Table 4.4, the zoning objective for WG-GC-07 states that this zone is not suitable for development. Given the proximity to and potential connectivity with Cork Harbour SPA, development within this zoned land presents environmental and consenting risks. The southwest section of this subzone is also located near several housing estates that currently overlook an area of green open space.

Detailed studies are warranted to further assess the feasibility of siting the infrastructure within the constrained subzone CRK-04 with respect to the existing immovable utilities, underground cable routing corridors for the OHL diversions, WG-GC-07 Green Industry parcel, site platform cut and fill, HDD cable crossings of the gas pipeline, present project and future site cable access and 220kV OHL temporary diversions.

While CRK-04 presents significant challenges and risks, it is proposed to bring it forward to Step 4B for further study as it does present an opportunity to locate the infrastructure in lands zoned for industry and proximate to existing energy infrastructure.

Table 5.2: Emerging Best Performing Grid Connection Subzones (County Cork)

Criteria	CRK-01	CRK-02	CRK-03	CRK-04
Technical				
Economic				
Environmental				
Social				
Deliverability				
EBPO(s)		**EBPO**		**EBPO**

5.4 Emerging Best Performing Indicative Onshore Transmission Cable Route Corridors

CRK_TC1 and CRK_TC2 presents challenges relating to the narrowness of the roads and many tight bends impact the installation of the cable. Potential clearing of vegetation and expansion of entrances for any off-road locations may be required to maintain the necessary sightlines to accommodate vehicles for construction and maintenance operations.

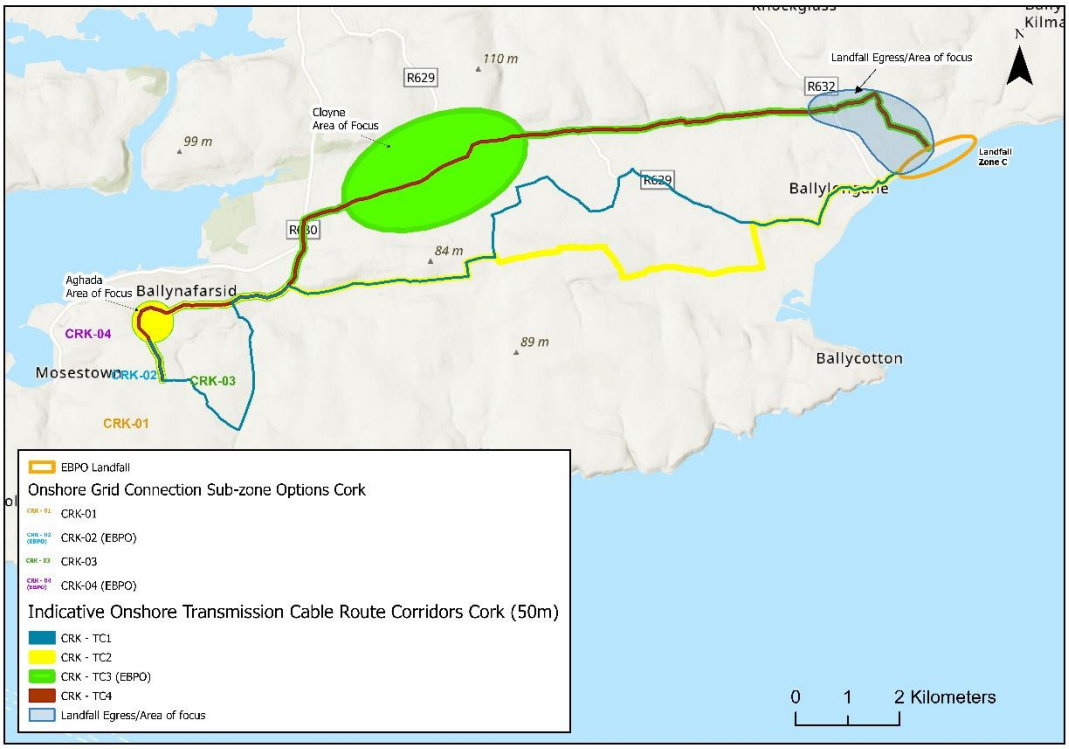
CRK_TC4 is routed through Cloyne and can be expected to cause the most inconvenience, nuisance and disturbance for local residents. The anticipated high density of utilities within Cloyne results in significant uncertainty on the availability of an alignment through Cloyne, with limited flexibility to re-align in the event significant obstacles are encountered.

CRK_TC3 bypasses urban areas and is expected to encounter fewer deliverability constraints compared to other options under consideration. The route is reasonably direct, has flexibility with respect to micro-alignment, and ability to avoid obstacles along the route. CRK_TC3 is therefore the EBPO. The CRK-03 corridor is however in an area of high archaeological value and potential and will require archaeological testing to inform the final alignment.

Table 5.3: Emerging Best Performing Onshore Transmission Route Corridor (County Cork)

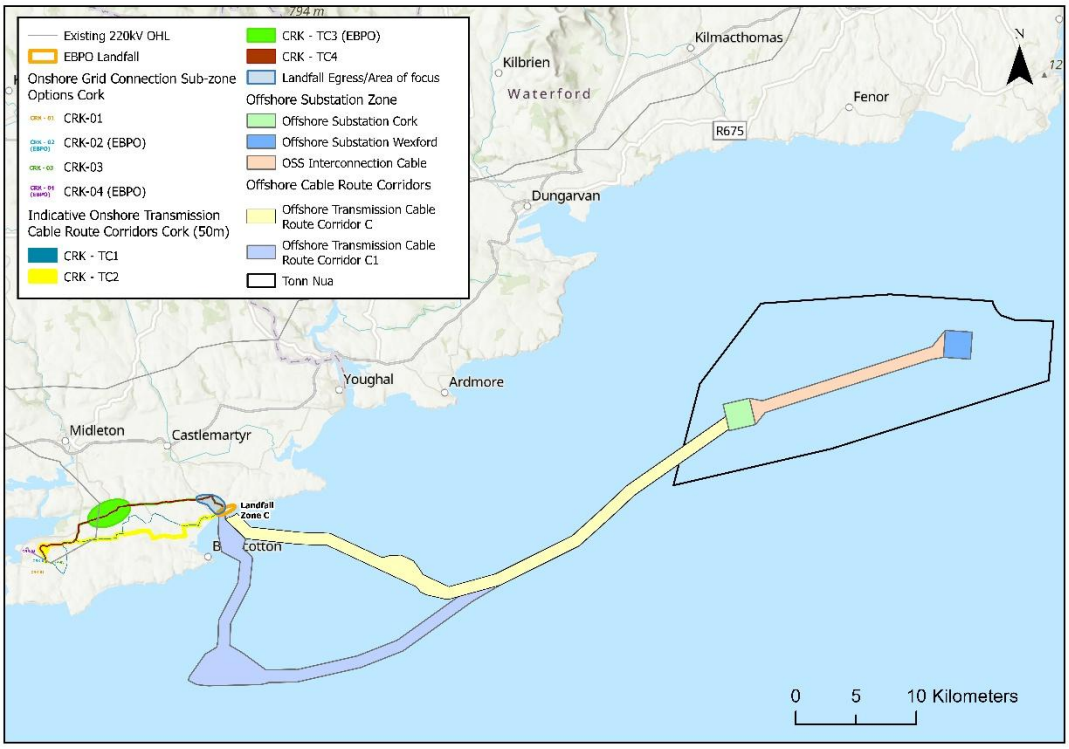
Criteria	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
Technical				
Economic				
Environmental				
Social				
Deliverability				
EBPO(s)			**EBPO**	

Figure 5-1: Step 4A Onshore EBPO (County Cork)



Source: Mott MacDonald

Figure 5-2: Step 4A Offshore EBPOs (County Cork)



Source: Mott MacDonald

6 Emerging Best Performing Options (County Wexford)

6.1 Introduction

This chapter presents the Step 4A EBPO for Landfall Zones (and associated Offshore Transmission Cable Route Corridors and OSS) and Grid Connection Subzones and Onshore Transmission Cable Route Corridors in County Wexford, based on the detail provided in the MCA included in Appendix C of this report.

The Step 4A EBPOs for Landfall Zones, Grid Connection Subzones and Onshore Transmission Cable Route Corridors in County Wexford are presented in Figure 6-1 and Figure 6-2.

6.2 Emerging Best Performing Landfall Zone and Associated Offshore Transmission Cable Route Corridor

Landfall Zone E and associated offshore elements are within Hook Head SAC where reef is a qualifying interest. While no confirmed *Sabellaria alveolate* reef was recorded in the intertidal survey, the intertidal survey recorded rocky shore, bedrock and cobble-boulder habitats with potential to qualify as Annex I geogenic reef. Landfall Zone E is also of high archaeological potential and value due to the historical and archaeological significance of Baginbun Head.

The associated offshore cable route corridor for Landfall Zone F includes reef-forming substrate with intertidal surveys noting extensive *Sabellaria alveolate* habitat although to a lesser extent than the associated offshore transmission cable route corridors for Landfall Zone G.

The associated offshore cable route corridor for Landfall Zone G includes strong biogenic reef presence and hard substrate. The intertidal survey confirms extensive *Sabellaria alveolate* reef. The HDD design is complex, requiring careful planning and execution.

Landfall Zone F has been identified as the EBPO to be brought forward to Step 4B as it the most deliverable, is least likely to encounter bedrock and more likely to find a suitable channel, thereby reducing construction risks.

Table 6.1: Emerging Best Performing Landfall Zone and Associated Offshore Cable Route Corridor (County Wexford)

Criteria	Landfall Zone E	Landfall Zone F	Landfall Zone G
Technical			
Economic			
Environmental			
Social			
Deliverability			
EBPO(s)		**EBPO**	

6.3 Emerging Best Performing Grid Connection Subzones

WXD-01 lands are state owned. This subzone borders a floodzone, includes soft soils and is densely forested. Distances for loop-in connection also present challenges and there are also signs of previous excavations on site.

WXD-02 presents challenges associated with ground conditions which are likely to necessitate a significant volume of cut and potential importation of material to raise the site. Distances for loop-in connection also present challenges.

WXD-03 has a relatively lengthy overall connection to the 220kV OHLs being equidistant between both OHL connection points.

WXD-04 is partially located within State-owned and forested lands. It is likely a former wetland and may have botanic species of interest. The subzone is also anticipated to be used by protected species. This location is expected to necessitate significant ground investigation and civil works and presents poor flexibility due to size and proximity to a floodzone.

WXD-05 is traversed by one of the two 220kV OHLs and has a relatively short connection to the second OHL. WXD-05 offers good access for vehicles and cabling however it may however require some additional civil works due to this subzone sloping to a nearby river and has limited optioneering flexibility due to the constrained subzone area.

WXD-06 has been identified as an EBPO to be brought forward to Step 4B. Both 220kV OHLs traverse the site which facilitates the loop-in connections. The subzone is very large and has very good access for vehicles and cabling. Some additional civil works may be required due to proximity to a nearby river although the subzone size would offer good layout optioneering flexibility.

WXD-07 is traversed by one of the two 220kV OHLs and has a very short connection to the second OHL. Additional civil works may however be required due to the presence of historically marshy land. This subzone is also restricted due to medium pressure gas line in the road at its southern border.

WXD-08 has both of the 220kV OHLs traversing the site for loop-in connections, however, the subzone is small and a medium pressure gas line runs in the road bordering the south of the subzone.

WXD-09 has also been identified as an EBPO to be brought forward to Step 4B as it has both of the 220kV OHLs traversing the subzone for loop-in connections, and there is potential for co-location with another energy project.

Table 6.2: Emerging Best Performing Grid Connection Subzones (County Wexford)

Criteria	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
Technical									
Economic									
Environmental									
Social									
Deliverability									
EBPO(s)						**EBPO**			**EBPO**

6.4 Emerging Best Performing Indicative Onshore Transmission Cable Route Corridors

Ca. 65% of the WXD_TC1 route and ca. 25% of the WXD_TC5 route runs parallel with a gas distribution main which contributes to increased complexity, uncertainty and elevates risk. While WXD_TC1 has less widespread environmental risk compared with other options, it presents the

greatest risk to the Owenduff River semi natural woodland as there is a wide riparian corridor for the river crossing.

The majority of WXD_TC1 and WXD_TC5 are routed in regional roads. This presents the greatest potential for disturbance due to partial road closure, although targeted night-time working could mitigate some disturbance.

WXD_TC2 presents the least ecological risks as it is mostly located in-road, with some sections of off-road cable trenching required, including two HDD crossings of the Owenduff River. WXD_TC2 avoids urban areas while minimising the extent of tight bends which would otherwise impact the installation of the cable.

WXD_TC2 and WXD_TC3 and WXD_TC4 present cultural heritage risks, these risks will be managed with appropriate pre-application testing.

WXD_TC3 presents ecological risk as it routes off-road near or around a marshy area. WXD_TC3 also presents constructability risks with respect to ground conditions and cable route design challenges relating to the large number of tight bends.

The WXD_TC4 route presents the greatest ecological risk compared with other options due to ca. 50% offroad routing. Some tree felling may be required on treelined single lane roads for health and safety reasons where there is potential to disturb ground stability and resultant root system damage from construction works.

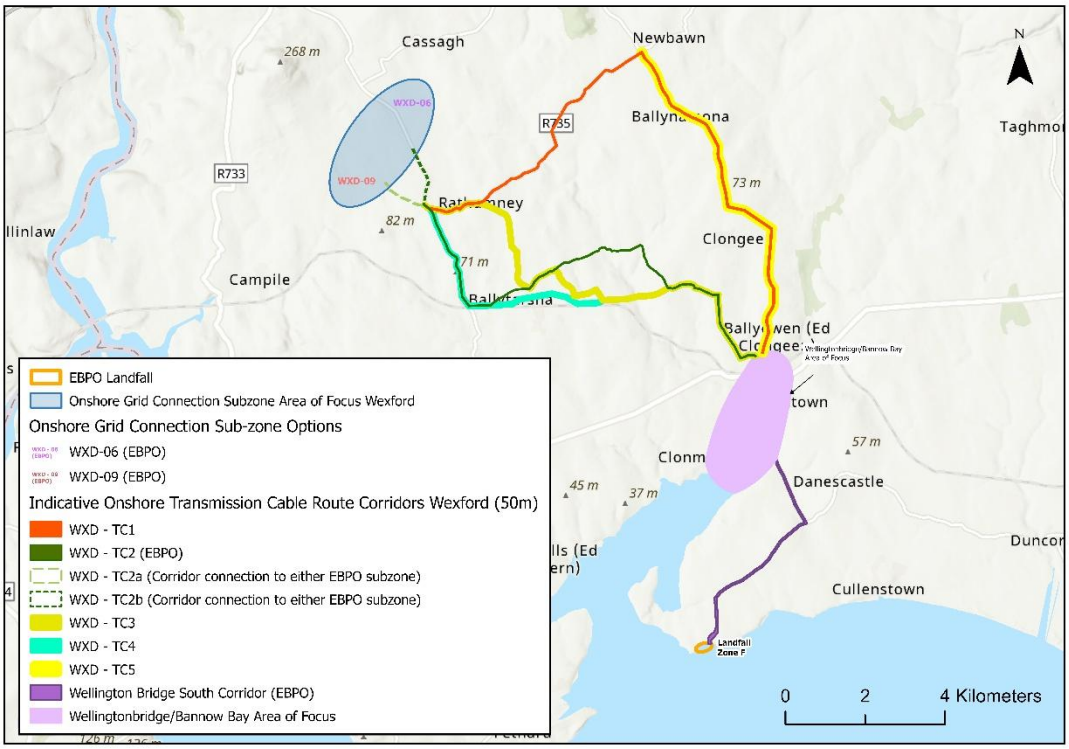
The WXD_TC5 route traverses a main access road (R736) and significant disturbance to residents and visitors can be expected. There are also many utilities which may present challenges in identifying a suitable alignment which could further impact traffic management during construction.

WXD_TC02 is proposed to be taken forward to Step 4B. The route corridor between the convergence of the R734 and the R735 and the potential Grid Connection Subzones requires further study and that area is therefore presented as WXD-TC2 Area of Focus in Figure 6-1 and Figure 6-2.

Table 6.3: Emerging Best Performing Onshore Transmission Route Corridor (County Wexford)

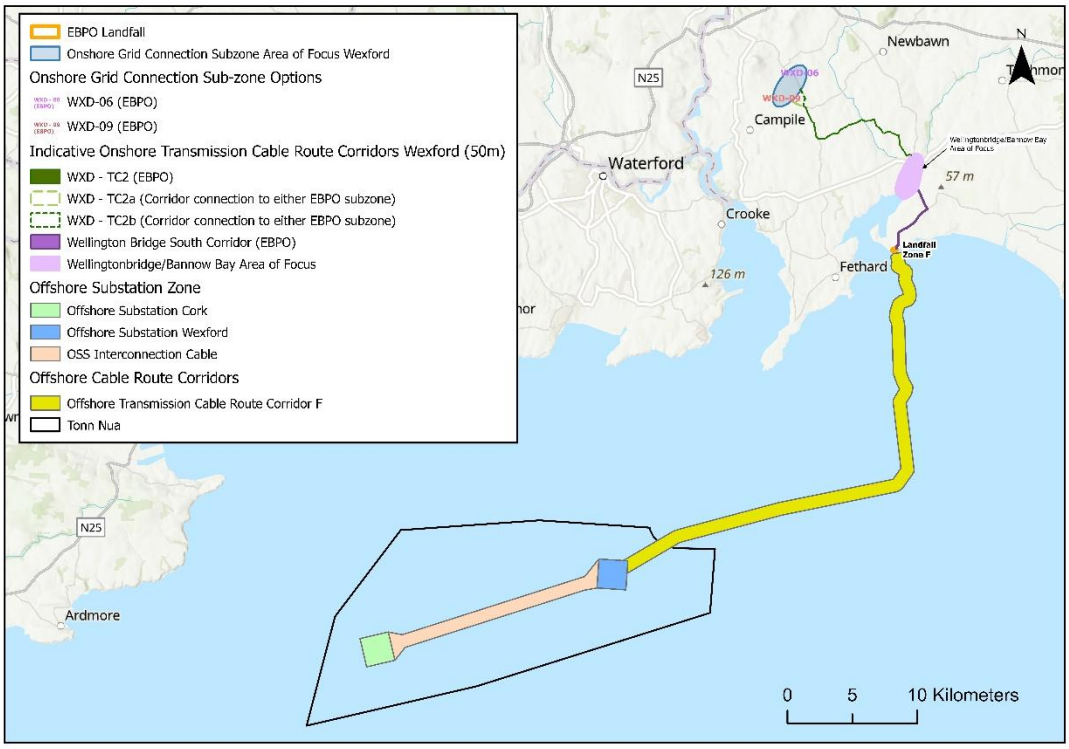
Criteria	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Technical					
Economic					
Environmental					
Social					
Deliverability					
EBPO(s)		**EBPO**			

Figure 6-1: Step 4A Onshore EBPOs (County Wexford)



Source: Mott MacDonald

Figure 6-2: Step 4A Offshore EBPOs (County Wexford)



Source: Mott MacDonald

7 Next Steps

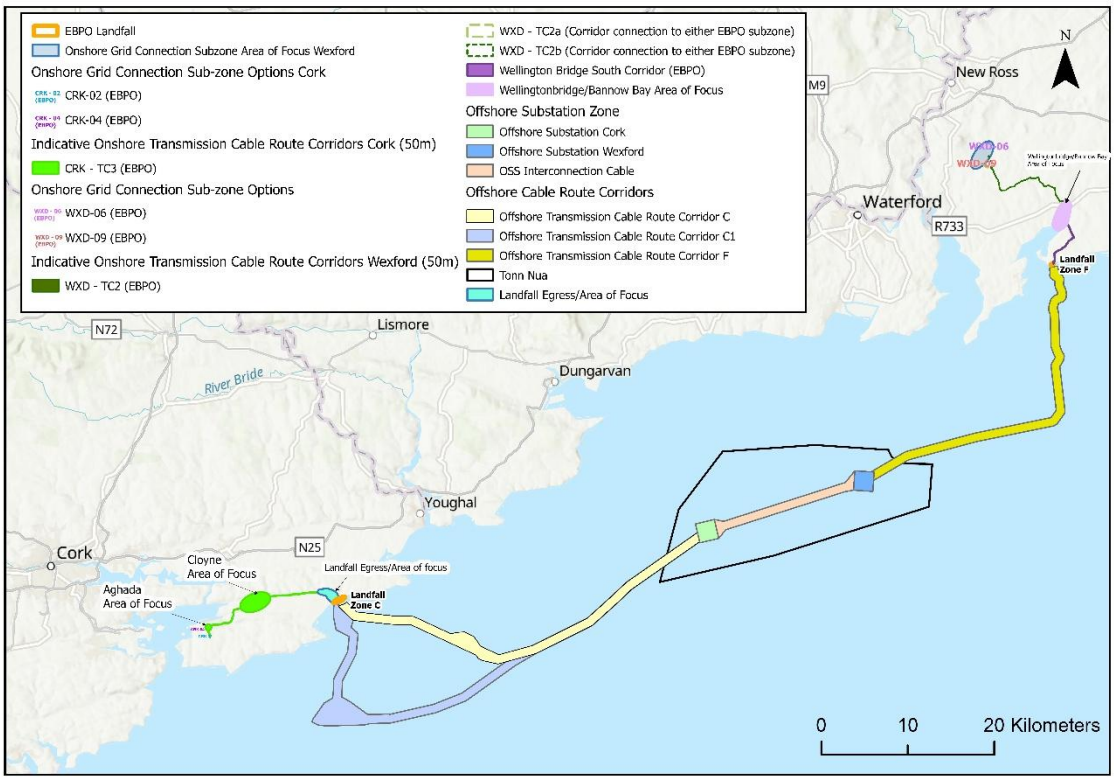
7.1 Stakeholder Consultation and Engagement

EirGrid will undertake a comprehensive engagement to gather public feedback on this Step 4A Report and the EBPOs presented in Chapter 5 and Chapter 6 of this report, which are summarised in Table 7.1 and presented in Figure 7-1.

Table 7.1: Step 4A Short List of Options

County	Landfall Zone (including Offshore Transmission Corridors and OSS)	Grid Connection Subzones	Onshore Transmission Cable Route Corridors
Cork	Landfall Zone C Landfall Zone C1	CRK-02 CRK-04	CRK_TC3
Wexford	Landfall Zone F	WXD-06 WXD-09	WXD_TC2

Figure 7-1: Step 4A EBPOs



Source: Mott MacDonald

Post consultation, a Step 4A Engagement and Consultation Report will be written by an independent consultant and will include an analysis of the engagement responses and their key themes. This feedback will inform project development.

7.2 Community Forum

A community forum is currently being established. The purpose of community forums is to develop representative stakeholder groups from these areas to ensure that those being impacted by the project have regular opportunities to give direct feedback on the work proposed in their area.

To ensure that all voices are heard, EirGrid will seek expressions of interest across the project area for membership of the forum. Membership of the forum will include representatives of local community, voluntary and business groups in addition to local county councillors, as proposed by the relevant Municipal District.

7.3 Community Benefit Fund

In recognition of the impact of large infrastructure projects on hosting communities, a dedicated fund for new grid development is made available by EirGrid. This fund is independently administered on behalf of EirGrid, with the grant's facilitator working closely with local communities and through the local forum, to ensure that funding is allocated to projects that will have the most positive impact in the community.

7.4 Step 4B

Step 4B will comprise:

- Identification of potential routes and sites for targeted studies and surveys.
- Engagement with key stakeholders.
- Identification of the BPO for Step 5.
- Public Engagement and Consultation.

A. Step 4A Multi-criteria Analysis (MCA) Criteria

A.1 Technical Considerations

Table A.1 describes the technical considerations, opportunities and constraints that inform this Step 4A Report.

Table A.1: Step 4A MCA Criteria: Technical Considerations

Sub-criterion	Technical Considerations
Compliance with Health and Safety Standards	**General** ● Compliance with Health and Safety Standards including the European Committee for Electrotechnical Standardisation (CENELEC). Materials should comply with IEC or CENELEC standards. Regardless of the location, the proposed development will be designed in accordance with relevant Health and Safety Standards. **Landfall Zones (including offshore transmission cable and OSS)** ● Safety implications from UXO identification, risks associated with HDD failure (borehole collapse, sinkholes), and operational safety during vessel-based installation and burial. ● Compliance with applicable health and safety legislation and industry best practice. ● There is no discernible distinction between the sites. Full compliance with health and safety (H&S) standards will be maintained across all sites, therefore, this subcriterion is not assessed further in the Landfall Zone MCA **Grid Connection Sub-zones** ● 220kV OHL connection works health and safety considerations ● Existing subzone infrastructure health and safety considerations ● Site access sightlines **Onshore transmission cables** ● During the construction phase, full road closures would be applicable for single lane roads while partial road closures would be applicable for two lane roads.
Compliance with Specifications	**Landfall Zones (including offshore transmission cable and OSS)** ● Meeting the required technical and engineering specifications for the cable system, such as burial depth, thermal performance, and electrical capacity. ● There is no discernible distinction between the sites. Full compliance with all applicable specifications will be maintained across all sites, therefore, this subcriterion is not assessed further in the landfall Zone MCA **Grid Connection Sub-zones** ● Regardless of the location or technology, the proposed development will be designed in accordance with EirGrid specifications. As compliance with specifications is not a differentiator it is not considered further in the MCA. – OCC design will be in compliance with the OCC General Requirements (OFS-SSS-400-R2). – ESBN Substation design will be in compliance with 110/220/400kV Station General Requirements (XDS-GFS-00-001-R4). **Onshore transmission cables**

Sub-criterion	Technical Considerations
	● The cable routing principle with respect to the routing within national roads, regional roads, local roads and off-road routing with respect to the EirGrid specifications. ● The joint bay positioning principle with respect to the positioning within the road, verge or off-road with respect to the EirGrid specifications.
Average Failure Rates	**Landfall Zones (including offshore transmission cable and OSS)** ● The likelihood of component or system failure over its lifetime, influencing long-term O&M costs and reliability. **Grid Connection Sub-zones** ● No differentiator as only GIS is under consideration **Onshore transmission cables** ● The technology is the same across all route corridor options and will therefore not be assessed further in the Onshore Cable Route Corridor MCA
Technology Operational Risk	**Landfall Zones (including offshore transmission cable and OSS)** ● The risk associated with using specific technologies, particularly novel or complex ones, which could lead to delays or failures. **Grid Connection Sub-zones** ● The new SF6 Free technology which will likely be required for the GIS, will be a new technology and will likely carry risk from supplier lead time, operationally as it will be a new technology and possibly maintainability impacts. As the technology is the same across all options, this subcriterion is not assessed further in the Grid Connection Sub-zone MCA **Onshore transmission cables** ● The technology is the same across all route corridor options and will therefore not be assessed further in the Onshore Cable Route Corridor MCA
Repeatability	**General** ● “Repeatability” means whether this option can be readily repeated in the EirGrid network. **Landfall Zones (including offshore transmission cable and OSS)** ● The ability to replicate the construction process reliably across different sections or future projects. ● While site-specific variables necessitate tailored engineering solutions, the underlying methodology is built upon a scalable framework, ensuring consistent execution across future developments. Therefore, this subcriterion is not assessed further in the Landfall Zone MCA **Grid Connection Sub-zones** ● A more compact OCC/ESBN GIS infrastructure solution may have greater possibility for repeatability throughout the EirGrid transmission system than larger greater landtake requirements of OCC/ESBN AIS infrastructure solutions. As the technology is the same across all options, this subcriterion is not assessed further in the Grid Connection Sub-zone MCA **Onshore transmission cables** ● Tthe technology is the same across all route corridor options and will therefore not be assessed further in the Onshore Cable Route Corridor MCA
Compliance with Security and Planning Standards	**General** ● Adherence to Transmission System Security Planning Standards (TSSPS). **Landfall Zones (including offshore transmission cable and OSS)**

Sub-criterion	Technical Considerations
	● There is no discernible distinction between the options; therefore, full compliance with all Security and Planning Standards shall be maintained across the entirety of the project. **Grid Connection Sub-zones and onshore transmission cables** ● The project will 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: – 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. These are not differentiators and will therefore not be considered further in the MCA
Expansion or Extendibility	The ease with which the solution option can be expanded, allows for future developments or network reinforcements. **Landfall Zones (including offshore transmission cable and OSS)** ● The ability to accommodate additional cables or infrastructure in the future without requiring a new landfall or major redesign. **Grid Connection Sub-zones** ● A small, constrained subzone area will have limited possibility or flexibility for siting of any future grid infrastructure **Onshore transmission cables** ● Not applicable for onshore transmission cables
Constructability (Ground Conditions and Marine Processes)	**Landfall Zones (including offshore transmission cable and OSS)** ● The ease of construction based on subsea geotechnical and oceanographic conditions, impacting methodology, programme, and cost. Multiple HDD prole options are being considered, and these options provide offshore punch-out locations at approximately the 6m, 6–10 m, or 10m water depth contours. **Grid Connection Sub- Zones** ● Topography / drainage may result in extensive cut and fill at a chosen site. ● Geotechnical and geophysical aspects include quaternary geology such as till, bedrock geology, geological features such as fault lines, karst features, landslide susceptibility, historic or active mining such as quarries. ● 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. **Onshore transmission cables** ● Geotechnical and geophysical aspects as for the Grid Connection Sub- Zones ● Ground conditions as for the Grid Connection Sub- Zones ● The EirGrid specifications detail that the HV cable trench 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 a thermal insulator in certain conditions. Design solutions such as increased phase spacing (increased trench width) would be required to mitigate these conditions.

Sub-criterion	Technical Considerations
	● Complexity of route construction including parallel routing or crossing of utilities or watercourses ● Where off-road joint bays are required, consideration will be given to the complexities of access during installation and maintenance.
Access (offshore)	**Landfall Zones (including offshore transmission cable and OSS)** ● Access from offshore for cable pull-in preparatory works and the vessel approach which may impact system design ● Water depth is a critical parameter for the approach of the cable installation vessel and the stand-off distance required for the cable pull-in operation. ● Access requirements for offshore construction, inspection, maintenance, and repair activities, including vessel access constraints, water depth limitations, tidal conditions, weather sensitivity, and proximity to suitable ports and marine support infrastructure. **Grid Connection Sub- Zones and onshore transmission cables** ● Not applicable
Access (Onshore)	**Landfall Zones (including offshore transmission cable and OSS)** ● Access for cable pull-in and construction traffic movements including drill rig and pull-in equipment. **Grid Connection Sub-zones** ● An adequate number of feasible approach corridors for the routing of the required circuits must be available. ● Accessibility of the subzone OHL/cable connection to the 220kV OHL ● Presence and suitability of national, regional and local public roads for transporting large HV equipment ● Presence and suitability of subzone access roads for construction phase traffic **Onshore transmission cables** ● Extent of off-road access will be considered with respect to offroad joint bays, watercourse and utility crossings and parallel routing utility conflicts.: ● Where off-road joint bays are required, consideration will be given to the complexities of access during installation and maintenance. ● With regard to in-road routing, consideration will be given to access for local residents and identifying the extent to which full or partial road closures are required. ● Consideration will also be given to the local road network in the context of expected sightlines associated with potential existing entrances and the expectation regarding the need for those existing entrances to be expanded to accommodate HGV's or for new entrances to be opened.
Physical Constraints	**Landfall Zones (including offshore transmission cable and OSS)** ● Identifying conflicts with existing infrastructure and / or physical constraints (including cables, pipelines, offshore infrastructure, wrecks). **Grid Connection Sub-zones and onshore transmission cables** ● Identifying conflicts with existing infrastructure and / or physical constraints (including above ground utilities, underground utilities, watercourses, culverts, ditches, flood zones, retaining walls, bridges and railways).

A.2 Economic Considerations

Table A.2 describes the economic considerations, opportunities and constraints that inform this Step 4A Report.

Table A.2: Step 4A MCA Criteria: Economic Considerations

Sub-criterion	Economic Considerations
Capital Cost	The capital costs are those project implementation costs associated with the procurement, installation and commissioning of the development and therefore includes all the transmission equipment that forms part of the scope of the project. Capital cost estimates are desktop based only and have not been informed by studies or agreements that would be required to accurately estimate the cost of a project of this nature and scale. **Landfall Zones (including offshore transmission cable and OSS)** ● The capital cost of the Landfall Zones would be dependent upon location, accessibility, ground conditions, land ownership and construction methodology. Represents the total installed cost of offshore and nearshore works. **Grid Connection Sub-zones** ● Where station technology is being assessed as part of Step 4A, a qualitative comparative evaluation of capital costs may be performed. As the grid infrastructure is the same across all subzone options, this is not a differentiator and has not been considered further. ● From a grid connection sub-zone perspective, the lengths of the four 220kV cable or overhead line circuits onwards to the OHL loop-in grid connection point would be the primary influence towards the overall grid connection sub-zone cost. ● The capital cost includes for the landholding requirement, which may range from the minimum grid infrastructure compound and associated construction area to that of the full extent of the subzone accounting for the OHL connection works. ● Further capital cost differentials would relate to infrastructure or utility enabling works, access track works, physical constraints and ground conditions. **Onshore transmission cables** ● Where cable circuit technology is being assessed as part of Step 4A, a qualitative comparative evaluation of capital costs may be performed. As the cable circuit technology and rating is the same across all subzone options, this is not a differentiator and has not been considered further. ● From an onshore transmission cable perspective, the lengths of the single 275kV cable circuit from the landfall to the grid infrastructure subzone would be the primary influence towards the overall onshore transmission cables cost. ● The capital cost ranking considers off-road routing accessibility and ground condition challenges with respect to urban area bypassing, watercourse and utility crossings while also considering the contrasting urban area installation costs related to the density of existing utilities.

Sub-criterion	Economic Considerations
Life Cycle Costs	"Life Cycle Costs" are costs incurred over the useful life of the project and include the on-going cost of ensuring that it remains viable for the evaluation period. This includes operating expenditure (OPEX), maintenance, replacement, cost of losses, decommissioning, etc. **Landfall Zones (including offshore transmission cable and OSS)** ● Life cycle cost differential of circuit route lengths from the landfalls to grid connection points would be influenced in a similar manner to that of the capital cost relating to circuit route lengths. In this regard, route length cable losses have not been considered further in the MCA. A qualitative comparative evaluation of thermal derating effects of the landfall HDD construction methodology has been considered. ● Driven by seabed stability (need for re-burial), marine access (repair complexity/cost), and coastal erosion management **Grid Connection Sub-zones** ● Where station technology is being assessed as part of Step 4A, a qualitative comparative evaluation of life cycle costs may be performed. As the grid infrastructure is the same across all subzone options, this is not a differentiator and has not been considered further. ● Maintenance and inspection requirements will be considered where variance may exist for the subzone options, in particular with respect to the OHL/cable circuit connection to the 220kV OHL. **Onshore transmission cables** ● Circuit technology is not being assessed as part of Step 4A. Therefore, life cycle costs may not offer much differentiation between options. In this regard, a qualitative comparative evaluation of cable corridors alone has been performed, primarily influenced by the length of cable, number of joint bays, maintenance and inspection requirements and potential HDD thermal derating effects.
Maritime Economy (Ports, Harbours and Shipping and Commercial Fisheries)	**Landfall Zones (including offshore transmission cable and OSS)** ● The interaction between offshore landfall works and the maritime economy, including potential impacts on ports, harbours, shipping routes, and commercial fishing activities during both construction and operation. **Grid Connection Sub-zones and onshore transmission cables** ● Not Applicable.

A.3 Environmental Considerations

Table A.3 describes the environmental considerations, opportunities and constraints that inform this Step 4A Report.

Table A.3: Step 4A MCA Criteria: Environmental Considerations

Sub-criterion	Environmental Considerations
Land use compatibility, other site users and planning policy	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● State owned or controlled lands and lands in ownership or control of other prescribed bodies, local authorities, utilities ● Areas where similar infrastructure or buildings exist ● 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 ● Other users, including commercial fisheries ● National Planning Marine Framework, County Development Plans and Local Area Plans detail development objectives and policies that may influence the siting of developments at county and local levels.
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Potential for poor ground ● Potential for encountering made ground infill / contaminated soil and water and / or sub-optimum ground conditions Topography, in terms of both elevation and slope, will influence the civil works likely to be required, constructability, visual impact and accessibility. ● 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 ● Geological heritage ● Potentially significant alterations to hydrogeological regimes ● Marine sediment quality
Water Resources	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** ● 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. ● Careful consideration should 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

Sub-criterion	Environmental Considerations
	– Water Framework Directive 2000/60/EC quality elements or prevent any waterbodies from reaching “good status” in the future for in freshwater, transitional and coastal waters up to one nautical mile (nm); and – The Marine Strategy Framework Directive 2008/56/EC (MSFD) Good Environmental Status (GES) within designated water bodies beyond one nm. ● Public Water Supply Protection Areas and known drinking water supplies in the context of pollution prevention and control, and potential disruption to flow paths.
Climate, including flood risk and Sustainable Development	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Location specific aspects, such as ground conditions and the volume of cut and fill and / or piling and / or pumping / enabling works anticipated to be required, may result in increased resource use and increased greenhouse gas emissions and challenges in terms of sustainable development. ● Siting, in relation to onshore elements, is an important consideration particularly in relation to the management of flood risk. In terms of climate adaptation, 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. Design of infrastructure is key in the management of climate change risks. Climate adaptation is not a differentiating factor and has therefore not been considered further in the MCA.
Biodiversity	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Designated Sites of International Importance such as Special Areas of Conservation (SAC), Special Protection Areas (SPA), 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. ● For offshore elements (including pre-construction investigation of seabeds), the potential for permanent loss of habitat / damage and the effects of that loss / damage on marine species that depend on those habitats has been considered. Cable installation, rock placement and / or concrete mattressing also have the potential for loss of ecosystems along the submarine cable route. Noise and vibration related construction phase disturbance of mammalian species and birds due to the works is also a key consideration. Subject matter considerations include: – Benthic ecology – Fish and shellfish ecology – Marine mammals and megafauna – Ornithology

Sub-criterion	Environmental Considerations
	The EirGrid Biodiversity Strategy 2025-2035 is also a key consideration having regard to quantification of habitat loss / demonstrating no net loss. Consideration has also been given to the relevant objectives and policies associated with the Cork County Development Plan 2022 and Wexford County Development Plan in addition to the NMPF.
Cultural Heritage, including Underwater Archaeology	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Sites and Monuments Records (SMR) ● Records of Monuments and Places (RMP) and associated Zones of Notification (ZoN) ● Record of Protected Structures (RPS) ● National Inventory of Architectural Heritage (NIAH) ● Architectural Conservation Areas (ACA) ● Submerged palaeolandscapes ● Shipwrecks ● Intangible heritage in line with the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage and Cultural Heritage: Engaging the Public. Archaeology, Built Heritage, Landscape, Portable Heritage and Intangible Heritage (TII, September 2025) The proposed infrastructure should, where possible, aim to avoid proximity to: ● 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) ● Shipwrecks and associated Archaeological Exclusion Zones (AEZs)
Traffic and Transport	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Shipping and Navigation routes ● Approach roads and their suitability in terms of access, including access for abnormal loads
Seascape, Landscape and Visual	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Significant or characteristic features of a landscape, ● International, national and county level landscape designations ● Areas of special amenity and landscape conservation areas

Sub-criterion	Environmental Considerations
	● Elevation and slope, scenic routes, protect views and landscape character areas
Aviation and Telecommunications	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Proximity to airports and flight paths and associated land use ● Potential for electricity infrastructure to impact on wireless services such as radars and radio communications and marine infrastructure, including cables and Met Eireann infrastructure

A.4 Social Considerations

Table A.4 describes the social considerations, opportunities and constraints that inform this Step 4A Report.

Table A.4: Step 4A MCA Criteria: Social Considerations

Sub-criterion	Social Considerations
Settlement and Communities, including coastal and fishing communities	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Social acceptance is a key consideration of EirGrid in relation to the development of this project. Key considerations include: ● Population centres. ● Way of life in a community and how identified communities (including those that may be socially excluded) may be disaffected by the proposed development. ● Intangible cultural heritage not captured under protected sites (Environment) i.e. way of life / sense of place, how they live, work, interact etc. Their culture – shared beliefs, customs, values, language etc and communities (cohesion, stability, character, facilities, participation in voluntary groups working in communities, like sports clubs, cultural societies, Meals on Wheels or Tidy Towns ● Local organisations representing people who are socially excluded and whose voices may not be heard in society, such as people with disabilities, migrants or Travellers.
Visitors and Commuters	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include transient and infrequent visitors not included under other theme headings, such as commuters, that may be disaffected by the proposed development.
Amenities, Recreation and Tourism	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include 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.
Nuisance and Disturbance	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** Key considerations include: ● Potential for construction phase noise and dust ● Potential for operational phase noise ● Receptors/stakeholders that are particularly sensitive to change and nuisance and disturbance, such as churches, schools and outdoor amenity

Sub-criterion	Social Considerations
Visual Effects	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Subzones and onshore transmission cables** ● While protected views and landscapes are considered under environmental criteria, consideration has also been given to potential visual impacts in a broader sense. ● For the offshore substation zones, long distance views will be afforded from a range of high sensitivity coastal receptors that include residential, road, tourist settlements and recreational / heritage features.

A.5 Deliverability Considerations

Table A.5 describes the deliverability considerations, opportunities and constraints that inform this Step 4A Report.

Table A.5: Step 4A MCA Criteria: Deliverability Considerations

Sub-criterion	Deliverability Considerations
Implementation Timelines	"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. It assumes no unreasonable consenting delays and/or potential judicial reviews. It considers time for securing landowner consents of permits, wayleaves and/or easements and third-party land agreements. **Landfall Zones (including offshore transmission cable and OSS)** Key considerations include: ● Accessibility for offshore and nearshore construction vessels ● Requirement for enabling works ● Proposed installation methodology (e.g. HDD interface, pull-in operations, nearshore cable lay) ● Reinstatement requirements within the nearshore and intertidal zone ● Seasonal, environmental, or local constraints affecting offshore or nearshore works ● Availability and maturity of offshore survey data ● Extent of environmental constraints and required mitigation ● Offshore route length and water depth ● Seabed conditions and anticipated cable protection requirements ● Interaction with existing offshore infrastructure and marine users ● Weather dependency and installation window availability ● Vessel and supply chain availability **Grid Connection Sub-zones** Key considerations include: ● Consenting timelines ● Third party landowner consents or agreements ● Accessibility ● Enabling works ● Seasonal or local constraints ● Construction timelines **Onshore transmission cables** Key considerations include:

Sub-criterion	Deliverability Considerations
	● Corridor lengths ● Crossing of major utility infrastructure (e.g gas transmission, railways, and national roads), watercourses ● Permits and wayleaves related to off-road installation in third party landholdings ● Urban area installation timelines related to density of existing utilities. ● Two-lane roads allowing greater working area and comparatively shorter timeline than single lane roads ● Seasonal and local constraints that may impact the implementation
Dependence on other Projects	**Landfall Zones (including offshore transmission cable and OSS)** For Landfall Zones, this criterion assesses dependency on other projects or activities that may affect offshore or nearshore works, including coordination with onshore. For offshore transmission routes, this criterion considers the extent to which implementation is dependent on other offshore projects or third-party infrastructure. This includes interaction with existing or planned offshore cables, pipelines, offshore renewable developments, port infrastructure works, or marine dredging activities that could influence construction sequencing or installation windows. **Grid Connection Sub-zones and onshore transmission cables** This criterion considers general inter-dependence with other projects, including 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 the 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. Consideration has also been given to other utility projects which may interact with PUOSC.
Supply Chain	Any constraints (e.g. small 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. Consider offshore supply chain availability, including the availability of suitable installation vessels, specialist equipment, materials, and experienced contractors to support delivery of the offshore landfall works. **Landfall Zones (including offshore transmission cable and OSS)** **F**or all Landfall Zone options, the impact of the supply chain will be the same, so this is not a differentiating feature and has therefore not been considered further in the MCA. For offshore cable route corridors, this criterion considers potential supply chain constraints that could affect the timely procurement of offshore materials, vessels, and specialist services. This includes availability and lead times for cable laying vessels, burial and protection equipment, offshore construction vessels, and suitably qualified contractors at a national and international level. **Grid Connection Sub-zones and onshore transmission cables** For all Grid Connection Sub-zone and onshore transmission cable options, the impact of the supply chain will be the same, so this is not a differentiating feature and is therefore has not been considered further in the MCA.
Permits and Wayleaves	**Landfall Zones (including offshore transmission cable and OSS) and Grid Connection Sub-zones and onshore transmission cables** Key considerations include: ● Securing timely access to land for pre-application surveys. ● Achieving timely statutory consent(s) ● Obtaining timely post-consent third party landowner wayleaves/ easements/ agreements.

Sub-criterion	Deliverability Considerations
	● Offshore permitting and consenting requirements associated with the landfall, including marine licences, environmental approvals, stakeholder interfaces, and potential consenting risks. ● Land use compatibility and planning policy
Project Plan Flexibility	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. **Landfall Zones (including offshore transmission cable and OSS)** For Landfall Zones, pre-planning flexibility relates to the ability to adjust offshore approach alignment, installation methodology, and construction sequencing between offshore and onshore works. Consideration has also been given to flexibility in timing of nearshore works in response to environmental or seasonal constraints Pre-planning conceptual design flexibility related to Landfall Zones may relate to the level of TJB or construction compound siting flexibility or the level of route flexibility from each landfall to potential grid connection zones i.e. number of possible roads associated with each landfall. For offshore transmission cable route corridors, this criterion assesses the flexibility of the project plan to accommodate changes during pre-consenting, consenting, detailed design, and construction. This includes flexibility to adjust offshore routing, installation sequencing, vessel deployment, and installation windows in response to weather or marine constraints. **Grid Connection Sub-zones** Pre-planning conceptual design flexibility related to grid connection zones may relate to the potential extent of unconstrained compatible land available within the sub-zone for to accommodate changes to the orientation of the layout, access road, cable route access or grid connection arrangement. **Onshore transmission cables** The extent to which mitigations are available for potential cable routing constraints such as major utility infrastructure crossings, watercourse crossings, single lane roads or urban area routing is considered.
Design Complexity, Uncertainty, Risk	This sub-criterion assesses the potential for design issues or construction phase issues and the requirement for non-standard approaches. **Landfall Zones (including offshore transmission cable and OSS)** Consideration has been given to the complexity of the landfall design coupled with uncertainty which may include inherent risk. **Grid Connection Sub-zones** Each sub-zone has been assessed in terms of the constraints, obstacles, services within the sub-zone which may necessitate the need for enabling works design, temporary works design or challenging site-specific design. **Onshore transmission cables** Each route has been assessed in terms of the constraints/obstacles anticipated to be encountered along the route, the extent of utility or watercourse crossings, the need for Horizontal Directional Drilling (HDD), requirements to micro-route to ensure minimum duct bending radius of 20m, and the extent to which services have already been installed within the roadway.

A.6 Summary of MCA Criteria

Table A.6: Summary of MCA Sub-criteria

Criteria	Landfall Zones and Associated Offshore Cable Route Corridors	Grid Connection Subzones	Onshore Transmission Route Corridors
Technical Considerations			
Compliance with Health and Safety Standards	X	✓	✓
Compliance with Specifications	X	X	✓
Average Failure Rates	✓	X	X
Technology Operational Risk	✓	X	X
Repeatability	X	X	X
Compliance with Security and Planning Standards	X	X	X
Expansion or Extendibility	X	✓	X
Constructability (Ground Conditions and Marine Processes)	✓	✓	✓
Access	✓	✓	✓
Physical Constraints	✓	✓	✓
Economic Considerations			
Capital Cost	✓	✓	✓
Life Cycle Costs	✓	✓	✓
Maritime Economy (Ports, Harbours and Shipping and Commercial Fisheries)	✓	X	X
Environmental Considerations			
Land use compatibility, other site users and planning policy	✓	✓	✓
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	✓	✓	✓
Water Resources	✓	✓	✓
Climate, including flood risk and Sustainable Development	✓	✓	✓
Biodiversity	✓	✓	✓
Cultural Heritage, including Underwater Archaeology	✓	✓	✓
Traffic and Transport	✓	✓	✓
Seascape, Landscape and Visual	✓	✓	✓
Aviation and Telecommunications	✓	✓	✓
Social Considerations			

Criteria	Landfall Zones and Associated Offshore Cable Route Corridors	Grid Connection Subzones	Onshore Transmission Route Corridors
Settlement and Communities, including coastal and fishing communities	✓	✓	✓
Visitors and Commuters	✓	✓	✓
Amenities, Recreation and Tourism	✓	✓	✓
Nuisance and Disturbance	✓	✓	✓
Visual Effects	✓	✓	✓
Deliverability Considerations			
Implementation Timelines	✓	✓	✓
Dependence on other Projects	X	✓	✓
Supply Chain	X	X	X
Permits and Wayleaves	✓	✓	✓
Project Plan Flexibility	✓	✓	✓
Risk of Untried Technologies	X	X	X
Design Complexity, Uncertainty, Risk	✓	✓	✓

B. Step 4A MCA (County Cork)

B.1 Evaluation of Landfall Zones and Associated Offshore Transmission Cable Route Corridors

B.1.1 Technical Considerations:

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Compliance with Health and Safety Standards	There is no discernible distinction between the sites. Full compliance with health and safety (H&S) standards will be maintained across all sites.		
Average Failure Rates	No discernible difference based on the landfall and the design of the HDD. For an offshore cable route length of 62.6 km, the overall probability of failure is proportionally higher compared to shorter cable lengths, reflecting the increased exposure to potential defects and external influences over a greater distance.	No discernible difference based on the landfall and the design of the HDD. Given that this site has the shortest offshore cable route length (49.5 km), it is expected to have the lowest probability of failure, due to the reduced exposure to potential defects and external influences over a shorter distance.	No discernible difference based on the landfall and the design of the HDD. Given that this site has the longest route length 66.5 km (49.5km +17km), it is expected to have the highest probability of failure, due to the increased exposure to potential defects and external influences over a greater distance.
Technology Operational Risk	The proposed technology and methodology are consistent across all sites based on the current information available; consequently, there is little discernible difference between the options. The proposed HDD lengths for the Cork landfalls are comparable and therefore present similar levels of drilling risk. However, the significant onshore elevation changes at this site are likely to increase the complexity of the HDD profile and cable landing works. When combined with the available spatial constraints for HDD compounds and cable installation, these factors are expected to complicate the shore-end engineering and increase overall construction risk. **HDD length:**1200m	The proposed technology and methodology remain uniform across all sites based on current available information; consequently, there is little discernible difference between them. The proposed HDD lengths for the Cork landfalls are all equal so present comparable risk levels. HDD risk levels will be dependent on ground conditions at the landfall and so should be re-assessed as this information becomes available. The assumed HDD Profile punch out water depth is between 6 and 10 m requiring a shallow draught installation vessel to be used in addition to the conventional Cable Lay Vessel, this increases technical risk. **HDD length:** 1200m.	The proposed technology and methodology remain uniform across all sites based on current available information; consequently, there is little discernible difference between them. The proposed HDD lengths for the Cork landfalls are all equal so present comparable risk levels. HDD risk levels will be dependent on ground conditions at the landfall and so should be re-assessed as this information becomes available. The assumed HDD Profile has a punch out water depth of 6 m requiring a shallow draught installation vessel to be used in addition to the conventional Cable Lay Vessel, this increases technical risk. **HDD length:** 1200m.
Expansion or Extendibility	The methodology is readily replicable, and with sufficient access available, this may facilitate efficient construction, minimise implementation constraints, and support further project	The methodology is readily replicable, and with sufficient access available, this may facilitate efficient construction, minimise implementation constraints, and support further project development.	The methodology is readily replicable, and with sufficient access available, this may facilitate efficient construction, minimise implementation constraints, and support further project development.

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
	development. Potentially limited options for HDD compound locations.		
Constructability (Ground Conditions and Marine Processes)	Considerable rock outcrop suggests there is bedrock close to the surface offshore. If the assumed HDD Profile were used, the restricted water depth (6m) at the 1200m HDD duct limit would increase the complexity of the cable pull-in operation and would necessitate a multi-vessel solution. **Overall cable:** 62.6km **Ploughing/jetting:** 56.2km Minimum of 6.4km of rock outcropping. **HDD Profile Option One:** 1170m to 10m water contour **HDD Profile Option Two:** 1200 to 6m water contour	Considerable rock outcrop suggests there is bedrock close to the surface offshore. If the assumed HDD Profile were used, the restricted water depth (6m) at the 1200m HDD duct limit would increase the complexity of the cable pull-in operation and would necessitate a multi-vessel solution. **Overall cable:** 49.5km **Ploughing/jetting:** 37.3km Minimum of 12.1km of rock outcropping. **HDD Profile Option One**: 1200 to 6-10m water contour **HDD Profile Option Two :**1200 to 6m water contour	As this option utilises the same solution as Option C, the associated constraints remain unchanged. However, the potential presence of identified sediment channels would improve the offshore routing potential. Further survey work is required to potentially utilise the proposed channel. If the assumed HDD Profile were used, the restricted water depth (6m) at the 1200m HDD duct limit would increase the complexity of the cable pull-in operation and would necessitate a multi-vessel solution. **Overall cable:** 66.5km **Ploughing/jetting:** 54.4km Up to 12.1km of rock outcropping. **HDD Profile:**1200 to 6m water contour (The uncertainty of the rock outcropping remains until full potential of the channel is known).
Access - Offshore	While metocean conditions are expected to be broadly consistent across the sites, the primary operational constraint is the water depth at the HDD punch-out location. A water depth of approximately >10 m is required for vessel approach and installation activities. Within this site, however, potential HDD profiles indicate punch-out locations ranging from the 6 m to 10 m water depth contour. Shallower punch-out locations would necessitate careful vessel selection or potentially a multi-vessel installation approach to safely execute the works. Notwithstanding these constraints, a punch-out at the 10 m water depth contour is achievable and represents the preferred solution from an installation perspective.	While metocean conditions are expected to be broadly consistent across the sites, the primary operational constraint is the water depth at the HDD punch-out location. A water depth of approximately >10 m is required for vessel approach and installation activities. Within this site, however, potential HDD profiles indicate punch-out locations ranging from the 6 m to 10 m water depth contour. Shallower punch-out locations would necessitate careful vessel selection or potentially a multi-vessel installation approach to safely execute the works.	While metocean conditions are expected to be broadly consistent across the sites, the primary operational constraint is the water depth at the HDD punch-out location. A water depth of approximately >10 m is required for vessel approach and installation activities. Within this site, however, potential HDD profiles indicate punch-out locations ranging from the 6 m to 10 m water depth contour. Shallower punch-out locations would necessitate careful vessel selection or potentially a multi-vessel installation approach to safely execute the works.

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Access - Onshore	Narrow access roads with severe elevation changes, cable access to the field would require routing through several fields and the access road at the beach will require widening. Multiple OHLs in the area	Good access via two lane road to the beach through Garryvoe. High population density with good footfall year-round. Access from both sides ensures local access won't be blocked. Potential for offroad access track to connect Landfall Zone and wider road network.	
Physical Constraints	Onshore, the site is characterised by extreme elevation changes (approximately 60 m over 400 m from the coastline), which is likely to significantly affect the feasibility of an HDD solution. Spatial constraints further limit suitable HDD compound locations. In the nearshore environment, this landfall has the least extent of rock outcropping (approximately 6.4 km) of the options assessed, representing a relative advantage for offshore installation. However, the extreme onshore topography would increase the complexity and technical risk of the HDD profile, reduce construction flexibility and resulting in a higher overall delivery risk for the site.	The relatively moderate elevation changes at the landfall reduce the required HDD drilling angles, simplifying the HDD profile and lowering installation complexity compared with steeper alternatives. The proximity of a nearby mobile home park will require careful construction planning and scheduling to avoid peak holiday periods and minimise disruption to residents. The presence of a designated green infrastructure corridor to the west constrains routing options, requiring alternative cable alignments to be considered during further design development.	The relatively moderate elevation changes at the landfall reduce the required HDD drilling angles, simplifying the HDD profile and lowering installation complexity compared with steeper alternatives. The proximity of a nearby mobile home park will require careful construction planning and scheduling to avoid peak holiday periods and minimise disruption to residents. The presence of a designated green infrastructure corridor to the west constrains routing options, requiring alternative cable alignments to be considered during further design development.
MCA Ranking (Technical)			

B.1.2 Economic Considerations

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Capital Cost	**Overall cable:** 62.6km **Ploughing/jetting:** 56.2km **Trenching/remedial protection**:6.4km Cable cost will be a primary consideration; however, the financial implications of the technical cable protection challenges remain a key uncertainty.	**Overall cable:** 49.5km **Ploughing/jetting:** 37.3km **Trenching/remedial protection:** 12.1km Cable cost will be a primary consideration; however, the financial implications of the technical cable protection challenges remain a key uncertainty.	**Overall cable**: 66.5km **Ploughing/jetting:** 54.4km **Trenching/remedial protection:** Up to 12.1km Cable cost will be a primary consideration; however, the financial implications of the technical cable protection challenges remain a key uncertainty.
Life Cycle Costs	Notwithstanding the potential need for additional remedial works—potentially requiring more frequent inspections and ongoing repairs—a simple high-	Notwithstanding the potential need for additional remedial works—potentially requiring more frequent inspections and ongoing repairs—a simple high-	Notwithstanding the potential need for additional remedial works—potentially requiring more frequent inspections and ongoing repairs—a simple high-

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
	level assessment suggests that the overall offshore cable length will be a key driver of inspection effort, and therefore the associated lifecycle costs. **Overall offshore cable length:** 62.6km	level assessment suggests that the overall offshore cable length will be a key driver of inspection effort, and therefore the associated lifecycle costs. **Overall offshore cable length**: 49.5km	level assessment suggests that the overall offshore cable length will be a key driver of inspection effort, and therefore the associated lifecycle costs. **Overall offshore cable length:** 66.5km
Maritime Economy (Ports, Harbours and Shipping and Commercial Fisheries)	While it is recognised the importance of the sites for spawning grounds and fishing zones, it is anticipated that the impact to maritime economy and commercial fisheries would be broadly similar for all sites, except for the potential need for trenching and remedial cable protection. The longer the requirement, the greater the impact. **Trenching/remedial protection**: 6.4km	While it is recognised the importance of the sites for spawning grounds and fishing zones, it is anticipated that the impact to maritime economy and commercial fisheries would be broadly similar for all sites, except for the potential need for trenching and remedial cable protection. The longer the requirement, the greater the impact. **Trenching/remedial protection:** 12.1km	While it is recognised the importance of the sites for spawning grounds and fishing zones, it is anticipated that the impact to maritime economy and commercial fisheries would be broadly similar for all sites, except for the potential need for trenching and remedial cable protection. The longer the requirement, the greater the impact. **Trenching/remedial protection:** Up to 12.1km
MCA Ranking (Economic)			

B.1.3 Environmental Considerations

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Land use compatibility, other site users and planning policy	**Current land use**: Land is predominantly public access beach and private agricultural fields. **Nearby infrastructure**: Few scattered residential properties and agricultural properties. **Planning applications**: Planning Applications within the Landfall Zone at the time of writing include applications for one off housing and extensions to existing dwellings, other than planning application (254930) for a Pilates studio/office/domestic storage area at Ballycroneen West, Ballycroneen, Cloyne, Midleton, Co. Cork **Zoning**: No land use zoning associated with this Landfall Zone. **Commercial Fisheries**: No differentiators in terms of NMPF Fisheries (co-existence) Policies	**Current land use**: Land is predominantly public access beach and private agricultural fields. **Nearby infrastructure**: West of the Landfall Zone is a public car park for access to Garryvoe Beach. East of the Landfall Zone is a public car park for Ballinwilling Beach. One property within the eastern border of the Landfall Zone. **Planning applications**: Planning application 254052 appealed (PL-500629-CK-26) for 10 no. two storey detached four-bedroom dwellings at Garryvoe Lower, Ladysbridge, Co.Cork. Case decided on 12 May 2026 (https://www.pleanala.ie/en-ie/case/500629) **Zoning**: The landing zone is just to the east of an area under the County Cork Development Plan 2022 designated for green infrastructure (Conservation, amenity or buffer space, corridor/belt, landscape protection). **Commercial Fisheries**: No differentiators in terms of NMPF Fisheries (co-existence) Policies.	

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Description**: 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. **Geological Heritage Sites:** Encompasses Ballycroneen Bay Geological Heritage Area. According to 2023 GSI Report 'Threats to the site are mainly from coastal erosion as the cliffs are not armoured" and "It merits promotion, possibly as part of a south coast geological heritage trail." Relatively large changes in superficial sediment cover evident leading to extensive exposure of rocky outcrops with no clear sediment channel. **Erosion**: ICPSS 2050 Erosion Line (2010 - 2014) no data at this location. EMODnet layer 'Coastal migration from field data' status 'erosion'. **Water features**: A stream flows across the beach resulting in some erosion. Some evidence of stream meanders. **Bedrock**: Bedrock crops out at the cliffs along the coastline. The bedrock geology is Ballyknock Member (Green sandstone, siltstone and mudstone) **Superficial cover**: Superficial cover is predominantly till derived from Devonian sandstones. **Bedrock aquifer**: The bedrock aquifer is classified as a Locally Important Aquifer -Bedrock which is Moderately Productive only in Local Zones. **Karst features**: No karst features identified on GSI viewer. **Groundwater vulnerability**: Classified as extreme. **Landslide susceptibility**: GSI Landslide Susceptibility Classification Description 'Moderately Low'. According to GSI data, landslide susceptibility is low with areas of moderately low along cliffs to the east and west.	**Description**: South-east facing sandy embayment from Garryvoe to Ballywilling fixed by a western headland and exhibiting east-west alongshore transport. Mixed pebble beach with sand in the lower sections. Larger stones and pebbles are found higher up the beach closer to the car park. Local rocky outcrop in the intertidal area. Small dunes. Some evidence of beach rotation. **Geological Heritage Sites:** Encompasses Ballycotton Bay Geological Heritage Area. According to 2023 GSI Report "Threats to the site are mainly from coastal erosion, which is ongoing. The cliffs are not armoured and the sites merits promotion, possibly as part of a south coast geological heritage trail." **Erosion**: The predicted location of the coastline in 2050 due to coastal erosion is above the existing HWM. EMODnet layer 'Coastal migration from field data' status 'stable'. **Water features**: Four rivers drain to the beach; two through the zone. **Bedrock**: Waulsortian Limestones underlie the zone, and these are classified as karstified bedrock meaning karstic features may be present. **Superficial cover**: Superficial cover is predominantly till derived from Devonian sandstones. **Bedrock aquifer**: The bedrock aquifer is classified as a Regionally Important Aquifer - karstified bedrock. **Karst features**: No karst features associated with this Landfall Zone. **Groundwater vulnerability**: 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. **Landslide susceptibility**: GSI Landslide Susceptibility Classification Description 'Low'. According to GSI data, landslide susceptibility is low or low inferred over the entire zone. **Marine Sediment Quality**: Limited sediment quality information is available for Landfall Zone C, although no significant contamination sources occur in the vicinity. Sediment quality is likely to be generally good; Fugro survey results will provide greater certainty on baseline sediment quality and risk. **Erosion**: The predicted location of the coastline in 2050 due to coastal erosion is above the existing HWM. EMODnet layer 'Coastal migration from field data' status 'stable'.	

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
	Marine Sediment Quality: Limited publicly available sediment chemistry data exist for Landfall Zone B, although no significant contamination sources are present nearby. Sediment quality is therefore likely to be generally good.		
Water Resources	**Terrestrial Surface Water Bodies:** Ardra More_010 (IE_SW_19A220720) drains into Outer Cork Harbour at the Eastern section of this Landfall Zone. According to EPA data the 2019-2024 WFD status of Ardra More_01 is Good and the waterbody is not at risk. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions recorded at this location. **Marine Water Quality**: According to EPA data the Coastal Waterbody WFD Status 2016-2021 of Western Celtic Sea (HAs 18;19;20), IE_SW_010_0000 is High. No nearby shellfish water designations or significant pollution sources.	**Terrestrial Surface Water Bodies**: SCHOOLGARDENS_010 (IE_SW_19S290720) drains into Outer Cork Harbour at the Eastern section of this Landfall Zone. According to EPA data the 2019-2024 WFD status of SCHOOLGARDENS_010 is Good and the waterbody is not at risk. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions recorded at this location. **Marine Water Quality**: According to EPA data the Coastal Waterbody WFD Status 2016-2021 of Western Celtic Sea (HAs 18;19;20), IE_SW_010_0000 is High. The bathing water quality at Garryvoe monitoring point (IESWBWC040_0000_0100), ca 440m to the East, was Good in 2024. .	
Climate, including flood risk and Sustainable Development	0.1% AEP (1 in 1000 year) probability of flooding along the beach with 10% AEP (1 in 10 year) probability to the East, according to the National Coastal Flood Hazard Maps	Extensive 10% AEP (1 in 10 year) probability of flooding along the landfall and the Western extents	
Biodiversity	**Benthic Ecology:** Intertidal surveys show a rocky foreshore with confirmed Sabellaria alveolata reef, indicating the presence of a sensitive biogenic reef habitat at the landfall itself. Nearshore and offshore geophysical interpretation, benthic survey data, and national seabed mapping show that the associated offshore cable corridor crosses extensive shallow bedrock, rock and mixed substrate, with limited and locally discontinuous sediment cover in the nearshore section. Sub-bottom profiler interpretation for corridor B demonstrates bedrock outcrops extending across most of the area, before transitioning offshore into a more defined sediment channel. Offshore benthic survey data also	**Benthic Ecology:** Intertidal surveys show a sediment-dominated shoreline (sand, muddy sand, gravel) with no rocky shore and no confirmed intertidal reef at the landfall itself. However, nearshore and offshore geophysical interpretation, benthic survey data, and national seabed mapping consistently show that the associated offshore cable corridor crosses extensive shallow bedrock, rock and mixed substrate, with sediment that is thin, discontinuous, or locally absent. Sub-bottom profiler interpretation demonstrates bedrock outcrop and incised bedrock features across much of the nearshore corridor, with no	**Benthic Ecology:** Intertidal surveys show a sediment-dominated shoreline (sand, muddy sand, gravel) with no rocky shore, no confirmed reef habitat and no biogenic reef structures at the landfall. Nearshore and offshore geophysical interpretation identifies a sediment-filled channel along much of the C1 corridor, providing continuous and locally thick sediment cover. Benthic survey data indicate a predominance of soft sediment habitats with substantially reduced interaction with bedrock-dominated seabed. Alignment within the sediment channel enables true avoidance of bedrock, minimising or eliminating the need for rock cutting, armour

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
	recorded bedrock and cobble / boulder aggregations within the route station range, indicating potential geogenic reef habitat and associated hard substrate benthic assemblages. Project assumptions indicate that where burial is not possible in bedrock-dominated sections, installation would require rock breaking / cutting and potentially post-installation rock armour or other cable protection, resulting in direct and permanent seabed modification.	continuous sedimentary pathway capable of supporting buried cable installation. Rock breaking/cutting represents direct, permanent seabed modification with a high likelihood of irreversible loss or degradation of geogenic reef habitat and associated epifaunal communities.	placement, or other permanent seabed intervention. Any benthic impacts are expected to be temporary and reversible, associated with disturbance to soft sediments rather than habitat loss.
	Fish and Shellfish Ecology: Risks to diadromous fish species during migratory life stages that are features of Lower River Suir SAC and River Barrow and River Nore SAC. Presence of mapped herring spawning grounds, beds and substrates. Overlap with Nephrops grounds. **Marine Mammals and Megafauna**: The proposed landfall and corridor does not directly intersect any SACs designated for marine mammals, nor does the expected ZoI of 3km relating to disturbance overlap within any SAC. Potential for rock breaking would extend the ZoI to 20km. Cable corridor crosses winter feeding ground for large baleen whales including fin whales and humpback Landfall Zone and associated cable corridor is within Celtic Sea Important Marine Mammal Area (IMMA) and An Mhuir Cheilteach Important Shark and Ray Area (ISRA). Fin whales, Annex II harbour porpoise and bottlenose dolphins and Annex II harbour seals and grey seals recorded regularly by MM along cable corridor during winter surveys. Basking shark observed off Landfall Zone C/C1.		
	Intertidal Ornithology: Potential connectivity to Cork Harbour SPA and Ballymacoda Bay SPA, with greater than 1% of SPA populations recorded during baseline surveys - oystercatcher, black-headed gull, lesser black-backed gull and cormorant. Although SPA species were present, all are relatively tolerant of disturbance and generally species recorded in low numbers. Impacts would be short-term and temporary within ZoI of 500m. Seasonal working restriction during the non-breeding season recommended. Connectivity of mobile SCI wintering bird populations associated with nearby SPAs to this Landfall Zone identified **Offshore Ornithology:** Proposed corridor does not directly intersect any SPAs designated for breeding seabirds or wintering / foraging congregations, nor does the expected ZoI of 2km relating to disturbance overlap within any SPAs.	**Intertidal Ornithology**: Potential connectivity to Cork Harbour SPA, Ballycotton SPA and Ballymacoda Bay SPA, with greater than 1% of SPA populations recorded during baseline surveys - oystercatcher, ringed plover, sanderling, black-headed gull, common gull, lesser black-backed gull and cormorant. Although the majority of SPA species are relatively tolerant of disturbance and generally species recorded in low numbers, greater numbers of sanderling (43% of Ballymacoda Bay SPA population) were recorded. Impacts would be short-term and temporary within ZoI of 500m. Seasonal working restriction during the non-breeding season is recommended. **Offshore Ornithology**: Proposed corridor does not directly intersect any SPAs designated for breeding seabirds or wintering / foraging congregations, nor does the expected ZoI of 2km relating to disturbance overlap within any SPAs. Connectivity to Northeast Celtic Sea IBA (Important Bird and Biodiversity Area).	

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
	Connectivity of mobile SCI breeding bird populations associated with nearby SPAs (Cork Harbour SPA, Ballycotton SPA) to this Landfall Zone identified with numbers exceeding 1% SPA breeding population thresholds. Connectivity to Northeast Celtic Sea IBA (Important Bird and Biodiversity Area).		
	Terrestrial Ecology including inshore ornithology: CD3 Fixed dunes (narrow strip can be avoided). FW2 River - and riparian woodland east side landfall - 10m minimum buffer to be maintained. Remaining majority lands primarily low ecological value. Annex I chough probable breeders immediately outside Landfall Zone (cliffs to east) during 2025 breeding season (<1km). Possible Annex II breeding herring gull also in cliffs east of landfall. Large flock of wintering curlew observed regularly in coastal fields here throughout wintering season. BoCCI red-listed yellowhammer and meadow pipit probable breeders recorded by MM within this Landfall Zone during 2025 breeding season. BoCCI amber-listed sand martin colony with confirmed breeding pairs recorded by MM within Landfall Zone during 2025 breeding season.	**Terrestrial Ecology including inshore ornithology**: Localised wetland/GM1 marsh - possibly Annex I. Annex I-type shingle bank habitat. BoCCI amber-listed ringed plover confirmed breeding recorded by MM within Landfall Zone during 2025 breeding season. Regular wintering flocks of Curlew inland fields during winter. No chough breeding noted in area during 2025 breeding bird survey.	

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Cultural Heritage, including Underwater Archaeology	**Terrestrial Archaeology:** May have a direct effect on 8 CH sites (lithic scatters CH001 CO100A001---- and CH002 CO100-031----; standing stone CH003 CO100-055----; UCH sites CH017 UCH001 and CH018 UCH002; townland boundaries CH019 TB001 and CH020 TB002) as well as the shoreline (CH016 AAP001) and a further indirect effect on 3 CH sites (standing stone CH003 CO100-055----; UCH sites CH017 UCH001 and CH018 UCH002). The field in which CH001-002 (Prehistoric site - lithic scatter), CH003 (Standing stone), CH017 and CH018 are higher risk due to the volume of cultural heritage sites within the area. Given the presence of the lithic scatters (CH001–CH002), there is an increased probability of unknown subsurface archaeology within this area. **Underwater Archaeology**: An Archaeological Exclusion Zone (AEZ) to be placed around nearshore wreck site recorded by during 2025 survey, at ITM 591514E 561272N (Latitude 51o 48' 13.1454"N, Longitude -08o 07' 22.9470" W). AEZ to be 50m radius.	**Terrestrial Archaeology:** May have a direct effect on 5 CH sites (fulacht fia CH001 CO089-076----; townland boundaries CH021 TB01 and CH028 TB002; vernacular structure CH022 UCH01; shoreline CH026 AAP001) and a further indirect effect on 4 CH sites (house CH002 CO077-041----/2870; ringfort CH003 CO077-040----; enclosures CH004 CO089-011002- and CH005 CO089-011001-). The areas around CH001 (Prehistoric site - lithic scatter) and CH027 (Cropmarks, AAP002) are higher risk than CH021 (Midden). In the case of CH027, the entire field is marked as higher risk due to the unknown extent of the potential archaeological deposits which may be indicated by the cropmarks. **Underwater Archaeology**: An archaeological dive inspection recommended of the previously unrecorded shipwreck at ITM 600857E, 567693N (Latitude 51o 51' 41.1960"N, Longitude -07o 59' 15.2046" W), which is located approx. 130m west of Cork 1 centreline and 50m east of Cork 1C centreline. A programme of archaeological intertidal investigation is recommended of the submerged woodland remains as exposed in February 2026, and archaeological intertidal testing at the proposed landfall centrepoint, which is approx. 290m west of exposed area. Archaeological monitoring of seabed and foreshore disturbance activities during construction.	
Traffic and Transport	**Road Traffic and Transport**: Ballycroneen 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 the cable route. **Shipping and Navigation**: Crosses the main regional shipping route from TSS Off Tuskar Rock to the Port of Cork, twice. The east crossing creates a shallow-angle to the shipping route, which increases the impact of the cable laying operation on navigation. Total length of crossings approximately 16 nm. Crosses in the vicinity of one dangerous shipwreck, near the cardinal mark off Ballyshane.In the vicinity of three non-dangerous wrecks.	**Road Traffic and Transport**: The local roads (including regional road R632) immediately surrounding Landfall Zone C are two lanes wide, they would only require partial lane closure if part of the cable route and would not significantly disturb traffic flows. Cycle Route EV1 could be impacted by associated cabling/construction routes. **Shipping and Navigation**: Crosses the main regional shipping route from TSS Off Tuskar Rock to the Port of Cork. Corridor C almost follows the shipping route for a total distance of approximately 11.5 nm up to the point where it crosses the Celtic cable buffer zone. The type of crossing suggests increased impact of the cable laying operation on navigation. Notices to mariners and precautionary measures will have to	**Road Traffic and Transport**: The local roads (including regional road R632) immediately surrounding Landfall Zone C are two lanes wide, they would only require partial lane closure if part of the cable route and would not significantly disturb traffic flows. Cycle Route EV1 could be impacted by associated cabling/construction routes. **Shipping and Navigation**: Crosses the main regional shipping route from TSS Off Tuskar Rock to the Port of Cork, in a shallow angle to the shipping route, and then almost follows the shipping route before it cuts perpendicularly across it again to the North. It intersects the shipping route for a total distance of approximately 22.5 nm. The type of crossing suggests the highest impact of the cable laying

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
		be deployed. Crosses in the vicinity of three non-dangerous wrecks.	operation on navigation compared to the other options. Notices to mariners and precautionary measures will have to be deployed. Appears to follow a tertiary route used by fishing and recreational vessels, in towards, or out of Ballycotton. Crosses in the vicinity of three non-dangerous wrecks.
Seascape, Landscape and Visual	Contained in LCA Broad Bay Coast which has a High Value Landscape (HVL) designation. Designated Scenic Route follows coast road between 500 -100m inland but visibility very unlikely. This Landfall Zone encompasses the enclosed Ballycroneen Beach / Ballybranagan Beach with public car parks at each end highlighting public recreational and amenity value. Assumed that the TJB will be in coastal farmland above sea cliff at back of beach. Trenching through the beach will have considerably greater construction stage impact than HDD. Operation stage effects very localised.	Contained in LCA Broad Bay Coast which has a High Value Landscape (HVL) designation. Designated Scenic Route follows coast road less than 1km inland and allows slightly elevated views toward subject section of coastline. This Landfall Zone encompasses the open, sandy Garryvoe Beach / Ballinwilling Beach with public car parks at each end highlighting public recreational and amenity value. Garryvoe Hotel also overlooks western end of Strand, albeit set back from the beach. Aside from Garryvoe Beach settlement at western end, the rural area is lightly populated with rural dwellings / farmsteads that have limited visibility of beach. Assumed that the TJB will be in coastal farmland above sea cliff at back of beach. Garryvoe Caravan Park adjacent to western end of Landfall Zone. Trenching through the beach will have considerably greater construction stage impact than HDD. Operation stage effects very localised.	
Aviation and Telecommunications	No location specific risks identified at this Landfall Zone. EirGrid will continue to engage with key stakeholders such as other developers, the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops.	There is a planned submarine telecoms cable called 'COAM' (Kabel van Cork near Katwijk: Kitwijk, The Netherlands, to Cork) and its route is like C/C1's. EirGrid has engaged with the developer and it is understood that that project is not progressing. EirGrid will continue to engage with key stakeholders such as other developers, the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops.	
MCA Ranking (Environmental)			

B.1.4 Social Considerations

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Settlement and Communities, including coastal and fishing communities	**Settlements:** The nearest settlement is Aghada-Farsid-Rostellan, approximately 6km northwest of Landfall Zone. **Communities:** Ballycroneen National School is approximately 400m from the perimeter of the Landfall Zone, this can be expected to have a wide catchment area and for communities to be impacted by local road closures and disruption. A small number of residential properties and farm buildings along the local road, approaching the beach. **Commercial fisheries**: Avoids close proximity to fishing port of Ballycotton.	**Settlements:** The nearest settlement is Shanagarry, approximately 1.6km west of Landfall Zone **Communities:** A mobile home park is located to the west of the zone. A car park to the east of the zone. Residential properties along An Tra Geal just to the west of the zone and along the R632 **Commercial fisheries**: Avoids close proximity to fishing port of Ballycotton.	**Settlements:** The nearest settlement is Shanagarry, approximately 1.6km west of Landfall Zone **Communities:** A mobile home park is located to the west of the zone. A car park to the east of the zone. Residential properties along An Tra Geal just to the west of the zone and along the R632. **Commercial Fisheries** This corridor runs closest to Ballycotton harbour which is a significant hub for commercial fishing activity. Potential for some disruption to fishing activities during surveys and construction
Visitors and Commuters	This beach offers bathing, fishing, surfing and recreational amenity value to locals and tourists. A favourite fishing grounds for Atlantic Bass with competitions on a regular basis. Ballycroneen National School is north of the zone and can be expected to have a wide catchment area with commuters dropping children at school.	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. This beach offers bathing, fishing, surfing and recreational amenity value to locals and tourists. A beach break in proximity offers good surf at all stages of the tide.	
Amenities, Recreation and Tourism	Amenity value for shore fishing, swimming and angling. Yoga sessions on the beach, and a sauna service operating in the area. No differentiators in terms of Failte Eireann Accommodation Density hotspot type. No marinas or blue flag beaches in proximity. Sailing and sea-kayaking activity all along the coast.	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. Ballinwilling 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. 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). Sailing and sea-kayaking activity all along the coast No differentiators in terms of Failte Eireann Accommodation Density hotspot type. No marinas or blue flag beaches in proximity, although Garryvoe Designated Beach is an identified bathing water		

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Nuisance and Disturbance	The construction phase can be expected to cause nuisance and disturbance during the construction phase		
Visual Effects	Designated Scenic Route follows coast road between 500 -100m inland but visibility very unlikely. This Landfall Zone encompasses the enclosed Ballycroneen Beach / Ballybrangan Beach with public car parks at each end highlighting public recreational and amenity value. Lightly populated with rural dwellings / farmsteads that have limited visibility of beach. Operation stage effects expected to be very localised.	Designated Scenic Route follows coast road less than 1km inland and allows slightly elevated views toward subject section of coastline. This Landfall Zone encompasses the open, sandy Garryvoe Beach / Ballinwilling Beach with public car parks at each end highlighting public recreational and amenity value. Garryvoe Hotel also overlooks western end of Strand, albeit set back from the beach. Aside from Garryvoe Beach settlement at western end, the rural area is lightly populated with rural dwellings / farmsteads that have limited visibility of beach. Garryvoe Caravan Park adjacent to western end of Landfall Zone. Trenching through the beach will have considerably greater construction stage impact than HDD. Operation stage effects very localised.	Designated Scenic Route follows coast road less than 1km inland and allows slightly elevated views toward subject section of coastline. This Landfall Zone encompasses the open, sandy Garryvoe Beach / Ballinwilling Beach with public car parks at each end highlighting public recreational and amenity value. Garryvoe Hotel also overlooks western end of Strand, albeit set back from the beach. Aside from Garryvoe Beach settlement at western end, the rural area is lightly populated with rural dwellings / farmsteads that have limited visibility of beach. Garryvoe Caravan Park adjacent to western end of Landfall Zone. Trenching through the beach will have considerably greater construction stage impact than HDD. Operation stage effects expected to be very localised.
MCA Ranking (Social)			

B.1.5 Deliverability Considerations

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Implementation Timelines	**Overall cable:** 62.6km **Ploughing/jetting:** 56.2km **Trenching/remedial protection:**6.4km The proposed shore-end landing solutions for each site would be broadly similar, including an HDD length of approximately 1,200 m. An increase in cable route length will result in a proportionate increase in installation duration. For an	**Overall cable:** 49.5km **Ploughing/jetting:** 37.3km **Trenching/remedial protection:**12.1km The proposed shore-end landing solutions for each site would be broadly similar, including an HDD length of approximately 1,200 m. An increase in cable route length will result in a proportionate increase in installation duration. For	**Overall cable:** 66.5km **Ploughing/jetting:** 54.4km **Trenching/remedial protection:** 12.1km The proposed shore-end landing solutions for each site would be broadly similar, including an HDD length of approximately 1,200 m. An increase in cable route length will result in a proportionate increase in installation duration. For

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
	increase of only a few kilometres, the additional installation time is expected to be on the order of several days. Cable trenching presents the greatest level of uncertainty due to the limited geotechnical and geophysical data currently available. Consequently, any estimate of the trenching duration can only be made at an order-of-magnitude level until further site investigation data become available. Based on the current level of design development and the limited geotechnical information available, differentiating installation durations between the landfall options would be largely subjective. Although there is an approximate 17 km difference between the longest and shortest overall cable routes, together with differences of approximately 6.7 km in plough/jetting lengths and 5.7 km in trenching/remedial protection requirements, these variations cannot yet be reliably translated into programme differences. Until the geotechnical conditions are confirmed, the installation methodologies and associated production rates remain uncertain. Consequently, the landfall options are currently considered to present broadly comparable installation timelines. The assessment considers all currently identified project activities and associated constraints. Where surveys cannot be completed within the required timeframe, the resulting uncertainty and any associated programme impacts have been reflected in the assessment. In addition, the potential for planning conditions to impose seasonal constraints on works has been recognised as a project risk and will be factored into the project delivery programme where applicable.	an increase of only a few kilometres, the additional installation time is expected to be on the order of several days. Cable trenching presents the greatest level of uncertainty due to the limited geotechnical and geophysical data currently available. Consequently, any estimate of the trenching duration can only be made at an order-of-magnitude level until further site investigation data become available. Based on the current level of design development and the limited geotechnical information available, differentiating installation durations between the landfall options would be largely subjective. Although there is an approximate 17 km difference between the longest and shortest overall cable routes, together with differences of approximately 6.7 km in plough/jetting lengths and 5.7 km in trenching/remedial protection requirements, these variations cannot yet be reliably translated into programme differences. Until the geotechnical conditions are confirmed, the installation methodologies and associated production rates remain uncertain. Consequently, the landfall options are currently considered to present broadly comparable installation timelines. The assessment considers all currently identified project activities and associated constraints. Where surveys cannot be completed within the required timeframe, the resulting uncertainty and any associated programme impacts have been reflected in the assessment. In addition, the potential for planning conditions to impose seasonal constraints on works has been recognised as a project risk and will be factored into the project delivery programme where applicable.	an increase of only a few kilometres, the additional installation time is expected to be on the order of several days. Cable trenching presents the greatest level of uncertainty due to the limited geotechnical and geophysical data currently available. Consequently, any estimate of the trenching duration can only be made at an order-of-magnitude level until further site investigation data become available. Based on the current level of design development and the limited geotechnical information available, differentiating installation durations between the landfall options would be largely subjective. Although there is an approximate 17 km difference between the longest and shortest overall cable routes, together with differences of approximately 6.7 km in plough/jetting lengths and 5.7 km in trenching/remedial protection requirements, these variations cannot yet be reliably translated into programme differences. Until the geotechnical conditions are confirmed, the installation methodologies and associated production rates remain uncertain. Consequently, the landfall options are currently considered to present broadly comparable installation timelines. The assessment considers all currently identified project activities and associated constraints. Where surveys cannot be completed within the required timeframe, the resulting uncertainty and any associated programme impacts have been reflected in the assessment. In addition, the potential for planning conditions to impose seasonal constraints on works has been recognised as a project risk and will be factored into the project delivery programme where applicable.
Permits and Wayleaves	No explicit limitations have been identified that would limit or hinder the HDD or nearshore works.		

Location	Landfall Zone B	Landfall Zone C	Landfall Zone C1
Project Plan Flexibility	Onshore access presents greater challenges due to steeper terrain, with landowner issues also being more complex in this area.	Where onshore spatial constraints are reduced, rock outcrops are less significant, residual sedimentary cover is more favourable, and suitable water depths can be achieved within an acceptable HDD length, the proposed sites may offer flexibility for the shore-end landing design.	
Design Complexity, Uncertainty, Risk	The extreme elevation changes at this site are likely to necessitate complex engineering solutions for both the HDD and open-cut options, resulting in increased design complexity and potentially prohibitive construction costs. These challenges are further compounded by spatial constraints, which limit the availability of suitable locations for the HDD construction compound.	Although the cable system design is not inherently complex, the current limitations in geophysical and geotechnical data result in elevated uncertainty and unquantified risks. Consequently, the relative risk profile between the candidate sites provides only marginal differentiation. However, it is still an important criterion to be assessed. Onshore Landfall C presents good potential for the HDD works. Similarly, the offshore alignment is optimised, with the HDD punch-out location situated at the 6-10 m contour. While challenging bedrock conditions are present, the combined onshore and offshore advantages, together with the shorter cable route, make this site more favourable.	Although the cable system design is not inherently complex, the current limitations in geophysical and geotechnical data result in elevated uncertainty and unquantified risks. Consequently, the relative risk profile between the candidate sites provides only marginal differentiation. However, it is still an important criterion to be assessed. Landfall Zone C1 utilises the same onshore and HDD punch-out locations and is therefore directly comparable. However, the offshore cable routing for this option may require an additional 17 km of export cable. While this represents an increase in route length, it may provide a significantly improved cable burial and protection environment, potentially reducing installation costs and lowering overall risk and uncertainty. However, If HDD profile C2 were used to align with the sediment channel, the restricted water depth (6m) at the 1200m HDD duct limit would increase the complexity of the cable pull-in operation and would necessitate a multi-vessel solution.
MCA Ranking (Deliverability)			

B.2 Evaluation of Grid Connection Subzones

B.2.1 Technical Considerations

Location	CRK01	CRK02	CRK03	CRK04
Compliance with Health and Safety Standards	**220kV OHL connection works health and safety considerations:** ● This subzone requires the cable/OHL to traverse ca. 1 km to loop-in to the 220kV OHLs. ● This connection may necessitate crossings of a gas transmission line, a road, two 110kV OHLs and numerous residential properties. **Existing subzone infrastructure health and safety considerations:** The following infrastructure and utilities will require design and construction setback distances or enabling works: ● MV OHL at the southern boundary of the subzone. **Site access sightlines:** ● Entrance to site is likely along a straight road. Clear sightlines are likely to be achievable.	**220kV OHL connection works health and safety considerations:** ● The 220kV OHL passes through the north-eastern corner of the subzone which limits the extent of OHL connection works. **Existing subzone infrastructure health and safety considerations:** The following infrastructure and utilities will require design and construction setback distances or enabling works: ● 220kV OHL which intersects the site in the north. ● Old farming building at eastern edge of the subzone. ● 110kV OHL which intersects the southeastern side of the subzone. ● Two separate gas transmission pipelines within the west and the south of the subzone. **Site access sightlines:** ● Entrance to site is likely along a straight road. Clear sightlines are likely to be achievable.	**220kV OHL connection works health and safety considerations:** ● The 220kV OHL passes through the north of this subzone which limits the extent of OHL connection works. **Existing subzone infrastructure health and safety considerations:** The following infrastructure and utilities will require design and construction setback distances or enabling works: ● 220kV OHL intersects the site in the north. ● MV OHL on the inside boundary of the southern side of the subzone. **Site access sightlines:** ● Entrance to site along a road with bends. Further investigation may be required to determine if clear sightlines are achievable.	**220kV OHL connection works health and safety considerations:** ● The 220kV OHL passes through the subzone along the eastern side which limits the extent of OHL connection works. **Existing subzone infrastructure health and safety considerations:** The following infrastructure and utilities will require design and construction setback distances or enabling works: ● Two separate gas transmission pipelines running parallel north to south through the site. ● 220kV OHL which intersects the site along the east. ● 110kV OHL which intersects through the centre of the subzone diagonally, which would need to be diverted as part of enabling works. ● 20kV OHL which intersects the site from the northwest corner, running diagonally to the centre south, which would need to be diverted as part of enabling works. **Site access sightlines:** ● Entrance to site is likely along a straight road. Clear sightlines are likely to be achievable.
Expansion or Extendibility	There is a large amount of land available for expansion.	There is a large amount of land available for expansion, although the existing infrastructure and utilities may constrain its extent.	There is land available for expansion, however, the presence of two RMP receptors within the site boundary would constrain its extent.	There is minimal land available for expansion

Location	CRK01	CRK02	CRK03	CRK04
Constructability (Ground Conditions and Marine Processes)	**Topography:** ● Subject to micrositing moderate cut and fill may be required on site. **Geotechnical and geophysical:** ● No Faults identified on or adjacent to this site. ● No Karst features were recorded on or adjacent to the site. ● Low landslide susceptibility is recorded on site. ● No active quarries are recorded on site. **Ground condition mapping:** ● Mapping shows agricultural land with some wet land in the centre, site investigation required to confirm condition. Quarry recorded approx. 100m south, now appears to be used for drainage.	**Topography:** ● It is unlikely that significant cut and fill will be required. **Geotechnical and geophysical:** ● A northeast to southwest orientated fault is present in the north of the site. ● No Karst features were recorded on or adjacent to the site. ● Areas of low to moderately low landslide susceptibility are recorded to the west of the site. ● No active quarries are recorded on site. **Ground condition mapping:** ● Mapping shows agricultural land and historic wet land and a possible water feature to the east of the site (unlabelled). Historic water feature could be indicative of soft sediments and may lead to differential settlement in the future.	**Topography:** ● It is likely that the substation will need to be located towards the southwestern corner of the subzone (due to potential archaeological restrictions). As a result, cut and fill may be required due to slope within this part of the site available for development. **Geotechnical and geophysical:** ● No Faults identified on or adjacent to this site. ● No Karst features were recorded on or adjacent to the site. ● Areas of low landslide susceptibility are recorded to the south of the site. ● No active quarries are recorded on site. **Ground condition mapping:** ● Mapping shows agricultural land.	**Topography:** ● It is likely that the 220kV ESB substation will be in the eastern side of the subzone between the two gas pipelines, while the EirGrid OCC compound may either be in the same eastern side or located within the western side of the subzone. ● Cut and fill will be required due to slope if either the OCC or the ESB substation was to be sited in the southern portions of this subzone. **Geotechnical and geophysical:** ● No Faults identified on or adjacent to this site. ● No Karst features were recorded on or adjacent to the site. ● Areas of low landslide susceptibility are recorded to the south of the site. ● No active quarries are recorded on site. **Ground condition mapping:** ● Mapping shows agricultural land.
Access	This subzone may be located on land that has been optioned for other developments. Connection into the 220kV OHLs requires approx 1 km of cable/OHL **Cable route access (Subzone to wider road network)** ● The subzone requires a section of off-road UGC through third party lands as the boundary is not directly adjacent to the road.	Direct UGC access from road to the subzone with no major utility crossings if the southern gas transmission line is avoided. The 220kV OHLs intersect the subzone. **Cable route access (Subzone to wider road network)** ● Cable route access to the subzone from the southern road directly adjacent to the boundary, or from a road to the east in which off-road UGC	Short length of off-road UGC required in third party lands and for HGV access to site. There is a likely gas pipeline crossing to the south of the subzone. OHLs cross through the site and this subzone may be able to contain all the necessary infrastructure. **Cable route access (Subzone to wider road network)** ● Cable route access to the subzone may require a section of off-road routing through third party lands. If the selected cable route enters the	Direct UGC access from road to the subzone with two high pressure gas main crossings and one double circuit 220kV OHL, 110kV OHL/UGC crossing and 20kV OHL/UGC crossing to reach the western side of the subzone for a potential siting of the OCC. One gas transmission line crossing, one potential 110kV OHL/UGC and one potential 20kV OHL/UGC crossing required to thereafter route from the OCC to the 220kV ESB substation sited in the eastern side of the subzone. **Cable route access (Subzone to wider road network)**

Location	CRK01	CRK02	CRK03	CRK04
	There are also two 110kV OHLs to the north of the site. **220kV OHL connection access to the Subzone** ● The double 220kV OHL is approx. 1km away from subzone. ● OHL loop-in via associated towers, Line Cable Interface Masts (LCIMs) or Cable Sealing End Compounds in close proximity to the existing OHLs. For the LCIMs and Cable Sealing End Compounds, cable routing from these to the substation (within the subzone) will be necessary. ● Cable circuit loop-in to the 220kV OHL requires 4 circuits to pass a gas transmission line, a roadway and around residential properties. ● OHL circuit loop-in to the 220kV OHL requires the 4 circuits to pass two 110kV OHLs north of the site and numerous roadside residential properties which would need to be routed around and a road. **HGV access** ● Assuming access from Whitegate on R630, route follows a wide single lane road (L3647) for approx 1.5km - access is good. ● Low residential density along the route. ● Construction vehicles would likely be required to pass under 2	required through third-party lands. ● Cable route should avoid intersecting the gas transmission line south of the subzone if possible. **220kV OHL connection access to the Subzone** ● OHL loop-in via associated towers, LCIMs or Cable Sealing End Compounds in close proximity to the existing OHLs. For the LCIMs and Cable Sealing End Compounds, cable routing from these to the substation (within the subzone) will be necessary. ● Depending on 220kV OHL cable termination location, the double 220kV OHL intersects the subzone, however it may require further infrastructure outside of the subzone for either OHL loop-in or cable loop-in. ● Depending on 220kV OHL cable termination location, the circuit loop-in may require crossing of a gas transmission line, roadway and around residential properties. **HGV access** ● Assuming access from Whitegate on R630, route follows a single lane road (L3647) for 1.8km - access is good. ● Low residential density along the route.	subzone from the south along the southeastern local road, it will intersect a gas transmission next to the subzone. **220kV OHL connection access to the Subzone** ● OHL loop-in via associated towers, LCIMs or Cable Sealing End Compounds in close proximity to the existing OHLs. For the LCIMs and Cable Sealing End Compounds, cable routing from these to the substation (within the subzone) will be necessary. ● Depending on 220kV OHL cable termination location, The double 220kV OHL intersects the subzone, however it may require further infrastructure outside of the subzone for either OHL loop-in or cable loop-in. **HGV access** ● Access from Whitegate R630, route follows a single lane road (L3647) for 3.4km and passes over a small bridge, reaching the site from the north. There is low residential density along the route, however construction vehicles may be required to pass under 2 x 220kV OHLs near the site entrance. ● Access from Whitewell Cross follows a local road south of L3651 before reaching the site from the south. There is low residential density along the route. **Access road:**	● Cable route access to the subzone from the southern road directly adjacent to the boundary. ● Cable route will intersect the two gas transmission lines and the 220kV OHL upon entry to the GIS OCC. **220kV OHL connection access to the Subzone** ● OHL loop-in via associated towers, LCIMs or Cable Sealing End Compounds in close proximity to the existing OHLs. For the LCIMs and Cable Sealing End Compounds, cable routing from these to the substation (within the subzone) will be necessary. ● The ESB substation is likely to be located directly adjacent to the double circuit 220kV OHL which intersects the subzone. ● Further infrastructure outside of the subzone identified may be required for either OHL loop-in or cabling back to the ESB substation. ● As the GIS OCC and ESB substation may be located in separate fields, cable routing between the two compounds and a gas transmission line crossing will be required for the connection. **HGV access** ● Assuming access from Whitegate on R630, route follows two-lane local roads (L3648 and L3650) for 1km - access is good. ● Moderate residential density along the local roads. ● Construction vehicles shall be required to pass under the 220kV,110kV and 20kV OHL to the south of the site which is located next to the road. **Access road:** ● Subzone has a large road frontage with the L3648.

Location	CRK01	CRK02	CRK03	CRK04
	x 110kV OHLs which run parallel to the road in front of the subzone. **Access road:** ● Ca. 150m access road required to connect local road to the subzone boundary.	● Construction vehicles may be required to pass under a 110kV OHL near the south of the site which is located next to the road. **Access road:** ● Subzone has a large road frontage with the L3047.	● Ca. 150m access road required to connect local road to the subzone boundary.	● Ca. 80m access road required to enter field where ESB substation shall be located., separate new internal access road to the OCC may also be required. ● As per the WG-I-01 development plan, any development proposals shall provide for the upgrading of the county road adjoining the site up to the junction with the R630 regional road.
Physical Constraints	No major utilities intersect this subzone **Above ground utilities:** ● Short length of LV and MV OHL at the southern boundary of the subzone, however this may not necessitate enabling works. **Underground utilities:** ● No underground utilities pass through this subzone. **Waterways:** ● No waterways pass through this subzone **Flooding:** ● This subzone is not located within any flood zones. **Other physical constraints:** ● None identified	220kV, 110kV OHLs and gas transmission lines intersect the site, and there is a disused farm building to the east within the subzone. **Above ground utilities** ● 220kV OHL intersects the northeast corner of the subzone. ● 110kV OHL intersects the southeast corner of the subzone, however this may not necessitate enabling works. **Underground utilities:** ● Two separate gas transmission lines pass under the subzone; one in the northwestern corner and one in the southern corner. **Waterways** ● No waterways pass through this subzone ● A possible stream may mark the townland boundary of Ardnabourkey and Ballynookery, from a review of available aerial imaging and historic mapping (further to Cultural Heritage review:	220kV OHLs intersect the subzone, however there are two RMP receptors Zones of Notification archaeological sites which severely constrain the subzone. **Above ground utilities** ● 220kV OHL intersects the subzone in the north. ● A single phase MV OHL intersects the southern end of the subzone. **Underground utilities** ● No underground utilities pass through this subzone. **Waterways** ● No waterways pass through this subzone **Flooding** ● This subzone is not located within any flood zones. **Other physical constraints:** ● Two RMP receptors and their Zones of Notification within site boundary (CH038 and CH039, both Ringfort-raths).	220kV, 110kV and 20kV OHLs and two gas transmission lines intersect the subzone. **Above ground utilities** ● 220kV OHL intersects the subzone from north to south on the eastern side ● 110kV OHL which intersects through the centre of the subzone diagonally. This will likely need to be diverted. ● 20kV OHL which intersects the site from the northwest corner, running diagonally to the centre south. This will likely need to be diverted. **Underground utilities** ● Two separate gas transmission pipelines running parallel north to south through the centre and the east of the site. **Waterways** ● No waterways pass through this subzone **Flooding** ● This subzone is not located within any flood zones. **Other physical constraints:** ● There is a slope greater than 4% towards the road at the southern end of the subzone.

Location	CRK01	CRK02	CRK03	CRK04
		Flooding: ● This subzone is not located within any flood zones. **Other physical constraints:** ● Disused farm buildings on the eastern side of the subzone which will require enabling works.		
MCA Ranking (Technical)				

B.2.2 Economic Considerations

Location	CRK01	CRK02	CRK03	CRK04
Capital Cost	Longest length of cable circuit for connection to the 220kV OHL, longest access road required and largest number of individual landowners in comparison to the other subzones. **Proximity to 220kV OHL connection:** • This subzone is located 1000m away from the 220kV OHL, therefore 4 x 1km 220kV cable circuits required. • Permits, wayleaves and coordination with GNI will also be required for offroad trenching and the gas transmission crossing. **Landholding requirement:** • This subzone encompasses the largest number of individual	The OHL connection is within the subzone. A short access road is required and disused farm buildings may need to be cleared, (a bat and hazardous material assessment may also need to be completed). **Proximity to 220kV OHL connection:** • The existing 220kV OHL intersects this subzone; thus the shortest length of 220kV loop-in cable is required. **Landholding requirement:** • This subzone encompasses the smallest number of individual landowners (one). which would necessitate only one landowner agreement • Subzone landtake size of 20 - 98 acres. **Additional works:**	The OHL connection is within the subzone. A short access road is required. **Proximity to 220kV OHL connection:** • The existing 220kV OHL intersects this subzone; thus the shortest length of 220kV loop-in cable is required. **Landholding requirement:** • This subzone encompasses the second largest number of individual landowners (five), which may necessitate the establishment of multiple landowner agreements. • Subzone landtake size of 20 - 62 acres **Additional works**	The OHL connection is within the subzone and a short access road is required. Enabling works will be required to divert the 110kV and 20kV OHLs via underground cable to accommodate the grid connection infrastructure. **Proximity to 220kV OHL connection:** • The existing 220kV OHL intersects this subzone; thus the shortest length of 220kV loop-in cable is required. **Landholding requirement:** • This subzone encompasses the smallest number of individual landowners (one). which would necessitate only one landowner agreement • Subzone landtake size of 20 - 48 acres. **Additional works:**

Location	CRK01	CRK02	CRK03	CRK04
	landowners (six), which may necessitate the establishment of multiple landowner agreements. • Subzone landtake size of between 20 - 78 acres. **Additional works:** • Ca. 160m farm track from the road may require upgrading.	• Disused farm buildings on the eastern side of the subzone may need to be cleared which could contain bats and/or hazardous materials.	● Ca. 25m or 150m farm track from the road may require upgrading ● Potential archaeological features maintenance / mitigation costs ● Single phase MV OHL intersecting the site in the south may require redirection.	● Enabling works will be required to divert the 110kV and 20kV OHLs via underground cable to accommodate the grid connection infrastructure. ● HDDs will be required for crossing of the two gas transmission lines for the incoming export cable connection to the GIS OCC and for the subsequent connection to the ESB substation.
Life Cycle Costs	Maintenance requirements for cable / OHL routing from site to the OHL, or LCIMs external to the grid infrastructure site will be greater than alternatives.	Cable / OHL grid connection circuit maintenance costs will be minimal due to short length.	Cable / OHL grid connection circuit maintenance costs will be minimal due to short length.	Cable / OHL grid connection circuit maintenance costs will be minimal due to short length.
MCA Ranking (Economic)				

B.2.3 Environmental Considerations

Location	CRK01	CRK02	CRK03	CRK04
Land use compatibility, other site users and planning policy	**Current land use:** Site is within agricultural fields. **Planning applications:** No planning applications associated with the lands at the time of checking (23 Feb 26). Historic 6-inch mapping shows Ardnabourkey Farm on the adjacent plot. **Land ownership:** Land contains privately owned agricultural fields. **Zoning:** Within zoned Special Policy Area WG-X-01 Whitegate / Aghada (388ha): Area with potential for major, large-scale energy and renewable	**Current land use:** Site includes one agricultural property and associated fields. **Planning applications:** Three planning permissions granted (245549, 254784 and 254783) for dwelling houses at this location. Nothing of obvious note recorded in Historic 6-inch mapping. **Land ownership:** Land is privately owned agricultural fields and dwellings.	**Current land use:** Site is within agricultural fields. **Planning applications:** No planning applications associated with the lands at the time of checking (26 Feb 26). Nothing of obvious note recorded in Historic 6-inch mapping **Land ownership:** Land is privately owned agricultural fields. **Zoning:** No land use zoning associated with this location.	**Current land use:** Site is within agricultural fields with residential and agricultural dwellings adjacent. it is also adjacent to the Aghada 220kV substation. **Planning applications:** Multiple planning permissions have been sought and granted in relation to the existing 220kV substation to the north of the subzone. Planning was granted in 2020 by Cork County Council (20/5788) for a ca. 2MW computing facility on

Location	CRK01	CRK02	CRK03	CRK04
	energy related development, including port-related activities and bulk liquid storage and processing activities.	**Zoning:** No land use zoning associated with this location.		ESB lands directly adjacent to the west of the subzone which may require access or cable routing interacting with this subzone. Two planning applications were granted by Cork County Council in 2023 for change of farm entrance to domestic site entrance for a site in the southeast corner of the subzone. Nothing of obvious note recorded in Historic 6-inch mapping. A planning application was granted by Cork County Council in 2020 for a 2MW computing facility on ESB lands directly adjacent to the west of the subzone which may require access or cable routing interacting with this subzone. **Land ownership:** Land within the subzone is owned by Irelands Electricity Supply Board (ESB) and is retained as agricultural land. **Zoning:** Most of the sub-zone is zoned for Industry (WG-I-01). The southwest corner of the subzone is located within an area for Green Infrastructure (WG-GC-07) and is adjacent to Cork Harbour SPA. The zoning objectives are: ● WG-I-01: Development of small to medium scale energy related uses, including research and development, maintenance and transport uses. Any development proposals shall

Location	CRK01	CRK02	CRK03	CRK04
				provide for the upgrading of the county road adjoining the site up to the junction with the R630 regional road. ● WG-GC-07: Retain open space where existing land uses will remain largely unchanged. This zone is adjacent to Cork Harbour Special Protection Area and is not suitable for development. The area makes a significant contribution to the attractiveness of longer distance views from the Cobh area and provides important visual and physical separation between the village of Whitegate and industrial areas to the north and east. The zoning objective for WG-GC-07 states that this zone is not suitable for development
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Description:** Sandstone till (Devonian) subsoil. Till is sediment deposited by or from glacier ice with isolated bedrock at or close to surface to the south of the subzone. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock:** Solid Geology comprises Old Head Sandstone Formation (Flaser-bedded sandstone & minor mudstone), Ballyknock Member (green sandstone, siltstone & mudstone).	**Description:** Sandstone till (Devonian) subsoil. Till is sediment deposited by or from glacier ice. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock:** Bedrock geology consists of a mix of Ballyknock member (green sandstone, siltstone and mudstone), Old Head Sandstone Formation (Flaser-bedded sandstone and minor mudstone), and Cuskinny Member (Flaser-bedded sandstone and mudstone).	**Description:** Sandstone till (Devonian) subsoil. Till is sediment deposited by or from glacier ice. Some bedrock at surface. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock:** Bedrock geology consists of Ballyknock member (green sandstone, siltstone and mudstone). **Superficial cover:** Till derived from Devonian sandstones	**Description:** Clayey Shale till (Lower Palaeozoic) Till is sediment deposited by or from glacier ice. **Geological Heritage Sites:** No geoheritage data recorded at this site. **Bedrock:** Solid Geology comprises Ballyknock Member and Old Head Sandstone Formation **Superficial cover:** Till derived from Devonian sandstones

Location	CRK01	CRK02	CRK03	CRK04
	Superficial cover: Till derived from Devonian sandstones **Bedrock aquifer:** Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones with isolated areas of Extreme Vulnerability where the groundwater has natural characteristics that make it extremely vulnerable to contamination by human activities. **Karst features:** No karst features or faults at or in close proximity to this subzone. **Groundwater vulnerability:** Groundwater vulnerability is classified as extreme, with some rock at or near the surface in the immediate vicinity. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is "Low".	**Superficial cover:** Till derived from Devonian sandstones **Bedrock aquifer**: The bedrock aquifer is classified as a Locally Important Aquifer -Bedrock which is Moderately Productive only in Local Zones, with areas of High and Extreme Vulnerability where the groundwater has natural characteristics that make it vulnerable / extremely vulnerable to contamination by human activities. **Karst features:** No karst features identified on GSI viewer. Fault along northern section. **Groundwater vulnerability**: Groundwater vulnerability is classified as extreme, with some areas of high and some rock at or near the surface in the immediate vicinity. **Landslide susceptibility:** Low Landslide Susceptibility Classification. Areas of low to moderately low landslide Susceptibility are recorded to the West - 1976 site investigation records available for a Gas Pipeline in proximity	**Bedrock aquifer:** The bedrock aquifer is classified as a Locally Important Aquifer -Bedrock which is Moderately Productive only in Local Zones. **Karst features:** No karst features identified on GSI viewer. **Groundwater vulnerability**: Groundwater vulnerability is classified as extreme. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is "Low". Areas of low to moderately low landslide Susceptibility are recorded to the South.	**Bedrock aquifer:** The bedrock aquifer is classified as a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones **Karst features:** No karst features or faults at or near this sub-zone **Groundwater vulnerability:** Groundwater vulnerability is extreme **Landslide susceptibility:** Low Landslide Susceptibility Classification
Water Resources	● No EPA watercourses at this location. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● No EPA watercourses at this location, however, a possible stream may mark the townland boundary of Ardnabourkey and Ballynookery, from a review of available aerial imaging and historic mapping (further to Cultural Heritage review). ● No protected Salmonid Rivers, nutrient sensitive rivers or	● No EPA watercourses at this location. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● No EPA watercourses at this location. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location

Location	CRK01	CRK02	CRK03	CRK04
		drinking water rivers at this location		
Climate, including flood risk and Sustainable Development	No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data Viewer associated with this location			
Biodiversity	Not located within or near (within 1km) of a designated site. Habitats within Subzone boundary are dominated by improved grassland and cultivated. Hedgerows and treeline field boundaries are of local (higher) ecological value.	Not located within or near (within 1km) of a designated site. Habitats within Subzone boundary are dominated by less managed grassland. Hedgerow networks are relatively dense compared to other options. An old farm building will require checks for bat roosts. Hedgerows and treeline field boundaries are of local (higher) ecological value.	Not located within or near (within 2km) of a designated site. Habitats within Subzone boundary are dominated by improved grassland and cultivated land. Hedgerows and treeline field boundaries are of local (higher) ecological value.	Subzone is located approximately 400m from Cork Harbour SPA, and incorporates lands zoned for the protection of Cork Harbour SPA (Green Infrastructure WG-GC-07). This extensive site is dominated by large, improved farmland fields of low ecological value. The internal field boundaries are mainly relatively managed hedgerows and mature trees along the boundary of the subzone.
Cultural Heritage, including Underwater Archaeology	Three known Undesignated Cultural Heritage receptors (CH077-078 Vernacular Structures and CH079 Quarry), 1 Area of Archaeological Potential (CH093 stream) and 4 Townland Boundaries (CH108-110 and CH109, 111).	Three known undesignated cultural heritage receptors (CH080, CH082 Lime Kiln & Footpath, CH081 Vernacular Structure), 1 Area of Archaeological Potential (CH094 possible stream) and 2 Townland Boundaries (CH112 and 113), 1 designed landscape (CH046 Designed landscape - tree ring).	Two RMP receptors and their Zones of Notification (ZoN) within site boundary (CH038 and CH039, both Ringfort-raths. Four townland boundaries (CH114-117), 1 area of archaeological potential (CH095 stream), and potential settings impact on a church (CH048) and the 2 on site RMP receptors. Works within ZoN should be avoided. Given the proximity of the two RMP's to each other there may be features	There are no designated receptors within the site, one ZoN (for CO088-057----) clipped at the eastern boundary, one townland boundary at the northern boundary. nine recorded monuments, two RPS, eight NIAH within 1km.

Location	CRK01	CRK02	CRK03	CRK04
			that extend between both (trackways, souterrains etc.). Further studies will be required in Step 4B if this option is to be brought forward, including intrusive investigations. It may be possible, to apply for a Section 12(3) Notification to NMS to consent to specific and limited works within the ZoN. An assessment on the impact on the setting of St Mary's church in Ballinrostig (a RMP and a Protected Structure), c. 530m south of the site boundary will be required if this option is brought forward.	
Traffic and Transport	● Access would be from Ardnabourkey Road (L3647). The local road is narrow in width (single vehicle width). Entrance to site is along a straight road with clear sightlines, access is good and within a low-density residential area. The speed limit is 80km/h. ● Approx. half the subzone is within the <4% slope requirement, moderate cut and fill may be required which could increase the number and frequency of HGV movement within the area. ● Nearest bus stop is in Whitegate, approx. 1.7km from site access. ● Arable farm directly to the west of the subzone, farmer may be impacted by vehicle movement in and out of the subzone as site traffic will pass the access road to the farm. Rabbit Road (Dirt Track)	● Access would be from Ardnabourkey Road (L3647). The local road is narrow in width (single vehicle width). Entrance to site is along a straight road with clear sightlines, access is good and within a low-density residential area. Direct access from subzone to local road along the southern boundary. The speed limit is 80km/h. ● Majority of the land is within the <4% slope requirement. ● Nearest bus stop is approx. 800m from the subzone in Upper Aghada to the northeast and access is unlikely to be affected by the construction works or site access. ● Nearby livestock farm along Upper Aghada road within 500m of the subzone may be impacted, however site	● Access would be from Ballinbeg road. The local roads is very narrow in width (single vehicle width). Entrance to site is along a road with bends, it is unclear whether clear sightlines are achievable. Short length of off-road UGC required and for HGV access to site. Access will also require passing over a small bridge to the north of the site which may not be suitable for HGVs, creating disruption to the local traffic network and potential safety hazards. There are not many passing places along the Ballinbeg road that would be suitable for HGVs to pull over. ● Majority of the land is within the <4% slope requirement. ● There are no nearby active travel options. ● The subzone is contained within agricultural farmland, with one	● Access from Whitegate on R630, route follows a two-lane local road (L3648 and L3650) for 1km along the southern border of the subzone. The local road has two lanes and is straight where it abuts the subzone. Entrance to site is likely along a straight section. Clear sightlines are likely to be achievable. ● There is a slope greater than 4% closer to the road at the south side of the subzone. Cut and fill will be required due to slope within this part of the site available for development. ● The EirGrid OCC compound will likely need to be located to the west of the subzone and will require cut and fill. Cut and fill requirement could

Location	CRK01	CRK02	CRK03	CRK04
	runs through the boundary from north to south.	entrance not likely to be on this road so should be minimal. The subzone is contained within agricultural farmland with one arable farm 350m from the western border of the subzone. One dirt access track to a disused agricultural property intersects the boundary from the eastern border.	agricultural farm on the northeast border which may be impacted when moving vehicles around the property. The route towards the subzone for access also passes livestock fields and farms which may be impacted when moving livestock between grazing fields.	increase HGV movement within the surrounding area and along the roads leading to subzones, increasing traffic and causing delays to locals. ● The subzone is within agricultural farmland and does not intersect any roads. There are agricultural properties to the east of the subzone, and there is a large residential area directly to the south, local road closures (full or partial) are likely to affect many residents. Arable farmland to the northeast of the subzone, however site entrance not likely to be on this road so should be minimal. ● The nearest bus stop is in Whitegate centre approx. 500m southwest.
Seascape, Landscape and Visual	● This Subzone is contained in agricultural farmland divided between the 'City Harbour and Estuary' and 'Broad Fertile Farmland' Landscape Character units with only the former contained within a High Value Landscape (HVL) zoning. ● There is a designated scenic route less than 500m to the east and another 1km to the west. ● There is a farmstead adjacent to the west but otherwise few houses within the immediate	● This Subzone is contained in agricultural farmland divided between the 'City Harbour and Estuary' and 'Broad Fertile Farmland' Landscape Character units with only the former contained within a High Value Landscape (HVL) zoning. ● There is a designated scenic route less than 300m to the southeast and another wrapping from 1km west to 1.5km north of the Subzone.	● This Subzone is contained in agricultural farmland within the 'Broad Fertile Farmland' Landscape Character unit which is not within a High Value Landscape (HVL) zoning. ● There is a designated scenic route within 700m to the west / southwest and another beyond 1.8km north of the Subzone. ● There is a cluster of eight rural dwellings within 200m to the west, but few others within close proximity. The nearest residential	● This Subzone is contained in agricultural farmland divided within the 'City Harbour and Estuary' Landscape Character unit, which is contained within a High Value Landscape (HVL) zoning. ● There is a designated scenic route wrapping around the northern and western coastal quarters of the site at distances of between 370m and 450m.

Location	CRK01	CRK02	CRK03	CRK04
	vicinity. There are dense coastal residential settlements within 1km to the northwest (Whitegate). ● Strong potential for visibility of key structures within the sparsely populated farmland within 500m, but this is expected to dissipate to the northwest in the direction of coastal settlements. There is reasonable potential for visibility from the scenic route to the east.	● There is a scattering of rural dwellings throughout the eastern quarters within 200 - 350m and residential housing estates within 700m north and 300m west. ● Strong potential for visibility of key structures within the sparsely populated farmland within 500m to the south, but very limited visibility from the nearest residential housing estate to the northwest. There will be some visibility from the housing estate to the north, but little beyond the first row of houses. There is reasonable potential for visibility from the scenic route to the southeast.	estate is c. 1.8km to the northwest. ● Strong potential for visibility of key structures from all quarters except a linear band to the north which tracks the lower lying land of a water course. There is reasonable potential for visibility from the scenic route to the southwest.	● There is a high density of rural dwellings adjacent to the southwest corner and southern boundary as well as a cemetery on the opposite side of Hill Road. There are farmed fields to the east and Whitegate Power station and associated infrastructure abuts to the north and northwest. ● Relatively open visibility from the southeast and nearest dwellings to the south, but little visibility in other directions. Siting preference would be siting of the infrastructure furthest away from the southern Green Infrastructure (WG-GC-07) zoned lands.
Aviation and Telecommunications	No location specific risks identified at this location. EirGrid will continue to engage with key stakeholders such as other developers, Met Eireann etc as the project develops.	No location specific risks identified at this location. EirGrid will continue to engage with key stakeholders such as other developers, Met Eireann etc as the project develops.	No location specific risks identified at this location. EirGrid will continue to engage with key stakeholders such as other developers, Met Eireann etc as the project develops.	No location specific risks identified at this location. EirGrid will continue to engage with key stakeholders such as other developers, Met Eireann etc as the project develops.
MCA Ranking (Environmental)				

B.2.4 Social Considerations

Location	CRK01	CRK02	CRK03	CRK04
Settlement and Communities, including coastal and fishing communities	• The nearest settlement is Ballinookera, it is located to the northeast of the subzone with <20 residential properties spaced well apart, and one local store (Fox Wall Farm Stall). Surrounding residents are likely to be somewhat impacted by the proposed substation as Ballinookera is in a rural setting. However, the existing industrial backdrop of the surrounding area includes an oil refinery, power plant and there is significant energy infrastructure planned. This subzone is located within an area zoned for Energy infrastructure, as such the sense of settlement and community is expected to remain similar to the existing baseline. • The village of Aghada is directly to the north, with a population of approximately 1000 residents and hosts many local amenities that are used by residents of smaller surrounding villages. The subzone is located within private agricultural land. • The village of Aghada is host to the Sister Hub Aghada, this is a multicultural support network for women from East Cork and nearby areas, aiming to promote sisterhood within the community, encouraging friendships and	• There is one agricultural property within the subzone boundary. The nearest settlement is Ballinookera, it is located to the east of the subzone with <20 residential properties spaced well apart, and one local store (Fox Wall Farm Stall). Surrounding residents are likely to be somewhat impacted by the proposed substation as Ballinookera is in a rural setting. However, the existing industrial backdrop of the surrounding area includes an oil refinery, power plant and there is significant energy infrastructure planned, as such the sense of settlement and community is expected to remain similar to the existing baseline. • The village of Aghada is directly to the north, with a population of approximately 1000 residents and hosts many local amenities that are used by residents of smaller surrounding villages. The subzone is located within private agricultural land. • The village of Aghada is host to the Sister Hub Aghada, this is a multicultural support network for women from East Cork and nearby areas, aiming to promote sisterhood within the community, encouraging friendships and empowerment, whilst alleviating loneliness and isolation within the	• There is a cluster of eight rural dwellings within 200m to the west, but few others within proximity. The nearest residential estate is c. 1.8km to the northwest. The subzone is located within private agricultural land. Surrounding residents are likely to be somewhat impacted by the proposed substation as it is within a rural setting. However, the existing industrial backdrop of the surrounding area includes an oil refinery, power plant and there is significant energy infrastructure planned, as such the sense of settlement and community is expected to remain similar to the existing baseline. • The village of Aghada is to the northwest, with a population of approximately 1000 residents and hosts many local amenities that are used by residents of smaller surrounding villages. The subzone is located within private agricultural land. • The village of Aghada is host to the Sister Hub Aghada, this is a multicultural support network for women from East Cork and nearby areas, aiming to promote sisterhood within the community, encouraging friendships and empowerment, whilst alleviating loneliness and isolation within the	• Several large housing estates are located along the southwestern boundary of this subzone, and lands zoned WG-GC-07 Green Infrastructure. • The nearest settlement is Whitegate which is adjacent to the southern border of the subzone, it hosts local amenities such as coffee shops, restaurants, schools and fitness clubs, with approximately 1300 residents. These residents are likely to be impacted by the proposed substation given their proximity to it, however it will not change the baseline of the area as there is already a 220kV substation approx. 500m north of Whitegate, and an oil refinery and 110kV substation approx. 1.3km to the southwest, therefore fitting in with the existing industrial backdrop. As such the sense of settlement and community is expected to remain similar to the existing baseline. • The village of Aghada is directly to the east, approximately 500m away, with a population of approximately 1000 residents and hosts many local amenities that are used by residents of smaller surrounding villages. • The village of Whitegate is host to Whitegate Residents Association,

Location	CRK01	CRK02	CRK03	CRK04
	empowerment, whilst alleviating loneliness and isolation within the area. This is a core community initiative that provides benefit to the local women's community and offers a sense of belonging. ● Whitegate is approx. 1.2km to the west of the subzone, this is host to Whitegate Residents Association, another social inclusion initiative within the area for residents to develop a stronger sense of community and get to know fellow residents.	area. This is a core community initiative that provides benefit to the local women's community and offers a sense of belonging. ● Whitegate is approx. 1.5km to the west of the subzone, this is host to Whitegate Residents Association, another social inclusion initiative within the area for residents to develop a stronger sense of community and get to know fellow residents.	area. This is a core community initiative that provides benefit to the local women's community and offers a sense of belonging.	a social inclusion initiative within the area for residents to develop a stronger sense of community and get to know fellow residents. ● The village of Aghada is host to the Sister Hub Aghada, this is a multicultural support network for women from East Cork and nearby areas, aiming to promote sisterhood within the community, encouraging friendships and empowerment, whilst alleviating loneliness and isolation within the area. This is a core community initiative that provides benefit to the local women's community and offers a sense of belonging.
Visitors and Commuters	● The village of Aghada is to the north of the subzone, with the Upper Aghada Road to the east which is a main connecting road running north to south between local villages. Visitors and commuters passing through Aghada are likely to be affected. ● Users of the local school, community centre, playgroup, tennis and sailing club and retail shops in the area may be affected. ● Users of the designated scenic routes 500m to the east and 1km to the west will have their views altered if the current agricultural landscape is replaced by the substation, however this subzone is located within an area zoned for Energy infrastructure, as such the	● The village of Aghada is to the north of the subzone, with the Upper Aghada Road to the east which is a main connecting road running north to south between local villages. Visitors and commuters passing through Aghada are likely to be affected. ● Users of the local school, community centre, playgroup, tennis and sailing club and retail shops in the area may be affected. ● White Bay Beach is approximately 4.5km west of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists. Road closures in the area will increase travel time to this destination.	● The village of Aghada is to the northwest of the subzone. Visitors and commuters passing through Aghada have the potential to be affected ● Users of the local school, community centre, playgroup, tennis and sailing club and retail shops in the area may be affected. ● Visitors to St. Mary's Church, Ballinrostig, and Poc are Buile pub to the southwest of the subzone may be impacted by temporary road closures. ● White Bay Beach is approximately 6.5km west of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists.	● The village of Whitegate is to the south of the subzone separated by Hill Road which is a main connecting road between Whitegate and Aghada running east to west. Visitors and commuters passing through Whitegate are likely to be affected. ● Users of the Scoil Cholmáin Whitegate National School, St Michaels & All Angels Church, All Saints Cemetery, Corkbeg AFC, Corkbeg Pitch & Putt and retail shops or eateries in the area may be affected. ● White Bay Beach is approximately 3km southwest of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists. Road closures

Location	CRK01	CRK02	CRK03	CRK04
	proposed substation is in keeping with expected emerging baseline. ● White Bay Beach is approximately 4.5km west of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists.			in the area will increase travel time to this destination.
Amenities, Recreation and Tourism	● Aghada hosts various amenities including the Aghada Parish Community Playground, Aghada 66th Cork Sea Scouts, Lower Aghada Pier Community Association, the Sister Hub Aghada, Aghada & District Community Centre, Lower Aghada Tennis & Sailing Club, alongside retail shops, restaurants, cafes, bars and clubs. ● Whitegate hosts Whitegate Yawl Rowing Club and Corkbeg AFC - Whitegate soccer club, the soccer club has over 400 members and is a key recreation amenity for local men and boys of all ages. ● Beewildwithkate education centre is approximately 1km to the south of the subzone. ● East Cork Pilates is directly to the west of the subzone in Mosestown. ● The largest supermarket in the vicinity is the EUROSPAR in Whitegate approximately 3km to the west of the subzone. ● White Bay Beach is approximately 4.5km west of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists. Road closures in the area will disturb tourism in the area.		● St. Mary's Church, Ballinrostig, and Poc ar Buile pub to the southwest of the subzone may be impacted by temporary road closures. The cultural setting and value of St Mary's Church to locals may be significantly impacted by the introduction of a large visible substation in the immediate vicinity and would be considered not in keeping with the local setting which is dominated by agricultural fields. ● Dog Grooming Midleton Rose & Silk to the east may also be affected by temporary road closures during construction due to diversions. ● White Bay Beach is approximately 6.5km west of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists and tourism may be impacted by local road closures.	● Whitegate hosts Whitegate Yawl Rowing Club and Corkbeg AFC - Whitegate soccer club, the soccer club has over 400 members and is a key recreation amenity for local men and boys of all ages. ● Aghada hosts various amenities including the Aghada Parish Community Playground, Aghada 66th Cork Sea Scouts, Lower Aghada Pier Community Association, the Sister Hub Aghada, Aghada & District Community Centre, Lower Aghada Tennis & Sailing Club, alongside retail shops, restaurants, cafes, bars and clubs. ● East Cork Pilates is 450m directly to the south of the subzone. ● The largest supermarket in the vicinity is the EUROSPAR in Whitegate approximately 600m to the southwest of the subzone. ● White Bay Beach is approximately 3km southwest of the subzone. This beach offers bathing, fishing and recreational amenity value to locals and tourists. Road closures in the area will disturb tourism in the area.

Location	CRK01	CRK02	CRK03	CRK04
				● Access to Scenic route (S51) Road from Ballynacorra via East Ferry to Whitegate and Roche's Point may be disturbed.
Nuisance and Disturbance	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors. There are however already the ESBN Aghada Generating Station and Aghada 220kV Substation in the vicinity approximately 4km to the northwest, which are well-established within the energy infrastructure of the area		The construction phase can be expected to cause nuisance and disturbance to local residents and visitors. There are however already the ESBN Aghada Generating Station and Aghada 220kV Substation in the vicinity approximately 500m to the north, which are well-established within the energy infrastructure of the area.	Several large housing estates are located along the southwestern boundary of this subzone. Construction activities along the southwestern border of this zone can be expected to cause nuisance and disturbance to these local residents and visitors. There are however already the ESBN Aghada Generating Station and Aghada 220kV Substation in the vicinity approximately 500m to the north, which are well-established within the energy infrastructure of the area.
Visual Effects	● There is a designated scenic route less than 500m to the east and another 1km to the west. There is a farmstead adjacent to the west but otherwise few houses within the immediate vicinity. There are dense coastal residential settlements within 1km to the northwest (Whitegate). ● Strong potential for visibility of key structures within the sparsely populated farmland within 500m, but this dissipates to the northwest in the direction of coastal settlements. There is reasonable potential for visibility from the scenic route to the east.	● There is a designated scenic route less than 300m to the southeast and another wrapping from 1km west to 1.5km north of the Subzone. There is a scattering of rural dwellings throughout the eastern quarters within 200 - 350m and residential housing estates within 700m north and 300m west. ● Strong potential for visibility of key structures within the sparsely populated farmland within 500m to the south, but very limited visibility from the nearest residential housing estate to the northwest. There will be some visibility from the housing estate to the north, but little beyond the first row of houses. There is reasonable	● There is a designated scenic route within 700m to the west / southwest and another beyond 1.8km north of the Subzone. There is a cluster of eight rural dwellings within 200m to the west, but few others within close proximity. The nearest residential estate is c. 1.8km to the northwest. ● Strong potential for visibility of key structures from all quarters except a linear band to the north which tracks the lower lying land of a water course. There is reasonable potential for visibility from the scenic route to the southwest.	● There is a designated scenic route wrapping around the northern and western coastal quarters of the site at distances of between 370m and 450m. There is a high density of rural dwellings adjacent to the SW corner and southern boundary as well as a cemetery on the opposite side of Hill Road. There are farmed fields to the east and Whitegates Power station and associated infrastructure abuts to the north and northwest. ● Open visibility from the southeast and nearest dwellings to the south, but little visibility in other directions. Siting preference would be siting of the infrastructure furthest away from the southern

Location	CRK01	CRK02	CRK03	CRK04
		potential for visibility from the scenic route to the southeast.		Green Infrastructure (WG-GC-07) zoned lands.
MCA Ranking (Social)				

B.2.5 Deliverability Considerations

Location	CRK01	CRK02	CRK03	CRK04
Implementation Timelines	Longest cable length required to connect to the 220kV OHLs **Landholding:** • Large number of landholdings and could extend the timeline due to coordination **Proximity to 220kV OHL:** • This subzone is located ca. 1km away from the 220kV OHL, therefore 2 x 1km 220kV cable is required. **Additional site works:** • No additional site works apparent at this time. **Distance to Road network:** • Subzone is accessible via a 160m farm track from the road which may need to be upgraded. **Seasonal Constraints:** • No seasonal constraints identified at this time. **Timeline for construction:**	Less likely cut and fill will be required but will require further investigation for micro-siting. **Landholding:** • One landholding within the subzone boundary. **Proximity to 220kV OHL:** • The existing 220kV OHL intersects this subzone, thus the shortest length of 220kV loop-in cable is required. **Additional site works:** • Disused farm buildings on the eastern side of the subzone may need to be cleared. **Distance to Road network**: • Subzone is located adjacent to the road. **Seasonal Constraints**:	Cut and fill may be required but will require further investigation for micro-siting. **Landholding:** • Large number of landholdings and could extend the timeline due to coordination **Proximity to 220kV OHL**: • The existing 220kV OHL intersects this subzone, thus the shortest length of 220kV loop-in cable is required. **Additional site works**: • No additional site works apparent at this time. **Distance to Road network:** • Subzone is accessible via a 25m or 120m farm track from the road which may need to be upgraded. **Seasonal Constraints:** • No seasonal constraints identified at this time. **Timeline for construction:**	OHL enabling works, site platform cut and fill, construction within the constraints of the existing utilities and constrained site boundary and HDD cable crossings of the gas pipeline all contribute to construction critical path activities. **Landholding:** • One landholding within the subzone boundary. **Proximity to 220kV OHL:** • The existing 220kV OHL intersects this subzone, thus the shortest length of 220kV loop-in cable is required. **Additional site works:** • Enabling works will be required to divert the 110kV and 20kV OHLs via underground cable to accommodate the grid connection infrastructure. • Cut and fill may be required to accommodation the grid connection infrastructure due to the slopes towards the south of the subzone. **Distance to Road network**:

Location	CRK01	CRK02	CRK03	CRK04
	• Moderate cut and fill may be required but this will be site specific and require micro-siting. The longest grid connection cable route or overhead line works may be a consideration to the grid connection infrastructure critical path.	• No seasonal constraints identified at this time. **Timeline for construction:** • Less likely cut and fill but will require further investigation for micro-siting will be required. The grid connection cable route or overhead line works would not impact the grid connection infrastructure critical path.	• Cut and fill may be required but this will require micro-siting studies. The grid connection cable route or overhead line works would not impact the grid connection infrastructure critical path.	• Subzone is located adjacent to the road and is accessible via an 80m farm track. **Seasonal Constraints**: • No seasonal constraints identified at this time. **Timeline for construction:** • OHL enabling works, site platform cut and fill, construction within the constraints of the existing utilities and constrained site boundary and HDD cable crossings of the gas pipeline all contribute to critical path construction activities.
Dependence on other Projects	• The subzone is within the zoned Special Policy Area WG-X-01 Whitegate / Aghada so other future developments in this region can be anticipated • Interconnection into the double circuit OHL is understood to be a challenge in consideration of EirGrid's regional transmission outage programme and its associated scheduling constraints.	• The subzone is adjacent to the zoned Special Policy Area WG-X-01 Whitegate / Aghada so other future developments in this region may be anticipated. • Interconnection into the double circuit OHL is understood to be a challenge in consideration of EirGrid's regional transmission outage programme and its associated scheduling constraints.	• The subzone is close to the zoned Special Policy Area WG-X-01 Whitegate / Aghada so other future developments in this region may be anticipated. • Interconnection into the double circuit OHL is understood to be a challenge in consideration of EirGrid's regional transmission outage programme and its associated scheduling constraints.	• The majority of the sub-zone is zoned for Industry (WG-I-01) related to the development of small to medium scale energy related uses so other future developments in this region can be anticipated. • Interconnection into the double circuit OHL is understood to be a challenge in consideration of EirGrid's regional transmission outage programme and its associated scheduling constraints.
Permits and Wayleaves	• This subzone is within the zoned Special Policy Area WG-X-01 Whitegate / Aghada and so may be considered opportunistic for utility infrastructure.	• This subzone contains the smallest number of individual landholders. • As the 220kV OHL intersects the subzone, no additional permitting or wayleave activities would	• This subzone contains the second largest number of individual landholders. • As the 220kV OHL intersects the subzone, no additional permitting or wayleave activities would be required for this connection.	• The WG-I-01 industrial zoning, location adjacent to ESB's Aghada substation and land owned by ESB may be considered opportunistic for this energy infrastructure. • This subzone contains the smallest number of individual landholders.

Location	CRK01	CRK02	CRK03	CRK04
	• This subzone contains the largest number of individual landholders in Cork. • As 1km of grid connection loop-in cable or OHL is required to connect to the 220kV OHLs which may necessitate a corridor of greater than 50m width navigating the road, gas pipes and 110kV OHLs, this subzone would necessitate additional permitting and wayleave activities for the cable route and the OHL interface compounds. • Availability of land for a potential double circuit temporary bypass may also require consideration.	be required for this connection. • Availability of land for a potential double circuit temporary bypass may however also require consideration.	• Availability of land for a potential double circuit temporary bypass may however also require consideration.	• As the 220kV OHL intersects the subzone, no additional permitting or wayleave activities are likely to be required for this connection. • Availability of land for a potential temporary bypass of the double circuit 220kV OHL may however also require consideration.
Project Plan Flexibility	Infrastructure location flexibility is the greatest as the substation would only comprise approx. 25% of the total area. This flexibility is increased by the presence of two existing farm tracks for access; however the site is located at the greatest distance from the 220kV OHLs. **Remaining area**: • Substation footprint may comprise 25% of the subzone area **Orientation:** • Footprint is flexible within the site - multiple orientations within the subzone area could be achieved. **HGV Access:** • Subzone encompasses two existing farm tracks for access	The substation footprint would comprise approx. 30% of the total area. This flexibility is increased by the presence of two existing farm tracks for access, and direct access to the 220kV OHL for loop-in. **Remaining area:** • Substation footprint may comprise approx. 30% of the subzone area. **Orientation:** • GIS footprint is flexible within the site - multiple orientations within the subzone area could be achieved. **HGV Access:**	The substation footprint would comprise approx. 40% of the total area. However, the presence of two RMP receptors within the site boundary limits the flexibility of the site. **Remaining area:** • Substation footprint may comprise approx. 40% of the subzone area. **Orientation:** • GIS footprint orientation flexibility is likely to be significantly restricted due to the presence of two potential archaeological sites. The substation location may be restricted to south of the subzone. **HGV Access:** • Subzone encompasses two existing farm tracks for access **Cable route access (Subzone to wider road network):**	The substation footprint would comprise most of the subzone area and there is very minimal footprint orientation flexibility. **Remaining area:** • Substation footprint may comprise approx. 20% of the subzone area, however due to the presence of existing utilities, 220kV loop-in and connections between the GIS OCC and ESB substation, the subzone will be largely utilised or sterilised. **Orientation:** • GIS footprint is not flexible within the site – there are minimal orientation options within the subzone area that can be achieved. **HGV Access:** • Subzone encompasses an existing farm track for access

Location	CRK01	CRK02	CRK03	CRK04
	Cable route access (Subzone to wider road network): • The subzone requires a section of off-road UGC through third party lands as the boundary is not directly adjacent to the road. **Loop-in cable access**: • The double 220kV OHL is approx. 1km away from subzone.	• Subzone encompasses two existing farm tracks for access **Cable route access (Subzone to wider road network):** • Cable route access to the subzone from the southern road directly. **Loop-in cable access:** • Direct access to the 220kV OHL as it intersects the subzone.	• Cable route access to the subzone from the southern road directly. **Loop-in cable access:** • Direct access to the 220kV OHL as it intersects the subzone.	**Cable route access (Subzone to wider road network):** • Cable route access to the subzone from the southern road directly. **Loop-in cable access:** • Direct access to the 220kV OHL as it intersects the subzone.
Design Complexity, Uncertainty, Risk	Challenges with routing of circuits for connection to existing 220kV OHL. Moderate cut and fill may be required due to subzone slope variation. **Existing infrastructure:** • No other utilities present within this site. **Additional site works:** • Ca. 160m farm track from the road may require upgrading. Hedge removal and/or expansion of entrances may be required to achieve clear sightlines. As 50% of the size area is >4% slope, significant cut and fill may be necessary to facilitate construction works. **220kV OHL connection access to the Subzone**: • Increased challenges with respect to the 1km likely offroad routing to the 220kV OHL requiring 4 circuits to pass two 110kV OHLs, a gas transmission line, a	Multiple major above and below ground utilities intersect the site, and the disused farm buildings may require assessment before clearing. **Existing infrastructure**: • 110kV OHL intersects the subzone. 220kV OHL intersect the subzone. Two intersections of a gas transmission line. **Additional site works:** • Disused farm buildings on the eastern side of the subzone may need to be cleared. Hedge removal and/or expansion of entrances may be required to achieve clear sightlines. Unlikely that significant cut and fill works are required.	Extensive cut and fill may be required if substation site is restricted to the southwestern corner of the subzone due to archaeological sites **Existing infrastructure:** • 220kV OHL intersect the subzone. Single phase MV OHL intersects the subzone. **Additional site works**: • Ca. 25m or 150m farm track from the road may require upgrading. Hedge removal and/or expansion of entrances may be required to achieve clear sightlines. The substation is likely to be located towards the southwestern corner of the subzone (due to potential archaeological restrictions). Extensive cut and fill may be required due to the distribution of <4% slope within this part of the site available for development. There is also a single phase MV OHL which intersect the southern end of the site.	Further assessments are warranted to validate the feasibility of siting the infrastructure within the constrained site boundary with respect to the existing immovable utilities, underground cable routing corridors for the OHL diversions, WG-GC-07 Green Industry parcel, site platform cut and fill, HDD cable crossings of the gas pipeline, present project and future site cable access and 220kV OHL temporary diversions. **Existing infrastructure:** • 220kV OHL intersects the subzone. • 110kV OHL intersects the subzone. • 20kV OHL intersects the subzone. • Two separate gas transmission lines intersect the subzone **Additional site works**: • Enabling works will be required to divert the 110kV and 20kV OHLs via underground cable to accommodate the grid connection infrastructure. • Cut and fill may be required to accommodate the grid connection

Location	CRK01	CRK02	CRK03	CRK04
	roadway, around residential properties and consideration of private land wayleave requirements, along with requirement for LCIMs/Cable Sealing End Compounds in close proximity to the existing OHLs.			infrastructure due to the slopes towards the south of the subzone. • 220kV double circuit OHL temporary bypass may be required. • HDD cable crossings of the gas pipeline will be required.
MCA Ranking (Deliverability)				

B.3 Evaluation of Indicative Onshore Transmission Cable Route Corridors

B.3.1 Technical Considerations

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
Compliance with Health and Safety Standards	Full road closures will be required for ca. 70% of the cable route trenching activities with the remaining 30% following two-lane regional roads from the landfall (R632 & R629). With the majority of the route requiring full-road closures, this reduces the complexity of managing health and safety risks in comparison to partial road closures. **During construction:** ● There is a ca. 6.5km stretch of two-lane regional road between Garryvoe Beach and Shanagarry (R632) and north towards Ballyduff (R629). ● Partial closures with traffic management may be	Full road closures will be required for ca. 80% of the cable route trenching activities with the remaining 20% following a two-lane regional road from the landfall (R632). With the majority of the route requiring full-road closures, this reduces the complexity of managing health and safety risks in comparison to partial road closures. **During construction:** ● There is a 3.5km stretch of two-lane regional road between Garryvoe Beach and Shanagarry (R632). ● Partial closures with traffic management may be possible through these two-	Full road closures will be required for ca. 65% of the cable route trenching activities and ca. 20% of the route is completely off-road with a short section of two-lane regional roads either side of Cloyne (R629 & R631). With the majority of the route requiring full-road closures, this reduces the complexity of managing health and safety risks in comparison to partial road closures. **During construction:** ● There are two 1.5km stretches of two-lane regional road either side of Cloyne (R631). ● Partial closures with traffic management may be	Full road closures will be required for ca. 70% of the cable route trenching activities with the remaining ca. 30% following two-lane regional roads through Cloyne (R629 & R631) and two-lane local roads through Aghada (L3651 & L3648). With the majority of the route requiring full-road closures, this reduces the complexity of managing health and safety risks in comparison to partial road closures. **During construction:** ● This route passes through Cloyne and Aghada. ● There is a 6.2km stretch of two-lane regional road through and either side of

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	possible through these two-lane sections during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the roads along this route are a mix of wide and narrow single lane roads. The single lane roads necessitate full road closures and would comply with all relevant health and safety standards. **Maintenance:** ● Road closure unlikely for offroad joint bays.	lane sections during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the roads along this route are a mix of wide and narrow single lane roads. The single lane roads necessitate full road closures and would comply with all relevant health and safety standards. **Maintenance:** ● Road closure unlikely for offroad joint bays.	possible through these two-lane sections during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the roads along this route are a mix of wide and narrow single lane roads. The single lane roads necessitate full road closures and would comply with all relevant health and safety standards. **Maintenance:** ● Road closure unlikely for offroad joint bays.	Cloyne town (R631), and a 350m stretch of two-lane road through Aghada. ● Partial closures with traffic management may be possible through these two-lane sections during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the route is a mix of wide and narrow single lane roads which necessitates full road closures. These closures will comply with all relevant health and safety standards. **Maintenance:** Road closure unlikely for offroad joint bays.
Compliance with Specifications	**Cable routing principal:** • The principal concept of this option is routing within the regional road network from the landfall and in the local public road network thereafter towards the subzone. **Extent of off-road routing:** • Less off-road routing required in comparison to other options. ● Approx. 1.2km of offroad routing to bypass Carriglusky (~1km road with multiple sharp bends),	**Cable routing principal:** • The principal concept of this option is routing within the regional road network from the landfall and in the local public road network thereafter towards the subzone. **Extent of off-road routing:** • Multiple long stretches of off-road routing through third party lands required. ● Approx. 700m of offroad routing to bypass Aghada town centre (~1km), ● 1.5km of offroad routing to bypass Carriglusky (~1.5km	**Cable routing principal:** • The principal concept of this option is routing within the local public road network from the landfall, then to bypass the urban areas of Cloyne and Aghada within third party lands and the local public road network towards the subzone. **Extent of off-road routing:** ● Multiple long sections of off-road routing through third party lands required. ● Approx. 4km of offroad routing to bypass Cloyne town centre	**Cable routing principal:** • The principal concept of this option is routing within the local public road network from the landfall, then through Cloyne along the regional road network, then within the local public road network through Aghada and towards the subzone. **Extent of off-road routing:** ● Less off-road trenching required in comparison to other options. ● The availability of an alignment through Cloyne and Aghada will need to be

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	● There will be some sections of routing required in third party land for 6 identified watercourse crossings and up to 6 gas transmission crossings. **Joint bay positioning principle:** ● Due to the narrowness of the roads, most joint bays will be located on third party land.	road with multiple sharp bends), ● There will be some sections of routing required in third party land for 3 identified watercourse crossings and up to 4 gas transmission crossings. **Joint bay positioning principle:** ● Due to the narrowness of the roads, most joint bays will be located on third party land.	● Approx. 700m of offroad routing to bypass Aghada town centre (~1km). ● There will be some sections of routing required in third party land for up to 5 identified watercourse crossings and up to 5 gas transmission crossings. **Joint bay positioning principle:** ● Due to the narrowness of the roads, most joint bays will be located on third party land.	confirmed through site investigation. ● There will be some sections of routing required in third party land for 5 identified watercourse crossings and up to 5 gas transmission crossings. **Joint bay positioning principle:** ● Due to the narrowness of the roads, most joint bays will be located on third party land.
Constructability (Ground Conditions and Marine Processes)	This route contains a significant number of tight bends which may increase complexity of installation. **Geotechnical, geophysical and ground conditions:** ● Majority of route is along well-established roads and ground conditions are expected to be well understood, with low complexity in construction. ● Soil type of offroad routing may affect cable rating which requires consideration. ● Karst features of a swallow hole and spring are identified within 200m of the route at R629 intersection with Kilmahon road on GSI viewer. An enclosed depression is within 100m of the route at the R629 Shangarry south intersection. ● Cloyne cave (CK034) is located within 1km north of	This route contains a significant number of tight bends which may increase complexity of installation. **Geotechnical, geophysical and ground conditions:** ● Majority of route is along well-established roads and ground conditions are expected to well understood, with low complexity in construction. ● Soil type of offroad routing may affect cable rating which requires consideration. ● Karst features of a swallow hole and spring are identified within 200m of the route at R629 intersection with Kilmahon road on GSI viewer. **Route complexity:** ● The presence of several tight bends along this route may impact the puling tensions. This may consequently increase the number of joint	Route has karst features, however, has fewer instances of tight bends, and is less complex in comparison to other options. **Geotechnical, geophysical and ground conditions:** ● Majority of route is along well-established roads and ground conditions are expected to well understood, with low complexity in construction. ● Soil type of offroad routing may affect cable rating which requires consideration. ● Cloyne cave (1705NEK018 and 1705NEK017) karst features are identified adjacent to the route to the east of Cloyne village. Two springs (White Well ID:1705NEK013 and Dick Neills Well ID:1705NEK012) are adjacent to the route along the R360 at Crocane.	Route has karst features, however, has fewer instances of tight bends, and is less complex comparison to other options. **Geotechnical, geophysical and ground conditions:** ● Majority of route is along well-established roads and ground conditions are expected to well understood, with low complexity in construction. ● Soil type of offroad routing may affect cable rating which requires consideration. ● Cloyne cave (1705NEK018 and 1705NEK017) karst features are identified adjacent to the route to the east of Cloyne village. Two springs (White Well ID:1705NEK013 and Dick Neills Well ID:1705NEK012) are adjacent to the route along the R360 at Crocane.

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	the route (located to the east of Cloyne village). **Route complexity:** ● The presence of a significant number of tight bends along this route may impact the pulling tensions. This may consequently increase the number of joint bays required along this route and increase the complexity of installation.	bays required along this route and increase the complexity of the installation.	**Route complexity:** ● Dependent upon the offroad routes taken to bypass Cloyne and Aghada, this route has fewer instances of tight bends and is therefore likely to require less joint bays in comparison to the other route options.	**Route complexity:** ● This route has fewer instances of tight bends and is therefore likely to require less joint bays in comparison to the other route options. Route traverses through Cloyne and Aghada and may result in a complex alignment due to presence of underground utilities.
Access	Multiple long stretches of off-road trenching required through third party lands to bypass urban areas in addition to watercourse and GNI crossings. **Extent of off-road access:** ● Approx. 30 offroad joint bays, 6 watercourse crossings and up to 6 gas transmission crossings are required along this route. All of these will require offroad trenching into third party land and gas crossings will necessitate coordination with GNI. ● Approx. 1km total of offroad trenching is required to bypass Carriglusky. This would necessitate engagement with multiple landowners to coordinate access. **Joint bays:** ● Approx. 30 offroad joint bays may be required. No road closures would be required for offroad joint bays.	Multiple long stretches of off-road trenching required through third party lands to bypass urban areas in addition to watercourse and GNI crossings. **Extent of off-road access:** ● Approx. 30 offroad joint bays, 3 watercourse crossings and up to 4 gas transmission crossings are required along this route. All of these will require offroad trenching into third party land and gas crossings will necessitate coordination with GNI. ● Approx. 1km total of offroad trenching is required to bypass Aghada and 1.5km to bypass Carriglusky. This would necessitate engagement with multiple landowners to coordinate access. **Joint bays:** ● Approx. 30 offroad joint bays may be required. No road	Multiple long stretches of off-road trenching required through third party lands to bypass urban areas in addition to watercourse and GNI crossings. **Extent of off-road access:** ● Approx. 30 offroad joint bays, up to 5 watercourse crossings and up to 5 gas transmission crossings are required along this route. All of these will require offroad trenching into third party land and gas crossings will necessitate coordination with GNI. ● Approx. 5km total of offroad trenching is required to bypass Cloyne and Aghada. This would necessitate engagement with multiple landowners to coordinate access. **Joint bays:** ● Approx. 30 offroad joint bays may be required. No road closures would be required for offroad joint bays.	Off-road trenching required for watercourse and GNI crossings. Routing through Cloyne and Aghada avoids urban area bypass off-road sections. **Extent of off-road access:** ● Approx. 30 offroad joint bays, 5 watercourse crossings and up to 5 gas transmission crossings are required along this route. All of these will require offroad trenching into third party land and gas crossings will necessitate coordination with GNI. **Joint bays:** ● Approx. 30 offroad joint bays may be required. No road closures would be required for offroad joint bays. **Residential access:** ● Both full and partial road closures will be required during construction. ● The installation works will be done as a rolling site to

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	Residential access: ● Both full and partial road closures will be required during construction. ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route can have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	closures would be required for offroad joint bays. **Residential access:** ● Both full and partial road closures will be required during construction. ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route can have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	**Residential access:** ● Both full and partial road closures will be required during construction. ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route can have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	reduce the extent of roads being closed at all times. ● All sections along the route can have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.
Physical Constraints	Cable route encounters multiple watercourses and GNI crossings, however bypasses urban areas with utility congestion. **Watercourse crossings (structures):** ● 6 watercourse crossings identified, offroad trenching may be required to bypass. **Underground utilities:** ● Up to 6 gas transmission crossings. ● Uisce Éireann utilities present within the road along approx.	Cable route encounters multiple watercourses and GNI crossings, however bypasses urban areas with utility congestion. **Watercourse crossings (structures):** ● 3 watercourse crossings identified, offroad trenching may be require to bypass. **Underground utilities:** ● Up to 4 gas transmission crossings. ● Uisce Éireann utilities present within the road along approx.	Cable route encounters multiple watercourses and GNI crossings, however bypasses urban areas with utility congestion. **Watercourse crossings (structures):** ● Up to 4 watercourse crossings identified, offroad trenching may be required to bypass. **Underground utilities:** ● Up to 5 gas transmission crossings.	Cable route passes through Cloyne urban area with multiple underground utilities within the roadway, thus a greater number of physical constraints in comparison to the other route options in addition to waterways and GNI crossings. Similar constraints for Aghada. **Watercourse crossings (structures):** ● 6 watercourse crossings identified, offroad trenching may be required to bypass.

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	9km of the total route, largely along two-lane roads. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	8km of the total route, largely along single lane roads. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	● Uisce Éireann utilities present within the road along the entire route length, one pipe for the majority of the route. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	**Underground utilities:** ● Up to 5 gas transmission crossings ● Uisce Éireann utilities present within the road along the entire route length. 1.7km stretch through Cloyne and a 600m stretch through Aghada which has 2-3 parallel water utilities within a double lane road. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.
MCA Ranking (Technical)				

B.3.2 Economic Considerations

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
Capital Cost	Cable route is approximately 20km with complexity surrounding off-road routing. **Length of onshore 275kV cable:** • All routes are approximately the same length extending ca. 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Extent of offroad routing:** ● Approx 1km of offroad trenching to bypass Carriglusky constraint area. ● Ca. 6 potential instances of offroad trenching due to watercourse structures. ● Up to 6 potential instances of offroad trenching due to gas transmission crossings. ● No route locations requiring HDD at this stage of assessment.	Cable route is approximately 20km with complexity surrounding off-road routing. **Length of onshore 275kV cable:** • All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Extent of offroad routing:** ● Approx 1.5km of offroad trenching to bypass Carriglusky constraint area. ● Approx. 1km of offroad trenching to bypass Aghada town centre. ● Up to 3 potential instances of offroad trenching due to watercourse structures. ● Up to 4 potential instances of offroad trenching due to gas transmission crossings. ● No route locations requiring HDD at this stage of assessment.	Cable route is approximately 20km with complexity surrounding off-road routing. **Length of onshore 275kV cable:** • All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Extent of offroad routing:** ● Approx. 4km of offroad trenching to bypass Cloyne town centre. ● Approx. 1km of offroad trenching to bypass Aghada town centre. ● Ca. 5 instances of offroad trenching due to watercourse structures. ● Up to 5 instances of offroad trenching due to gas transmission crossings. ● No route locations requiring HDD at this stage of assessment.	Cable route is approximately 20km with complexity due to the extent of routing through urban areas. **Length of onshore 275kV cable:** • All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. It is however noted that trenching through Cloyne urban area may increase capital costs. **Urban areas:** • Installation through Cloyne and Aghada may have higher costs due to density of existing utilities and installation rates. **Extent of offroad routing:** ● Ca. 5 instances of offroad trenching due to watercourse structures. ● Up to 5 instances of offroad trenching due to gas transmission crossings. ● No route locations requiring HDD at this stage of assessment.
Life Cycle Costs	All routes are approximately the same length therefore lifecycle costs will be similar. **Length of onshore cable:**	All routes are approximately the same length therefore lifecycle costs will be similar. **Length of onshore cable:**	All routes are approximately the same length therefore lifecycle costs will be similar. **Length of onshore cable:**	All routes are approximately the same length therefore lifecycle costs will be similar. **Length of onshore cable:**

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	• All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Joint bays:** • Approx 30 joint bays will be required for the 20km length of cable. The presence of a significant number of tight bends may impact the puling tensions and consequently increase the number of joint bays required along this route.	• All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Joint bays:** • Approx 30 joint bays will be required for the 20km length of cable. The presence of a significant number of tight bends may impact the puling tensions and consequently increase the number of joint bays required along this route.	• All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Joint bays**: • Approx 30 joint bays will be required for the 20km length of cable.	• All routes are approximately the same length extending 20km from landfall to subzone with approx. 1km of length variation depending on which of the three shortlisted subzones is selected. **Joint bays:** • Approx 30 joint bays will be required for the 20km length of cable.
MCA Ranking (Economic)				

B.3.3 Environmental Considerations

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
Land use compatibility, other site users and planning policy	• **Nearby infrastructure:** Includes hotels, coffee shops, a playground, bars, beach saunas, a school, a football club and a health club. • **Current land use:** A mix of agricultural land and existing road network. • **Planning applications:** There are no planning applications directly on the route (as of 19 March 2026). Previous applications include	**Nearby infrastructure:** Infrastructure along the corridor includes hotels, coffee shops, a playground, bars, beach saunas, a school and a health club. **Current land use:** Land use is a mix of agricultural land and existing road network. **Planning applications**: There are no active planning applications directly on the route (as of 19 March 2026). Previous applications include applications for one off	**Nearby infrastructure:** Infrastructure along the corridor includes hotels, coffee shops, a playground, bars, beach saunas, a school and a health club. **Current land use:** Land use is a mix of agricultural land and existing road network. **Planning applications:** There are no active planning applications directly on the route (as of 19 March 2026). Previous applications include applications for one off housing and extensions to existing dwellings.	**Nearby infrastructure:** Infrastructure along the corridor includes hotels, coffee shops, a playground, bars, beach saunas, a school and a health club. **Current land use:** Land use is a mix of agricultural land and existing road network. **Planning applications:** There are no active planning applications directly on the route (as of 19 March 2026). Previous applications include applications for one off housing and extensions to existing dwellings.

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	applications for one off housing and extensions to existing dwellings. ● **Land ownership:** Corridor includes mostly public roads with some agricultural property and private lands. ● **Zoning:** The start of the route from the landing zone is adjacent to an area under the County Cork Development Plan 2022 designated for green infrastructure (Conservation, amenity or buffer space, corridor/belt, landscape protection).	housing and extensions to existing dwellings. **Land ownership:** Corridor includes mostly public roads with some agricultural property, residential property and private lands. **Zoning:** The start of the route from the landing zone is adjacent to an area under the County Cork Development Plan 2022 designated for green infrastructure (Conservation, amenity or buffer space, corridor/belt, landscape protection).	**Land ownership:** Corridor includes mostly public roads with some agricultural property and private lands. **Zoning:** The start of the route from the landing zone is adjacent to an area under the County Cork Development Plan 2022 designated for green infrastructure (Conservation, amenity or buffer space, corridor/belt, landscape protection). The route also ventures into the southeast corner of another zoned area within the Cork County Development Plan 2022 designated as existing residential.	**Land ownership:** Corridor includes mostly public roads with some agricultural property and private lands. **Zoning:** The start of the route from the landing zone is adjacent to an area under the County Cork Development Plan 2022 designated for green infrastructure (Conservation, amenity or buffer space, corridor/belt, landscape protection). The route also ventures into the southeast corner of another zoned area within the Cork County Development Plan 2022 designated as existing residential.
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Geological Heritage Sites:** The corridor begins west of a geoheritage audited site (CK008) "Ballycotton Bay" and is described as sea cliffs up to 4 m high. The route also passes within 1km of site CK034 "Cloyne Cave". This is the longest network of cave passages in County Cork, and a particularly complex network of passages, Cloyne Cave is a unique feature and is recognised as a County Geological Site. **Water features:** There are 6 watercourse crossings associated with this route. **Bedrock:** From the landfall zone the route starts in Waulsortian Limestones (massive unbedded lime-mudstone) before crossing into Cuskinny Member (Flaser-bedded sandstone & mudstone) at Ballynone. At some points the route	**Geological Heritage Sites:** The corridor begins west of a geoheritage audited site (CK008) "Ballycotton Bay" and is described as sea cliffs up to 4 m high backing onto popular beach, this site contains excellent exposures of Quaternary sediment sequences. **Water features:** There are 3 watercourse crossings associated with this route. **Bedrock:** From the landfall zone the route starts in Waulsortian Limestones (massive unbedded lime-mudstone) before crossing into Cuskinny Member (Flaser-bedded sandstone & mudstone) south of Shanagarry. At some points the route also intersects Old Head Sandstone Formation (Flaser-bedded sandstone & minor mudstone).	**Geological Heritage Sites:** The corridor begins west of a geoheritage audited site (CK008) "Ballycotton Bay" and is described as sea cliffs up to 4 m high. The route also passes adjacent to site CK034 "Cloyne Cave". This is the longest network of cave passages in County Cork, and a particularly complex network of passages, Cloyne Cave is a unique feature and is recognised as a County Geological Site. **Water features:** There are 4 watercourse crossings associated with this route. **Bedrock:** From the landfall zone the route starts in Waulsortian Limestones (massive unbedded lime-mudstone) before crossing into Cuskinny Member (Flaser-bedded sandstone & mudstone) at Ballyhimikin. The route then crosses through Gyleen Formation (Sandstone with mudstone & siltstone). There is a small intersection with Cork ed Marble	**Geological Heritage Sites:** The corridor begins west of a geoheritage audited site (CK008) "Ballycotton Bay" and is described as sea cliffs up to 4 m high backing onto popular beach, this site contains excellent exposures of Quaternary sediment sequences. The route also passes adjacent to site CK034 "Cloyne Cave". This is the longest network of cave passages in County Cork, and a particularly complex network of passages, Cloyne Cave is a unique feature and is recognised as a County Geological Site. **Water features:** There are 6 watercourse crossings associated with this route. **Bedrock:** From the landfall zone the route starts in Waulsortian Limestones (massive unbedded lime-mudstone) before crossing into Cuskinny Member (Flaser-bedded sandstone & mudstone) at Ballyhimikin. The route then crosses

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	also intersects Old Head Sandstone Formation (Flaser-bedded sandstone & minor mudstone). **Superficial cover:** The route is predominantly contained within till derived from Devonian sandstones, with small patches of Gravels derived from Devonian sandstones. **Bedrock aquifer:** The route passes through two different aquifers. Between the landfall zone and Ballyonane the aquifer is classed as a Regionally Important Aquifer - Karstified (diffuse). Between Ballynone and Ballyfin the route passes through a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones and another Locally Important Aquifer - Karstified. **Karst features**: Karst features of a swallow hole and spring are identified within 200m of the route at R629 intersection with Kilmahon road on GSI viewer. An enclosed depression is within 100m of the route at the R629 Shangarry south intersection. **Groundwater vulnerability:** Groundwater vulnerability is predominantly classified high along the corridor, with some patches of moderate and extreme vulnerability. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is predominantly "Low" with small	**Superficial cover:** The route is predominantly contained within till derived from Devonian sandstones, with small patches of Gravels derived from Devonian sandstones. **Bedrock aquifer:** The route passes through two different aquifers. Between the landfall zone and Ballingarrane the aquifer is classed as a Regionally Important Aquifer - Karstified (diffuse). Between Ballingarrane and Ballyfin the route passes through a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones and another Locally Important Aquifer - Karstified. **Karst features:** Karst features of a swallow hole and spring are identified within 200m of the route at R629 intersection with Kilmahon road on GSI viewer. **Groundwater vulnerability:** Groundwater vulnerability is predominantly classified high or extreme along the corridor, with some patches of moderate vulnerability. Landslide susceptibility: GSI Landslide Susceptibility Classification description is predominantly "Low" with small patches of "High" along the entire corridor. These high patches could be avoided if the route is carefully planned.	Formation (Red brecciated calcilutite limestone). At some points the route also intersects Old Head Sandstone Formation (Flaser-bedded sandstone & minor mudstone). **Superficial cover:** The route is predominantly contained within till derived from Devonian sandstones, with small patches of Gravels derived from Devonian sandstones. **Bedrock aquifer:** The route passes through two different aquifers. Between the landfall zone and Ballyhimikin the aquifer is classed as a Regionally Important Aquifer - Karstified (diffuse). Between Ballyhimikin and the subzone the route passes through a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. **Karst features:** Cloyne cave (1705NEK018 and 1705NEK017) karst features are identified adjacent to the route to the east of Cloyne village. Two springs (White Well ID:1705NEK013 and Dick Neills Well ID:1705NEK012) are adjacent to the route along the R360 at Crocane. **Groundwater vulnerability:** Groundwater vulnerability is classified as moderate to extreme vulnerability along the corridor. **Landslide susceptibility**: GSI Landslide Susceptibility Classification description is predominantly "Low" with small patches of "Moderately High" along the entire corridor. These moderately high patches could be	through Gyleen Formation (Sandstone with mudstone & siltstone). There is a small intersection with Cork ed Marble Formation (Red brecciated calcilutite limestone). At some points the route also intersects Old Head Sandstone Formation (Flaser-bedded sandstone & minor mudstone). **Superficial cover:** The route is predominantly contained within till derived from Devonian sandstones, with small patches of Gravels derived from Devonian sandstones and alluvium. **Bedrock aquifer:** The route passes through two different aquifers. Between the landfall zone and Ballyhimikin the aquifer is classed as a Regionally Important Aquifer - Karstified (diffuse). Between Ballyhimikin and the subzone the route passes through a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. **Karst features:** Cloyne cave (1705NEK018 and 1705NEK017) karst features are identified adjacent to the route to the east of Cloyne village. Two springs (White Well ID:1705NEK013 and Dick Neills Well ID:1705NEK012) are adjacent to the route along the R360 at Crocane. **Groundwater vulnerability:** Groundwater vulnerability is classified as moderate to extreme vulnerability along the corridor. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is predominantly "Low" with small patches of "Moderately High"

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	patches of "High" along the entire corridor. These high patches could be avoided if the route is carefully planned.		avoided if the route is carefully planned to the south of the R631.	along the entire corridor. These moderately high patches could be avoided if the route is carefully planned to the south of the R631.
Water Resources	Six watercourse crossings associated with this route. ● Ardnahinch_010 (IE_SW_19A200870), with a WFD status of Good. ● SHANAGARRY_010 (IE_SW_19S270790), with a WFD status of Good. ● Farrannamanagh_010 (IE_SW_19F110740), with a WFD status of Good. ● Ardra More_010 (IE_SW_19A220720), with a WFD status of Good Garryvoe bathing area (IESWBWC040_0000_0100) has ""Good"" bathing water quality, and a small portion of the route is within the bathing water catchment area. The route passes through CLOYNE AGHADA PWS SO Outer Protection Area and SI Inner Protection Area (Public Supply Source Protection Areas). No nutrient sensitive watercourses and no drinking water river abstractions recorded across the route.	Three watercourse crossings associated with this route ● Ardnahinch_010 (IE_SW_19A200870), with a WFD status of Good. ● SHANAGARRY_010 (IE_SW_19S270790), with a WFD status of Good. ● Farrannamanagh_010 (IE_SW_19F110740), with a WFD status of Good. Garryvoe bathing area (IESWBWC040_0000_0100) has "Good" bathing water quality, and a small portion of the route is within the bathing water catchment area. The route passes through CLOYNE AGHADA PWS SO Outer Protection Area and SI Inner Protection Area (Public Supply Source Protection Areas). No nutrient sensitive watercourses and no drinking water river abstractions recorded across the route.	Four watercourse crossings associated with this route. ● SCHOOLGARDENS_010 (IE_SW_19S290720) drains into Outer Cork Harbour at the Eastern section of this landfall zone. According to EPA data the 2019-2024 WFD status of SCHOOLGARDENS_010 is Good and the waterbody is not at risk. ● Ardnahinch_010 (IE_SW_19A200870), with a WFD status of Good. ● Farrannamanagh_010 (IE_SW_19F110740), with a WFD status of Good. ● Garryvoe bathing area (IESWBWC040_0000_0100) has ""Good"" bathing water quality, and much of the route is within the bathing water catchment area. The route passes through CLOYNE AGHADA PWS SI Inner Protection Area (Public Supply Source Protection Area). No nutrient sensitive watercourses and no drinking water river abstractions recorded across the route.	Six watercourse crossings associated with this route. ● SCHOOLGARDENS_010 (IE_SW_19S290720) drains into Outer Cork Harbour at the Eastern section of this landfall zone. According to EPA data the 2019-2024 WFD status of SCHOOLGARDENS_010 is Good and the waterbody is not at risk. The route crosses this watercourse 2 times. ● Ardnahinch_010 (IE_SW_19A200870), with a WFD status of Good. The route crosses this watercourse 2 times. ● Farrannamanagh_010 (IE_SW_19F110740), with a WFD status of Good. The route crosses this watercourse 2 times. ● Garryvoe bathing area (IESWBWC040_0000_0100) has "Good" bathing water quality, and much of the route is within the bathing water catchment area' The route passes through CLOYNE AGHADA PWS SI Inner Protection Area (public supply source protection area). No nutrient sensitive watercourses and no drinking water river abstractions recorded across the route.

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
Climate, including flood risk and Sustainable Development	Route passes across the Farrannamanagh_010 which has a 1% (100:1) AEP of flooding. No risk identified on Groundwater Flooding Data Viewer.			
Biodiversity	● In road / verge option. ● Does not cross or intersect with any European designated site. ● Adjacent to Rostellan Lough, Aghada Shore and Poulnabibe Inlet pNHA. ● Crosses 3 watercourses: Ardnahinch (EPA: 19A20), Shanagarry (EPA: 19S27), Farrannamanagh (EPA: 19F11). Ardnahinch flows into nearby Ballycotton Bay SPA - standard water quality mitigation measures during construction to reduce impact. Assumption HDD or similar non-intrusive method. ● Localised removal of hedgerows / treelines. Larger trees not replaced. Scrub regrowth - mitigation (with fencing) ● Off-road habitats in this area largely grassland and cultivated land.	● In road / verge option. ● Does not cross or intersect with any European designated site. ● Crosses 3 watercourses: Ardnahinch (EPA: 19A20), Shanagarry (EPA: 19S27), Farrannamanagh (EPA: 19F11). Ardnahinch flows into nearby Ballycotton Bay SPA - standard water quality mitigation measures during construction to reduce impact. Assumption HDD or similar non-intrusive method. ● Intersects Rostellan Lough, Aghada Shore and Poulnabibe Inlet pNHA. Can be avoided. ● Localised removal of hedgerows / treelines. Larger trees not replaced. Scrub regrowth - mitigation (with fencing) ● Off-road habitats in this area largely grassland and cultivated land.	● Includes off road sections in green field. - exact off-road route is not available at time of MCA ● Does not cross or intersect with any European designated site. ● Presence of Annex I Atlantic salt meadows south of R632 and Shanagarry - to be avoided. ● Potential for watercourse crossings - standard water quality mitigation can be implemented to reduce impact. Assumption HDD or similar non-intrusive method. ● Disturbance to hedgerows and trees during breeding season ● Removal of hedgerows / treelines ● Larger trees not replaced. Scrub regrowth - mitigation (with fencing) ● Off-road habitats in this area largely grassland and cultivated land.	● Does not cross or intersect with any European designated site. ● Crosses 6 watercourses: Lower Garryvoe (EPA: 19L52), Glennageare West (EPA: 19G69), Sheanliss (EPA: 19S25), Ardnahinch (EPA: 19A20), Rostellan (EPA: 19R33) and Farrannamanagh (EPA: 19F11). Ardnahinch flows downstream into Ballycotton Bay SPA - standard water quality mitigation measures during construction to reduce impact. Assumption HDD or similar non-intrusive method. ● Disturbance to hedgerows and trees during bird breeding season ● Removal of hedgerows / treelines. Larger trees not replaced. Scrub regrowth - mitigation (with fencing) ● Off-road habitats in this area largely grassland and cultivated land.
Cultural Heritage, including Underwater Archaeology	Crosses 4 ZoNs in-road (House CO089-059----, County House and Tower House CO089-008001-/CO089-008002-, Enclosure CO088-042----, Enclosure CO088-115----) and 3 ZoNs crossed in greenfield areas (Lime kilns	Crosses 7 ZoNs in-road (House CO089-059----, County House and Tower House CO089-008001-/CO089-008002-2, Fulachtai fia CO089-017001-/CO089-017002-, Fulacht fia CO089-018001-, Enclosure CO089-019----, Upper	Crosses 6 ZoNs in-road (Lithic scatter CO089-078----, Church and Graveyard CO077-037001-/CO077-037002-, Ringfort CO077-035---, Country House CO077-086---, Upper Aghada Church CO088-119----, Aghada Church and Graveyard CO088-035001-/CO088-	Crosses 8 ZoNs in-road (Lithic scatter CO089-078----, Church and Graveyard CO077-037001-/CO077-037002-, Ringfort CO077-035---, Country House CO077-086---, Upper Aghada Church CO088-119----, Aghada Church and Graveyard CO088-035001-/CO088-

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	CO088-020002-/CO088-060----, Church CO008-118----)..	Aghada Church CO088-119----, Aghada Church and Graveyard CO088-035001-/CO088-035002-), 3 ZoNs crossed in greenfield areas (Lime kilns CO088-020002-/CO088-060----, Church CO008-118----).	035002-). There are also large off-road sections where the risk cannot be properly determined without a walkover survey and test trenching.	035002- Cloyne Historic Town which includes 12 RMPs CO088-01901- to CO088-01912-, and Leper Hospital CO088-018---). Potential for archaeological remains to be found in-road in the Historic Town.
Traffic and Transport	Onshore cable route does not intersect any large urban areas, it passes through small settlements and bypasses areas with utility congestion. Cable route would run along both single lane (local roads) and double lane roads (R632 and R629). Small local roads may require temporary full road closures with diversions in place. This has potential to impact local users including traffic associated with agricultural activities. 6km of double lane roads may only require single lane closures and traffic management using a stop-and-go system. Local access will be retained through small local road network.	Onshore cable route does not intersect any large urban areas, it passes through small settlements and bypasses areas with utility congestion. Cable route would run along both single lane (local roads) and double lane roads (R632). Small local roads may require temporary full road closures with diversions in place. This has potential to impact local users including traffic associated with agricultural activities. 3km of the route runs alongside the R632 double lane road, this may only require single lane closures and traffic management using a stop-and-go system. Local access will be retained through small local road network.	This option bypasses Cloyne. Cable route would run along both single lane (local roads) and one double lane road (R631). Small local roads may require temporary full road closures with diversions in place. This has potential to impact local users including traffic associated with agricultural activities. The R631 double lane road may only require single lane closures and traffic management using a stop-and-go system. Local access will be retained through small local road network.	This option is routed through Cloyne and can be considered to cause the most traffic disruption of the Cork options, although cable laying and associated traffic impacts will be sequential and temporary in nature.
Seascape, Landscape and Visual	Cable corridors will be substantially along road corridors and occasionally requiring short sections of trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient landscape and visual effects during the construction phase (akin to road works) but with little or no surface expression during the operational phase.			
Aviation and Telecommunications	No location specific risks identified along this corridor. EirGrid will continue to engage with key stakeholders such as other developers, the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops.			

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
MCA Ranking (Environmental)				

B.3.4 Social Considerations

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
Settlement and Communities, including coastal and fishing communities	• The nearest settlement to Landfall Zone C is Shanagarry, approximately 1.6km to the west. • The corridor passes through the settlement of Shanagarry, within 1km of Cloyne, within 500m of Aghada-Farsid-Rostellan, and within 1.4km of Aghada Upper. • The communities in Garryvoe and Shanagarry with hotels, cafe's, a school (Shanagarry only), stores and residential properties will be impacted by lane closure of the R632 during the construction phase, however traffic will still flow and impact should not be significant. Dwellings across the remainder of the route are in small hamlets or isolated rural properties.	• The nearest settlement to Landfall Zone C is Shanagarry, approximately 1.6km to the west. • The corridor passes through the settlement of Shanagarry, within 500m of Aghada-Farsid-Rostellan and adjacent to Aghada Upper. • The communities in Garryvoe and Shanagarry with hotels, cafe's, a school (Shanagarry only), stores and residential properties will be impacted by lane closure of the R632 during the construction phase, however traffic will still flow and impact should not be significant. Dwellings across the remainder of the route are in small hamlets or isolated rural properties.	• The nearest settlement to Landfall Zone C is Shanagarry, approximately 1.6km to the west. The corridor bypasses the settlement of Cloyne, within 500m of Aghada-Farsid-Rostellan and adjacent to Aghada Upper. • The small community of Garryvoe has hotels, cafe's, businesses and residential properties that will be impacted by full road closure of local roads (L3815 and L3818 and Garryvoe Lower Road). Local road closures along the route will require temporary diversions through the road network. Lane closures along regional roads R629, R630 and R631 during the construction phase may cause temporary congestion, however traffic will still flow and impact should not be significant. • The village of Aghada will also be impacted during the construction phase by partial closure of Upper Aghada road	• The nearest settlement to Landfall Zone C is Shanagarry, approximately 1.6km to the west. The corridor passes through the settlement of Cloyne, within 500m of Aghada-Farsid-Rostellan and through Aghada Upper. • The small community of Garryvoe has hotels, cafe's, businesses and residential properties that will be impacted by full road closure of local roads (L3815 and L3818 and Garryvoe Lower Road). Local road closures along the route will require temporary diversions through the road network. Lane closures along regional roads R629, R630 and R631 during the construction phase may cause temporary congestion, however traffic will still flow and impact should not be significant. • The village of Aghada will also be impacted during the construction phase by partial closure of Upper Aghada road and Curragh road (local roads) which pass through the centre of the village and connect neighbouring settlements and to the coast. • The village of Cloyne will be similarly impacted by partial road closure of the R629 during the construction phase.

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
			and Curragh road (local roads) which pass through the centre of the village and connect neighbouring settlements and to the coast.	● Cloyne is home to various clubs and groups, including the Cloyne Union of Parishes, Cloyne Tidy Towns, Cloyne GAA, Cloyne Diocesan Youth Services and Cloyne District Community Council, all of which value community and social inclusion.
Visitors and Commuters	Regional roads R632 and R629 form part of the local commuter network, lane closures will affect commuting times for resident and visitors alike. Garryvoe Beach is a popular seaside destination, therefore limited access due to partial and full road closures could impact the area.	Regional road R632 forms part of the local commuter network, partial lane closures will affect commuting times for resident and visitors alike. Garryvoe Beach is a popular seaside destination, therefore limited access due to partial and full road closures could impact the area.	Regional road R629, R630 and R631 form part of the local commuter network, partial lane closures will affect commuting times for resident and visitors alike. Partial closure of Upper Aghada road and Curragh road (local roads) will result in severance of the village for commuters and visitors around Aghada village, including access to Aghada Pier. Garryvoe Beach is a popular seaside destination, therefore limited access due to partial and full road closures could impact the area. Bypassing urban areas will limit disruption.	Regional road R629, R630 and R631 form part of the local commuter network, partial lane closures will affect commuting times for resident and visitors alike. Partial closure of Upper Aghada road and Curragh road (local roads) will result in severance of the village for commuters and visitors around Aghada village, including access to Aghada Pier. Garryvoe Beach is a popular seaside destination, therefore limited access due to partial and full road closures could impact the area. Commuters within Cloyne village will be disrupted by partial closures to the R629.
Amenities, Recreation and Tourism	Garryvoe Beach is a popular seaside destination with hotels, coffee shops, a playground, bars, beach saunas and a health club. Access for tourism and residents may be restricted due to partial and full road closures on the R632. Shanagarry village has Shanagarry National Catholic School as well as various stores, Ballymaloe cookery	Garryvoe Beach is a popular seaside destination with hotels, coffee shops, a playground, bars, beach saunas and a health club. Access for tourism and residents may be restricted due to partial and full road closures on the R632. Shanagarry village has Shanagarry National Catholic School as well as various stores, a cookery school and attractions including a Celtic Maze and hotels and B&Bs. These may all be impacted by partial closure of the	The small community of Garryvoe will be impacted by full road closure of local roads (L3815 and L3818 and Garryvoe Lower Road). Garryvoe Beach is a popular seaside destination with hotels, coffee shops, a playground, bars, beach saunas and a health club. Access for tourism and residents, including Ballymaloe Cookery School, may be restricted due to partial and full road closures.	The small community of Garryvoe will be impacted by full road closure of local roads (L3815 and L3818 and Garryvoe Lower Road). Garryvoe Beach is a popular seaside destination with hotels, coffee shops, a playground, bars, beach saunas and a health club. Access for tourism and residents, including Ballymaloe Cookery School, may be restricted due to partial and full road closures. The village of Aghada has many amenities including Lower Aghada Tennis & Sailing Club, hotels, bars, a community centre and Aghada National School. Access to all of

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC4
	school and attractions including a Celtic Maze and hotels and B&Bs. These may all be impacted by partial closure of the R632 and R629. Shanagarry is host to Russel Rovers GAA Club for traditional Irish sports games for all age ranges, this club supports Shanagarry and surrounding areas. Access to Churchvilla FC Ballyduff Football Pitch may also be impacted by full local road closures.	R632. Shanagarry is host to Russel Rovers GAA Club for traditional Irish sports games for all age ranges, this club supports Shanagarry and surrounding areas. The village of Aghada has many amenities including Lower Aghada Tennis & Sailing Club, hotels, bars, a community centre and Aghada National School. Access to all of these has the potential to be disrupted during full road closures of Curragh Road and Upper Aghada road during the construction phase.	The village of Aghada has many amenities including Lower Aghada Tennis & Sailing Club, hotels, bars, a community centre and Aghada National School. Access to all of these has the potential to be disrupted during full road closures of Curragh Road and Upper Aghada road during the construction phase. Bypassing urban areas will limit disruption.	these has the potential to be disrupted during full road closures of Curragh Road and Upper Aghada road during the construction phase. The village of Cloyne has religious buildings, restaurants and cafes, a school and a GAA sports complex that will be disrupted by partial road closures. Cloyne is home to various other clubs and groups, including the Cloyne Union of Parishes, Cloyne Tidy Towns, Cloyne Diocesan Youth Services and Cloyne District Community Council.
Nuisance and Disturbance	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors. Bypassing urban areas will limit nuisance and disturbance	The construction phase can be expected to cause nuisance and disturbance to local residents in and visitors to Cloyne.
Visual Effects	Cable corridors will be substantially along road corridors and occasionally requiring short sections of trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient visual effects during the construction phase (akin to road works) but with little or no surface expression during the operational phase.			
MCA Ranking (Social)				

B.3.5 Deliverability Considerations

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC34
Implementation Timelines	There are multiple stretches of off-road trenching required. **Offroad:** ● This route contains 30 joint bays, 6 watercourse crossings and up to 6 gas transmission crossings. ● In addition to existing infrastructure crossings, there is one additional section of offroad trenching required to bypass Carriglusky. ● Permits and wayleaves for this section will be required from landowners which may affect the implementation timeline, however offroad trenching activities can be performed faster than along local roads. **Road type:** • Approx. 30% of roads are two lanes allowing for more space to conduct works and comparatively shorter timelines than single lane roads. **Seasonal constraints:** ● Garryvoe Beach more densely populated in the summer and may result in seasonal constraints. ● There is one school along a local road 300m from the R629 which this cable route follows through Shanagarry. This may impact	There are multiple stretches of off-road trenching required, and this route has the shortest length of two-lane roads. **Offroad:** ● This route contains 30 joint bays, 3 watercourse crossings and up to 4 gas transmission crossings. ● In addition to existing infrastructure crossings, there are two sections of offroad trenching required to bypass Aghada and Carriglusky. ● Permits and wayleaves for these sections will be required from landowners which may affect the implementation timeline, however offroad trenching activities can be performed faster than along local roads. **Road type:** ● Approx. 15% of roads are two lanes allowing for more space to conduct works and comparatively shorter timelines than single lane roads. **Seasonal constraints:** ● Garryvoe Beach more densely populated in the summer and may result in seasonal constraints. ● There is one school along a local road 300m from the R629 which this cable route follows through Shanagarry, and two schools off the main road through Aghada. This may impact cable installation	There are multiple stretches of off-road trenching required, and this route has the shortest length of two-lane roads. **Offroad:** ● This route contains 30 joint bays, 5 watercourse crossings and up to 5 gas transmission crossings. ● Large stretches of offroad trenching are required in comparison to the other route options. ● An increased number of permits and wayleaves will be required from landowners. Although this may extend the implementation timeline, offroad trenching activities can be performed faster than along local roads. **Road type:** ● Approx. 15% of roads are two lanes allowing for more space to conduct works and comparatively shorter timelines than single lane roads. **Seasonal constraints:** ● Garryvoe Beach more densely populated in the summer and may result in seasonal constraints. ● There are two schools off the main road through Aghada which may impact cable installation timelines with respect to seasonal restrictions.	This route requires many fewer instances of off-road trenching through third party lands in comparison to all other routes and has the longest stretch of two-lane road. **Offroad:** ● This route contains 30 joint bays, 5 watercourse crossings and up to 5 gas transmission crossings. ● No large stretches of offroad trenching required in comparison to the other route options. This reduces the permitting and wayleave requirements from landowners and may reduce the implementation timeline. **Road type:** ● 30% of roads are two lanes allowing for more space to conduct works and comparatively shorter timelines than single lane roads. ● Although the road passing through Cloyne has two lanes, trenching through this area may be slower due to the existence of other underground services. **Seasonal constraints:** ● Garryvoe Beach more densely populated in the summer and

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC34
	cable installation timelines with respect to seasonal restrictions.	timelines with respect to seasonal restrictions.		may result in seasonal constraints. ● There are two schools along the road which passes through Cloyne, and two schools off the main road through Aghada. This may impact cable installation timelines with respect to seasonal restrictions.
Dependence on other Projects	No known dependencies at the time of writing	● Uisce Éireann have forecast plans to construct a new Wastewater Transfer Pipeline, upgrade an existing service and construct a new Treated Wastewater Transfer Pumping Station along R631 through Cloyne with a 2030 initiation date.		
Permits and Wayleaves	● Cable route bypasses Carriglusky off-road in addition to watercourse and GNI crossings. ● The cable to be located within public road where possible, however there is a third-party land requirement for bypassing Carriglusky, infrastructure crossings, waterway crossings and joint bays. Additional permitting may also be required for in-road utilities (water pipes and gas transmission lines). This may pose risks to delays in project execution, and thus to the project programme.	● Cable route bypasses Aghada and Carriglusky off-road in addition to watercourse and GNI crossings. ● The cable to be located within public road where possible, however there is a third-party land requirement for bypassing Aghada and Carriglusky. There will also be a third-party land requirement for infrastructure crossings, waterway crossings and joint bays. Additional permitting may also be required for in-road utilities (water pipes and gas transmission lines). This may pose risks to delays in project execution, and thus to the project programme.	● Cable route bypasses Cloyne and Aghada off-road in addition to watercourse and GNI crossings. ● The cable to be located within public road where possible, however there is a third-party land requirement for Bypassing urban areas and Aghada. There will also be a third-party land requirement for infrastructure crossings, waterway crossings and joint bays. Additional permitting may also be required for in-road utilities (e.g. Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.	● Cable route is mostly within the public road. ● The cable to be located within public road where possible, however there is a third-party land requirement for infrastructure crossings, waterway crossings and joint bays. Additional permitting may also be required for in-road utilities (e.g. Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.
Project Plan Flexibility	Most of this route is single-lane roads which may limit flexibility in addition to watercourse and GNI crossings. **Existing infrastructure:** ● 30% of roads are two lane and contain one Uisce Éireann service within the road. The	The majority of this route is single-lane roads which may limit flexibility in addition to watercourse and GNI crossings. **Existing infrastructure:** ● 15% of roads are two lane and contain one Uisce Éireann service	This route has a large off-road section to bypass urban areas and contains overall less in-road services than other route options, allowing for flexibility is micro-alignment. **Existing infrastructure:**	A large section of the route contains in-road services and traverses urban areas in addition to watercourse and GNI crossings. **Existing infrastructure:** ● 30% of roads are two lane and contain approx. 2-3 Uisce

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC34
	remaining sections of road are all single lane of varying widths with one Uisce Éireann service along 50% of the route. ● 6 watercourse crossings (bridges / culverts) ● Up to 6 gas crossings: **Road type / offroad:** • The offroad section of this route bypassing Aghada and Carriglusky would have greater mitigation options for obstacles encountered in comparison to route sections along narrow roads. • The remaining 70% of this route is single lane which may limit flexibility.	within the road. The remaining sections of road are all single lane of varying widths with one Uisce Éireann service along 50% of the route. ● 3 watercourse crossings (bridges / culverts) ● Up to 4 gas crossings **Road type / offroad:** • The offroad section of this route bypassing Aghada and Carriglusky would have greater mitigation options for obstacles encountered in comparison to route sections along narrow roads. • The remaining 85% of this route is single lane which may limit flexibility.	● 15% of roads are two lane and contain one Uisce Éireann service within the road. The remaining sections of road are all single lane of varying widths with one Uisce Éireann service along the majority of the route. ● 5 watercourse crossings (bridges / culverts) ● Up to 5 gas crossings **Road type / offroad:** • The offroad section of this route Bypassing urban areas and Aghada would have greater mitigation options for obstacles encountered in comparison to route sections along narrow roads.	Éireann services within the road. The remaining sections of road are all single lane of varying widths with one Uisce Éireann service along most of the route. ● 5 watercourse crossings (bridges / culverts) ● Up to 5 gas crossings **Road type / offroad:** • Route passes through Cloyne and Aghada urban areas which limit flexibility.
Design Complexity, Uncertainty, Risk	This route encounters the greatest number of tight bends which significantly increases complexity. **Urban areas:** This route does not encounter any significant urban areas, reducing uncertainty regarding this. **Utilities:** ● Up to 6 gas transmission line crossings contribute to design complexity and risk, uncertainty will be reduced through further survey activities and engagement with GNI. ● This route encounters the least amount of Uisce Éireann utilities within the road - approx. 50% of	This route encounters the greatest number of tight bends which significantly increases complexity. **Urban areas:** This route bypasses Aghada urban area by trenching offroad, reducing uncertainty regarding this. **Utilities:** ● Up to 4 gas transmission line crossings contribute to design complexity and risk, uncertainty will be reduced through further survey activities and engagement with GNI. ● This route encounters the least amount of Uisce Éireann utilities within the road - approx. 50% of all on-road sections contain at least one Uisce Éireann pipe.	This route bypasses urban areas and may encounter less tight bends pending off-road path taken. **Urban areas:** This route bypasses Cloyne and Aghada urban areas by trenching offroad, reducing uncertainty regarding this. **Utilities:** ● Up to 5 gas transmission line crossings contribute to design complexity and risk, uncertainty will be reduced through further survey activities and engagement with GNI. ● This route encounters the second greatest number of Uisce Éireann utilities within the road - all on-road sections contain at least one Uisce Éireann pipe.	Alignment with Aghada and Cloyne urban areas would significantly increase route complexity and uncertainty regarding utility congestion. Could be reduced to DG pending further surveys. **Urban areas:** Alignment through Cloyne and Aghada would have increased complexity due to the extent of various existing utilities along the route, leading to significant uncertainty. Greater surveying of this area will be required to reduce this uncertainty. **Utilities:** ● Up to 5 gas transmission line crossings contribute to design

Location	CRK_TC1	CRK_TC2	CRK_TC3	CRK_TC34
	all on-road sections contain at least one Uisce Éireann pipe. **Watercourse crossings:** ● 6 watercourse crossings. Identified structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. ● Temp works required for road closures and traffic management etc. **Extent of route bends:** This route encounters the greatest number of tight bends. This significantly increases complexity regarding adherence to a minimum duct bend radius of 20m.	**Watercourse crossings:** ● 3 watercourse crossings. Identified structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. ● Temp works required for road closures and traffic management etc. **Extent of route bends:** This route encounters a comparatively large number of tight bends. This increases complexity regarding adherence to a minimum duct bend radius of 20m.	**Watercourse crossings:** ● 5 watercourse crossings. Identified structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. ● Temp works required for road closures and traffic management etc. **Extend of route bends:** This route encounter a minimal number of tight bends pending confirmation of the Cloyne and Aghada offroad bypass paths to be taken. Therefore, it currently has lower comparative complexity regarding adherence to a minimum duct bend radius of 20m.	complexity and risk, uncertainty will be reduced through further survey activities and engagement with GNI. ● This route encounters the greatest number of Uisce Éireann utilities within the road ● Uisce Éireann have forecast plans to construct a new Wastewater Transfer Pipeline, upgrade an existing service and construct a new Treated Wastewater Transfer Pumping Station along R631 through Cloyne with a 2030 initiation date. **Watercourse crossings:** ● 5 watercourse crossings. Identified structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. ● Temp works required for road closures and traffic management etc. **Extent of route bends:** This route has the least number of tight bends, therefore it has lower comparative complexity regarding adherence to a minimum duct bend radius of 20m.
MCA Ranking (Deliverability)				

C. Step 4A MCA (County Wexford)

C.1 Evaluation of Landfall Zones and Associated Offshore Transmission Cable Route Corridors

C.1.1 Technical Considerations

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Compliance with Health and Safety Standards	There is no discernible distinction between the sites. Full compliance with health and safety (H&S) standards will be maintained across all sites.		
Average Failure Rates	No discernible difference based on the landfall and the design of the HDD. Given that this site has the shortest route length (35.6 km), it is expected to have the lowest probability of failure, due to the reduced exposure to potential defects and external influences over a shorter distance. However, since the difference between the longest and shortest cable routes to Wexford is only 4 km it is considered that the benefit would be negligible.	No discernible difference based on the landfall and the design of the HDD. For a route length of 38.7 km, the overall probability of failure is proportionally higher compared to shorter cable lengths, reflecting the increased exposure to potential defects and external influences over a greater distance. However, since the difference between the longest and shortest cable routes to Wexford is only 4 km it is considered that the benefit would be negligible.	No discernible difference based on the landfall and the design of the HDD. Given that this site has the longest route length (39.6 km), it is expected to have the highest probability of failure, due to the increased exposure to potential defects and external influences over a greater distance. However, since the difference between the longest and shortest cable routes to Wexford is only 4 km it is considered that the benefit would be negligible.
Technology Operational Risk	The proposed technology and methodology remain uniform across all sites; consequently, there is little discernible difference between them. The only significant variable is the length of the proposed HDD segments, which contributes a marginal decrease to the overall risk profile of the site. HDD risk levels will be dependent on ground conditions at the landfall and so should be re-assessed as this information becomes available. HDD profile has a punch out at water depth of 10 m enabling conventional Cable Lay Vessel to be used. **HDD length:** 600m -700m	The proposed technology and methodology remain uniform across all sites; consequently, there is little discernible difference between them. The only significant variable is the length of the proposed HDD segments, which contributes a marginal increase to the overall risk profile of this site. HDD risk levels will be dependent on ground conditions at the landfall and so should be re-assessed as this information becomes available. Where the assumed HDD profile is used the punch out water depth is 10 m enabling conventional Cable Lay Vessel to be used. **HDD length:** 1200m	The proposed technology and methodology remain uniform across all sites; consequently, there is little discernible difference between them. The only significant variable is the length of the proposed HDD segments, which contributes a marginal increase to the overall risk profile of this site. HDD risk levels will be dependent on ground conditions at the landfall and so should be re-assessed as this information becomes available. HDD profile has a punch out at water depth of between 6 and 10 m requiring a shallow draught installation vessel to be used in addition to the conventional Cable Lay Vessel, this increases technical risk. **HDD length:** 1200m
Expansion or Extendibility	The methodology is readily replicable, and with sufficient access available, this may facilitate efficient construction, minimise implementation constraints, and support further project development.	The methodology is readily replicable and, where sufficient access is available, may facilitate efficient construction, minimise implementation constraints, and support future project development. However, the limited options available at this site may	The methodology is readily replicable and, where sufficient access is available, may facilitate efficient construction, minimise implementation constraints, and support future project development. However, the fragmented nature of the available land parcels at

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
		constrain future development and reduce flexibility for subsequent project phases.	this site may limit opportunities for further development.
Constructability (Ground Conditions and Marine Processes)	This site offers the shortest HDD drill length, approximately 600–700 m, with a punch-out location situated at the 10 m water depth contour. However, rock outcrops are present along the route, which may present challenges to installation. **Overall cable:** 35.6km **Ploughing/jetting:** 30.3km Minimum of 5.3km of rock outcropping **HDD Profiles** 600-700 to 10m water contour	This site represents a potentially favourable option for the Wexford/Waterford area, supported by the presence of an identified sediment channel. The HDD drill length is flexible, ranging from approximately 750 m to 1200 m, depending on the optimal water depth contour selection. An exit at the 10 m water depth contour is achievable and may be located within sediment, which would be advantageous for installation. **Overall cable:** 38.7km **Ploughing/jetting:** 31.8km Minimum of 6.9km of rock outcropping. **HDD Profile Option One:** 1200m to 10m water contour **HDD Profile Option Two:** 750m to 6m water contour.	The 10 m water depth contour is located a significant distance offshore, necessitating an HDD drill profile in excess of 1200 m. The proposed cable punch-out location is within an area of extensive bedrock exposure, with no viable sediment alternative, which would require substantial remedial submarine cable protection measures. Furthermore, the increased HDD length would result in higher cable pull-in tensions, potentially imposing more onerous cable design requirements. The HDD profile has a punch out location in restricted water depth <10m at the 1200m HDD duct limit would increase the complexity of the cable pull-in operation and would necessitate a multi-vessel solution. **Overall cable:** 39.6km **Ploughing/jetting:** 30.5km Minimum of 9.1km of rock outcropping. **HDD Profiles** 800m to 1200 to between the 6m to 10m water contour.
Access - Offshore	The metocean conditions would be expected to be generally similar for all of the sites. While local micro-conditions may exist the principal criteria under consideration is the water depth allowing a cable installation vessel and larger sized vessels to approach the shoreline to the punch out location, with a water depth > 10 m being required. Water depth at this location is indicated as 10m being achievable.		While metocean conditions are expected to be broadly consistent across the sites, the primary operational constraint is the water depth at the HDD punch-out location. A water depth of approximately >10 m is considered optimal for vessel approach and installation activities. Within this site, however, potential HDD profiles indicate punch-out locations within the 6m water depth contour. Shallower punch-out locations would necessitate careful vessel selection or potentially a multi-vessel installation approach to safely execute the works.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Access - Onshore	Good access to the area. Access through Fethard on the East of the site would not block access for locals	Narrow access road cannot be widened due to drainage ditches. Beach closure may be required for access or alternatively an off-road access track may be required to allow site access and keep the beach open. Traffic management required for locals along with a long offroad cable route. Equine assistance centre located along the local access road.	Very poor-quality access roads, either closure of access roads to the beach or road widening would be required. An alternative off-road access track may be required to allow site access and keep the beach open. Blocked access would affect local farm and holiday homes. Cable can connect into a looped road at the north of the Beach.
Physical Constraints	Onshore, there are multiple potential compound locations, characterised by large, relatively flat areas, providing flexibility for site layout and construction activities. The requirement to avoid existing HVDC cables severely constrains landfall routing and TJB placement. Combined with potential land access conflicts, this will require close coordination with the Greenlink system owner. The offshore cable section is routed through a SAC area.	HDD compound option exists in the Western part of the zone, but less favourable due to heritage site proximity. There is a slope at the compound location which requires site preparation. Access road construction may be required. Bannow Coast Guard heritage buildings require setback/clearance distance.	The proposed HDD compound to the east provides a reasonably sized and relatively flat area suitable for construction, with potential to extend the compound further inland if required, albeit with reduced space for cable stringing. Access could be achieved by upgrading an existing track or constructing a new access road, subject to land availability. Two alternative compound locations to the west are also identified; however, these are more constrained by limited space, proximity to residential properties, and reduced accessibility.
MCA Ranking (Technical)			

C.1.2 Economic Considerations

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Capital Cost	**Overall cable:** 35.6km **Ploughing/jetting:** 30.3km **Trenching/remedial protection:** 5.3km Cable cost will be a primary consideration; however, the financial implications of the technical cable protection challenges remain a key uncertainty. In addition, routing through a Special Area of Conservation (SAC) may introduce further consenting requirements, environmental constraints, and associated project risks.	**Overall cable:** 38.7km **Ploughing/jetting:** 31.8km **Trenching/remedial protection:** 6.9km Cable cost will be a primary consideration; however, the financial implications of the technical cable protection challenges remain a key uncertainty. The overall offshore cable route length is comparable with Landfall Site E with a similar overall geological uncertainty based on the current data available.	**Overall cable:** 39.6km **Ploughing/jetting:** 30.5km **Trenching/remedial protection:** 9.1km Cable cost will be a primary consideration; however, the financial implications of the technical cable protection challenges remain a key uncertainty. Coupled with the longest cable route, potential HDD lengths in excess of 1200 m, Landfall G is considered the least favourable option.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Life Cycle Costs	Notwithstanding the potential need for additional remedial works—potentially requiring more frequent inspections and ongoing repairs—a simple high-level assessment suggests that the overall offshore cable length will be a key driver of inspection effort, and therefore the associated lifecycle costs. **Overall offshore cable length**: 35.6km	Notwithstanding the potential need for additional remedial works—potentially requiring more frequent inspections and ongoing repairs—a simple high-level assessment suggests that the overall offshore cable length will be a key driver of inspection effort, and therefore the associated lifecycle costs. **Overall offshore cable length:** 38.7km	Notwithstanding the potential need for additional remedial works—potentially requiring more frequent inspections and ongoing repairs—a simple high-level assessment suggests that the overall offshore cable length will be a key driver of inspection effort, and therefore the associated lifecycle costs. **Overall offshore cable length:** 39.6km
Maritime Economy (Ports, Harbours and Shipping and Commercial Fisheries)	While it is recognised the importance of the sites for spawning grounds and fishing zones, it is anticipated that the impact to martime economy and commercial fisheries would be broadly similar for all sites, with the exception of the potential need for trenching and remedial cable protection. The longer the requirement, the greater the impact. Trenching/remedial protection: 5.3km	While it is recognised the importance of the sites for spawning grounds and fishing zones, it is anticipated that the impact to martime economy and commercial fisheries would be broadly similar for all sites, with the exception of the potential need for trenching and remedial cable protection. The longer the requirement, the greater the impact. Trenching/remedial protection: 6.9km	While it is recognised the importance of the sites for spawning grounds and fishing zones, it is anticipated that the impact to martime economy and commercial fisheries would be broadly similar for all sites, with the exception of the potential need for trenching and remedial cable protection. The longer the requirement, the greater the impact. Trenching/remedial protection: 9.1km
MCA Ranking (Economic)			

C.1.3 Environmental Considerations

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Land use compatibility, other site users and planning policy	**Current land use:** Land is predominantly public access beach and private agricultural fields. **Nearby infrastructure:** Proximate to Baginbun Martello Tower and Baginburn signal station. GreenLink landfall site is approximately 400 north-east on the other side of the headland. **Planning applications:** No approved planning applications within the Landfall Zone. **Zoning:** No land use zoning associated with this Landfall Zone. **Commercial Fisheries:** No differentiators in terms of NMPF Fisheries (co-existence) Policies**.**	**Current land use:** Predominantly public beach with some private agricultural fields. **Nearby infrastructure:** No infrastructure within the Landfall Zone. Scattered residential dwellings nearby. **Planning applications:** No approved planning applications within the Landfall Zone. **Zoning:** No land use zoning associated with this landfall. **Commercial Fisheries**: No differentiators in terms of NMPF Fisheries (co-existence) Policies	**Current land use:** Predominantly public access beach with agricultural land. **Nearby infrastructure:** Scattered residential buildings to the north of the landing zone. **Planning applications:** No approved planning applications within the Landfall Zone. **Zoning:** No land use zoning associated with this Landfall Zone. **Commercial Fisheries**: No differentiators in terms of NMPF Fisheries (co-existence) Policies

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Description**: South facing sandy embayment fixed by an eastern headland. The sandy beach is surrounded by cliffs and includes small dunes. The beach has a rip current and underwater rocks. Local rocky outcrop in the intertidal area. **Geological Heritage Sites:** Encompasses Petit's Bay Geological Heritage audited site. The GSI report states that 'This site is a good County Geological Site.' **Erosion**: ICPSS 2050 Erosion Line (2010 - 2014) no data at this location. EMODnet layer 'Coastal migration from field data' status 'stable'. **Water features**: No rivers drain to the beach. **Bedrock**: Booley Bay Formation (Grey to black mudstones with siltstones). Fault line running through the beach. **Superficial cover**: Till derived from Lower Palaeozoic shales. **Bedrock aquifer**: Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. There is an IE_GSI_aqGeLine_100k_9885 fault line at the landfall, see GSI data layer. **Karst features**: No karst features identified on GSI viewer. **Groundwater vulnerability**: Predominantly classified as extreme with some areas of high. **Landslide susceptibility**: GSI Landslide Susceptibility Classification Description 'Low'. According to GSI data, landslide susceptibility is low or low inferred over the entire zone. **Marine Sediment Quality:** Limited publicly available sediment chemistry data, although no significant contamination sources are present nearby. Sediment quality is therefore likely to be generally good.	**Description**: South facing sandy cove beach with small dunes, particularly rocky and jagged and exposed near the edges. Partly submerged sea rocks. Local rocky outcrop in the intertidal area. **Geological Heritage Sites:** No Geological Heritage Sites at this location **Erosion**: ICPSS 2050 Erosion Line (2010 - 2014) no data at this location. EMODnet layer 'Coastal migration from field data' status 'erosion'. **Water features**: No rivers drain to the beach. **Bedrock**: Kiln Bay Formation (Green-grey or buff slates & greywackes). Fault line runs through the Landfall Zone. **Superficial cover**: Till derived from Cambrian sandstones and shales. **Bedrock aquifer**: Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. IE_GSI_aqGeLine_100k_8958 intersects the Landfall Zone, see GSI data layer. **Karst features**: No karst features identified in GSI viewer. **Groundwater vulnerability**: High groundwater vulnerability. **Landslide susceptibility**: GSI Landslide Susceptibility Classification Description Moderately Low / Low / Moderately High. **Marine Sediment Quality**: Limited publicly available sediment chemistry data, although no significant contamination sources are present nearby. Sediment quality is therefore likely to be generally good	**Description**: South facing sandy embayment with small dunes surrounded by cliffs, some of which are rocky. **Geological Heritage Sites**: Encompasses Loftusacre Geological Heritage Site. The GSI report states. 'Due to this wholesale removal of the rocks by the sea, and consequent lack of certainty over the exact source of the starfish specimens, this site is not recommended as an NHA, but merits County Geological Site status for its historical value and remaining potential.' **Erosion**: ICPSS 2050 Erosion Line (2010 - 2014) no data at this location. EMODnet layer 'Coastal migration from field data' status 'erosion'. Local rocky outcrop in the intertidal area. GSI Wexford County Geological Site Report (W.B. Wright GSI, 1916) reported that the whole townland had been removed by the sea. Continuing natural erosion will undoubtedly further modify the Landfall Zone. **Water features**: One river drains to the beach. Western end by road 'Blackhall' **Bedrock**: Blackhall Formation (Dark grey slates & siltstone). **Superficial cover**: Till derived from Cambrian sandstones and shales. **Bedrock aquifer**: Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. **Karst features**: No karst features identified. **Groundwater vulnerability**: Predominantly high vulnerability with some rock at or near the surface. **Landslide susceptibility**: SI Landslide Susceptibility Classification Description Moderately Low / Low / Moderately High.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
			Marine Sediment Quality: Limited publicly available sediment chemistry data, although no significant contamination sources are present nearby. Sediment quality is therefore likely to be generally good
Water Resources	According to EPA data the Coastal Waterbody WFD Status 2016-2021 of Eastern Celtic Sea (HAs 13;17), IE_SE_050_0000, is High There are no other EPA referenced watercourses in the immediate area. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions recorded at this location. No nearby shellfish water designations or significant pollution sources.	According to EPA data the Coastal Waterbody WFD Status 2016-2021 of Eastern Celtic Sea (HAs 13;17), IE_SE_050_0000, is High There are no other EPA referenced watercourses in the immediate area. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions recorded at this location. No nearby shellfish water designations or significant pollution sources. A historic disposal site lies approximately 11 km southwest of Kilmore Quay but is distant from the corridor and unlikely to influence water quality.	Ballymadeer_10 (IE_SE_13B350700) drains this Landfall Zone. According to EPA data the 2019-2024 WFD status of Ballymadeer_10 is Moderate According to EPA data the Coastal Waterbody WFD Status 2016-2021 of Eastern Celtic Sea (HAs 13;17), IE_SE_050_0000, is High. No nutrient sensitive watercourses; no public water supply protection areas; no drinking water river abstractions recorded at this location. No nearby shellfish water designations or significant pollution sources. A historic disposal site lies approximately 11 km southwest of Kilmore Quay but remains distant from the corridor.
Climate, including flood risk and Sustainable Development	10% AEP (1 in 10 year) probability of flooding along the landfall extents.		
Biodiversity	**Benthic Ecology: I**ntertidal survey records rocky shore/bedrock and cobble-boulder habitat with potential to qualify as geogenic reef; no confirmed *Sabellaria alveolata* reef was recorded. Nearshore survey records hard substrate, boulders, and reef-forming sediment–rock interfaces. Some intertidal areas could not be surveyed → potential under-mapping of reef extent (adds precautionary risk). Available data confirms rocky foreshore consistent with reef-supporting conditions.	**Benthic Ecology:** Intertidal shows rocky shore with reef-forming conditions. Extensive *Sabellaria alveolata* habitat noted including at the survey corridor centreline (though not to the same extent as G). Nearshore survey: coarse sediment, boulder fields, and drop-video showing hard ground, including locations where benthic grabs could not deploy. Available data indicates mix of rock features i.e. increased likelihood of reef occurring.	**Benthic Ecology:** Intertidal survey confirms extensive *Sabellaria alveolata* reef. Mixed rocky and boulder foreshore. Nearshore survey: similar result with reef-forming hard substrate, kelp forest indicator species, and structured seabed. Available data shows steep rocky slope and bedrock influence.
	Fish and Shellfish Ecology: Risks to diadromous fish species during migratory life stages that are features of Lower River Suir SAC and River Barrow and River Nore SAC. Presence of mapped herring spawning grounds, beds and substrates. Overlap with broad scale datasets for sandeel and whelk spawning/nursey grounds.		

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
	Marine Mammals and Megafauna: The proposed landfall directly overlaps with a designated site for marine mammals (Hook Head SAC) and the cable corridor is located less than 3km (ZoI for disturbance) from the SAC. Cable corridor trenching through Hook Head SAC, protected site for Annex II bottlenose dolphins and harbour porpoises. This landfall is considered to represent least preferable option for marine mammals. Potential for rock breaking would extend the ZoI to 20km. Frequent records of Annex II bottlenose dolphins and harbour porpoises, Annex IV minke whales, common dolphins and Risso's dolphins, feeding Annex IV humpback whales and Annex II grey seals recorded. Grey seal breeding colony located nearby within Saltee Islands SAC. Landfall Zone and associated cable corridor within Celtic Sea IMMA and Northeast Atlantic Corridor ISRA.	**Marine Mammals and Megafauna**: The proposed landfall and cable corridor are located less than 3km (ZoI for disturbance) from the Hook Head SAC, designated for marine mammals. Standard mitigation measures will be required. Potential for rock breaking s would extend the ZoI to 20km. Frequent records of Annex II bottlenose dolphins and harbour porpoises, Annex IV minke whales, common dolphins and Risso's dolphins, feeding Annex IV humpback whales and Annex II grey seals recorded. Presence of Annex II grey seals associated with nearby (10km) Saltee Islands SAC breeding colony. Potential of Annex II grey seals haul outs to occur at Keeragh Islands (c.a. 1.5km) albeit no records form ongoing onshore surveys or desk information available. Landfall Zone and associated cable corridor within Celtic Sea IMMA and Northeast Atlantic Corridor ISRA.	**Marine Mammals and Megafauna**: The proposed landfall and cable corridor are located less than 3km (ZoI for disturbance) from the Hook Head SAC, designated for marine mammals. Standard mitigation measures will be required. Potential for rock breaking s would extend the ZoI to 20km. Frequent records of Annex II bottlenose dolphins and harbour porpoises, Annex IV minke whales, common dolphins and Risso's dolphins, feeding Annex IV humpback whales and Annex II grey seals recorded. Presence of Annex II grey seals associated with nearby (10km) Saltee Islands SAC breeding colony. Potential of Annex II grey seals haul outs to occur at Keeragh Islands (c.a. 1.5km) albeit no records form ongoing onshore surveys or desk information available. Landfall Zone and associated cable corridor within Celtic Sea IMMA and Northeast Atlantic Corridor ISRA.
	Intertidal Ornithology: Potential connectivity to Bannow Bay SPA, Saltee Islands SPA, Keeragh Islands SPA and Tramore Back Strand SPA with greater than 1% of SPA populations recorded during baseline surveys - oystercatcher and herring gull. Both species are relatively tolerant of disturbance and were recorded in relatively low numbers. Impacts would be short-term and temporary within ZoI of 500m. Breeding herring gull and possible breeding chough present. Seasonal working restriction during the non-breeding season is recommended if this option is brought forward. **Offshore Ornithology**: • Proposed corridors directly overlap with key designated site for foraging seabirds (Seas off Wexford cSPA). • Connectivity to Northeast Celtic Sea IBA (Important Bird and Biodiversity Area)	**Intertidal Ornithology**: Potential connectivity to Bannow Bay SPA, Saltee Islands SPA, Keeragh Islands SPA and Tramore Back Strand SPA with greater than 1% of SPA populations recorded during baseline surveys - brent goose, oystercatcher, turnstone, herring gull, lesser black-backed gull and cormorant. The majority of species are relatively tolerant of disturbance and were recorded in relatively low numbers. Although brent goose abundance was recorded at >1% of SPA populations, there were only two records. Impacts would be short-term and temporary within ZoI of 500m. Seasonal working restriction during the non-breeding season recommended if this option is brought forward. **Offshore Ornithology**: Proposed corridors directly overlap with key designated site for foraging seabirds	**Intertidal Ornithology**: Potential connectivity to Bannow Bay SPA, Saltee Islands SPA, Keeragh Islands SP and Tramore Back Strand SPA with greater than 1% of SPA populations recorded during baseline surveys - oystercatcher, redshank, turnstone, herring gull, lesser black-backed gull, shag and cormorant. The majority of species are relatively tolerant of disturbance and were recorded in relatively low numbers. Impacts would be short-term and temporary within ZoI of 500m. Seasonal working restriction during the non-breeding season is recommended if this option is brought forward.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
		(Seas off Wexford cSPA). Connectivity to Saltees - Ladies' Island Marine Extension IBA (Important Bird and Biodiversity Area). Offshore route passes relatively close (c.a. 2.5km) to breeding colonies of gulls and cormorant in Keeragh Islands SPA. Connectivity to Northeast Celtic Sea IBA (Important Bird and Biodiversity Area).	**Offshore Ornithology**: Proposed corridors directly overlap with key designated site for foraging seabirds (Seas off Wexford cSPA). Connectivity to Northeast Celtic Sea IBA (Important Bird and Biodiversity Area). Offshore route passes relatively close (c.a. 1.1km to SPA boundary, 1.6km to nearest Island) to breeding colonies of gulls and cormorant in Keeragh Islands SPA
	Terrestrial Ecology including inshore ornithology: Presence of Annex I CS1 rocky sea cliff and Annex I CS3 sedimentary sea cliff habitats with localised Annex I FP3 springs. Annex I chough recorded as probable breeders within this Landfall Zone during 2025 breeding season. Confirmed breeding colony of Annex II herring gull, with Annex II great-black backed gull and skylark also present. BoCCI red-listed meadow pipit probable breeders recorded within this Landfall Zone during 2025 breeding season. BoCCI amber-listed fulmar, linnet, shag and skylark recorded within Landfall Zone during 2025 breeding season.	**Terrestrial Ecology including inshore ornithology**: Presence of Annex I-type CD3 fixed dune, Annex I-type CS1 rocky sea cliffs, Annex I-type CS3 sedimentary sea cliff and Annex I-type shingle bank across most of the Landfall Zone. Relatively narrow band of habitat can be avoided and impacts minimised. Terrestrial Annex 1 habitats are not located within a European or Nationally designated site. Annex I foraging non-breeding chough recorded at this Landfall Zone during 2025 breeding bird season. Additionally, BoCCI amber listed linnet and red-listed meadow pipit.	**Terrestrial Ecology including inshore ornithology**: Presence of Annex I-type CD3 fixed dune, Annex I-type CS1 rocky sea cliffs, Annex I-type CS3 sedimentary sea cliff and Annex I-type shingle bank across most of the Landfall Zone.
Cultural Heritage, including Underwater Archaeology	**Terrestrial Archaeology:** Significant archaeological constraints within the zone due to the historical and archaeological significance of Baginbun Head. The Proposed Development may have a direct effect on 4 CH sites (military camp WX050-015003-; battlefield WX050-015006-; linear earthwork WX050-015002-/192/1952; limekiln at 679843/603149) as well as the shoreline and a further indirect effect on 7 CH sites (inscribed stone WX050-015004-; hut site WX050-015005-; promontory fort WX050-015001-/192/1952; Martello tower WX050-027----/15705009/WCC1321; military camp WX050-015003-, battlefield WX050-015006-; linear earthwork WX050-015002-/192/1952). The Baginbun Earthworks (battlefield WX050-015006-; linear earthwork WX050-015002-/192/1952) are subject to Preservation Orders, and along with military camp WX050-015003- are likely to	**Terrestrial Archaeology:** There is a lack of recorded archaeological sites within this zone and it holds potential for unknown subsurface archaeology. The Proposed Development may have a direct effect on 1 CH site; the shoreline and a further indirect effect on 3 CH sites (boathouse NIAH 15705012; farmhouse NIAH 15705010/WCC1320; and coastguard station NIAH 15705011). Coastal areas should be considered areas of archaeological potential and there is still potential for unknown subsurface archaeological deposits within the area. **Underwater Archaeology**: An archaeological dive inspection is recommended within Kiln Bay, the natural landing point for vessels, some 100m west of proposed landfall. Observations of metal objects in the bedrock along the west side of Kiln Bay suggests potential.	**Terrestrial Archaeology:** There is a lack of recorded archaeological sites within this zone and it holds potential for unknown subsurface archaeology. The Proposed Development may have a direct effect on 4 CH sites (the shoreline) and three townland boundaries), and a further indirect effect on 4 CH sites (ringforts WX045-054001-, WX045-054002- and WX045-054003-; and house NIAH 15704549). Coastal areas should be considered areas of archaeological potential and there is still potential for unknown subsurface archaeological deposits within the area. **Underwater Archaeology**: Lack of recorded archaeological sites. Archaeological monitoring of seabed and

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
	include unknown subsurface archaeological deposits across most of the headland. **Underwater Archaeology**: Lack of recorded archaeological sites. Archaeological monitoring of seabed and foreshore disturbance activities during construction.		foreshore disturbance activities during construction.
Traffic and Transport	**Road Traffic and Transport**: The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of the cable route. Road closure would limit access to Carnivan Beach and car park. **Shipping and Navigation**: Crosses the secondary regional shipping routes to/from the ports of Belview and Waterford towards/from Lands' End or Off the West of Scilly Isles, St George's Channel, the coastal route. The traffic is low, with some 240 annual crossings recorded. Crosses in moderate vicinity of one non-dangerous wreck.	**Road Traffic and Transport**: The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of the cable route. Road closure would limit access to Bannow Bay Beach and The Long Gap Bay Beach. **Shipping and Navigation**: Crosses the secondary regional shipping routes to/from the ports of Belview and Waterford towards/from Lands' End or Off the West of Scilly Isles, St George's Channel, the coastal route. It also appears to cross a tertiary route to Bannow Bay however, EMSA data show that this route is used by non-cargo vessels, at very low frequency. Crosses in moderate vicinity of one non-dangerous wreck, and rocks in proximity to the landfall.	**Road Traffic and Transport**: The local roads are typically narrow in width (single vehicle width) and would likely require localised road closures if part of the cable route. Road closure would limit access to Blackhall Beach and car park. **Shipping and Navigation**: Crosses the secondary regional shipping routes to/from the ports of Belview and Waterford towards/from Lands' End or Off the West of Scilly Isles, St George's Channel, the coastal route. It also appears to cross a tertiary route to Bannow Bay however, EMSA data show that this route is used by non-cargo vessels, at very low frequency. Crosses in moderate vicinity of one non-dangerous wreck, and rocks in proximity to the landfall.
Seascape, Landscape and Visual	Contained in the 'Coastal' Landscape Character Area and the Hook Head Peninsula Landscape of Greater Sensitivity. Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. This Landfall Zone encompasses the enclosed Carnivan Beach and is very close to Baginbun Beach with public car parks at each highlighting public recreational and amenity value. Lightly populated with rural dwellings / holiday houses that are set inland c. 300 - 500m and have limited visibility of beach. Assumed that the TJB will be in coastal farmland	Contained in the 'Coastal' Landscape Character Area and the Bannow Bay Landscape of Greater Sensitivity. Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. This Landfall Zone encompasses a small and enclosed Beach, which does not appear to be heavily used as there is no formal car parking. There is one dwelling immediately west of the beach with views across it, but otherwise the area is sparsely populated with dwellings set back from the shoreline and limited beach visibility. Assumed that the TJB will be in coastal farmland above low sea cliff at back of beach. Operation stage effects are expected to be very localised.	Contained in the 'Coastal' Landscape Character Area and the Bannow Bay Landscape of Greater Sensitivity. Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. This Landfall Zone encompasses a linear beach backed by low sea cliffs, which does not appear to be heavily used as there is little formal car parking. The area is sparsely populated with dwellings set back from the shoreline and limited beach visibility. Assumed that the TJB will be in coastal farmland above low

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
	above sea cliff at back of beach. Operation stage effects are expected to be very localised.		sea cliff at back of beach. Operation stage effects are expected to be very localised.
Aviation and Telecommunications	Coningbeg Buoy (Latitude 52.0533 Longitude -6.64278, east of Offshore cable route corridors) is a Type 1 South Cardinal Marker situated off the Wexford coast. EirGrid will continue to engage with key stakeholders such as other developers, the fisheries organisations, Irish Coastguard, Commissioners of Irish Lights, Ports Authorities, Irish Aviation Authority. Met Eireann etc as the project develops.		
MCA Ranking (Environmental)			

C.1.4 Social Considerations

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Settlement and Communities, including coastal and fishing communities	**Settlements:** Closest settlement is Fethard-on-Sea, approximately 1km north of the Landfall Zone. **Communities:** One off housing, few houses within the Landfall Zone. Majorly agricultural land. Fethard St Mogues GAA grounds is located approximately 650m north of the Landfall Zone. Fethard-on-Sea is also home to Fethard Boat Club, Fethard Community Development Association who's aim is to develop and enhance the community infrastructure heritage and youth of the area, and St Mary's Hall, a hub for community members to address social inclusion and a meeting place for all. These community amenities demonstrate the regular, shared interactions between residents and the cohesion of residents within the area. Local organisations here make an effort to ensure inclusion across the community. The GAA Club hosts various sports clubs and events for all age groups, creating an inclusive community dynamic. Two parking areas close to the beach. Ban Milis housing estate located approximately 200m from the Landfall Zone	**Settlements:** 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. **Communities:** Carrig-on-Bannow (Danescastle) has a voluntary Tidy Towns committee. 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. **Commercial Fisheries:** There is little to differentiate between the three Wexford landfall options with respect to this criterion.	**Settlements:** 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. **Communities:** Carrig-on-Bannow (Danescastle) has a voluntary Tidy Towns committee. 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. **Commercial Fisheries:** There is little to differentiate between the three Wexford landfall options with respect to this criterion.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
	Town 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. It isn't used much for swimming as it has a rip current and underwater rocks. The Hook Head Peninsula is popular for diving **Commercial Fisheries:** There is little to differentiate between the three Wexford landfall options with respect to this criterion.		
Visitors and Commuters	Ramstown Farm is located approximately 700m north of Landfall Zone, which hosts a motorhome park (The Norman View). Baginbun Norman festival annually hosted at Fethard Castle in Fethard-on Sea. Scuba diving and coastal canyoneering operators are based in Fethard on Sea. The 'EV1 - Total 26-03-20' Greenway (extending from Rosslare Harbour to Derry in Northern Ireland) follows a local road to the north of this Landfall Zone, according to Heritage Ireland mapping.	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. This beach offers recreational amenity value to locals and tourists	Kerragh islands can be viewed from the beach Phil Murphy Weekend, a traditional Irish music festival, takes place in Carrig-on-Bannow annually This beach offers recreational amenity value to locals and tourists
Amenities, Recreation and Tourism	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. Fethard St Mogues GAA grounds is located approximately 650m north of the Landfall Zone and hosts various different sports for all age groups. No differentiators in terms of Failte Eireann Accommodation Density hotspot type No marinas or blue flag beaches in proximity Sailing and sea-kayaking activity all along the coast	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. No differentiators in terms of Failte Eireann Accommodation Density hotspot type. No marinas or blue flag beaches in proximity Sailing and sea-kayaking activity all along the coast.	Relatively isolated strand, but popular with families and walkers. Bannow Holiday Homes are located approximately 200m north of the beach. No differentiators in terms of Failte Eireann Accommodation Density hotspot type. No marinas or blue flag beaches in proximity. Sailing and sea-kayaking activity all along the coast.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Nuisance and Disturbance	The construction phase can be expected to cause nuisance and disturbance.	The construction phase can be expected to cause nuisance and disturbance for local residents and visitors. Located approx. 120m north, the Bannow Bay Equine Assisted Activities and Learning facility. is a specialised facility to help those with disabilities develop and improve social skills, particularly for children who find it hard to communicate. The facility sometimes make use of the seafront to engage with their clients who may be non-verbal. Potential for individuals particularly sensitive to change and noise to be impacted during the construction phase.	The construction phase can be expected to cause nuisance and disturbance.
Visual Effects	Contained in the Hook Head Peninsula Landscape of Greater Sensitivity. Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. This Landfall Zone encompasses the enclosed Carnivan Beach and is very close to Baginbun Beach with public car parks at each highlighting public recreational and amenity value. Lightly populated with rural dwellings / holiday houses that are set inland approximately 300 - 500m and have limited visibility of beach. Operation stage effects very localised.	Contained in the Bannow Bay Landscape of Greater Sensitivity. Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. This Landfall Zone encompasses an enclosed beach, which does not appear to be heavily used as there is no formal car parking. There is one dwelling immediately west of the beach with views across it, but otherwise the area is sparsely populated with dwellings set back from the shoreline and limited beach visibility. Operation stage effects very localised.	Contained in the Bannow Bay Landscape of Greater Sensitivity. Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. This Landfall Zone encompasses a linear beach backed by low sea cliffs, which does not appear to be heavily used as there is little formal car parking. The area is sparsely populated with dwellings set back from the shoreline and limited beach visibility. Operation stage effects very localised.
MCA Ranking (Social)			

C.1.5 Deliverability Considerations

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Implementation Timelines	**Overall cable:** 35.6km **Ploughing/jetting**: 30.3km **Trenching/remedial protection:** 5.3km	**Overall cable:** 38.7km **Ploughing/jetting:** 31.8km **Trenching/remedial protection**: 6.9km	**Overall cable:** 39.6km **Ploughing/jetting:** 30.5km **Trenching/remedial protection:** 9.1km

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
	The proposed shore-end landing solutions for each site would be broadly similar. A notable exception is this site, which presents the potential for a shorter HDD (600m) drill length, offering a relative advantage in constructability. Cable trenching presents the greatest level of uncertainty due to the limited geotechnical and geophysical data currently available. Consequently, any estimate of the trenching duration can only be made at an order-of-magnitude level until further site investigation data become available. The assessment considers all currently identified project activities and associated constraints. Where surveys cannot be completed within the required timeframe, the resulting uncertainty and any associated programme impacts have been reflected in the assessment. In addition, the potential for planning conditions to impose seasonal constraints on works has been recognised as a project risk and will be factored into the project delivery programme where applicable.	The proposed shore-end landing solutions for each site would be broadly similar. However compared to Landfall site B, a longer drill duration is required to achieve a HDD length of 1200m. Cable trenching presents the greatest level of uncertainty due to the limited geotechnical and geophysical data currently available. Consequently, any estimate of the trenching duration can only be made at an order-of-magnitude level until further site investigation data become available. The assessment considers all currently identified project activities and associated constraints. Where surveys cannot be completed within the required timeframe, the resulting uncertainty and any associated programme impacts have been reflected in the assessment. In addition, the potential for planning conditions to impose seasonal constraints on works has been recognised as a project risk and will be factored into the project delivery programme where applicable.	The proposed shore-end landing solutions for each site are broadly comparable; however, the required HDD lengths vary, with drilling distances likely to exceed 1,200 m for this site. The increased HDD lengths at this site are expected to result in an extended onshore drilling campaign and would likely increase the overall project programme. The assessment considers all currently identified project activities and associated constraints. Where surveys cannot be completed within the required timeframe, the resulting uncertainty and any associated programme impacts have been reflected in the assessment. In addition, the potential for planning conditions to impose seasonal constraints on works has been recognised as a project risk and will be factored into the project delivery programme where applicable.
Permits and Wayleaves	Routing through the Special Area of Conservation (SAC) is likely to introduce additional consenting, environmental assessment, and programme constraints, which could adversely affect project delivery.	No explicit limitations have been identified that would limit or hinder the HDD or nearshore works.	
Project Plan Flexibility	Where onshore spatial constraints are reduced, rock outcrops are less significant, residual sedimentary cover is more favourable, and suitable water depths can be achieved within an acceptable HDD length, the proposed sites may offer flexibility for the shore-end landing design.		Where onshore spatial constraints are reduced, rock outcrops are less significant, residual sedimentary cover is more favourable, and suitable water depths can be achieved within an acceptable HDD length, the proposed sites may offer flexibility for the shore-end landing design. Nevertheless, the required HDD lengths required at this site remain a concern.

Location	Landfall Zone E	Landfall Zone F	Landfall Zone G
Design Complexity, Uncertainty, Risk	Although the cable system design is not inherently complex, the current limitations in geophysical and geotechnical data result in elevated uncertainty and unquantified risks. Consequently, the relative risk profile between the candidate sites provides only marginal differentiation. However, it is still an important criterion to be assessed. The shorter drill lengths coupled with the lack of land constraints onshore are generally favourable to the overall design evalaution and design concept. But the rock outcropping and the punch out location are a concern.	Although the cable system design is not inherently complex, the current limitations in geophysical and geotechnical data result in elevated uncertainty and unquantified risks. Consequently, the relative risk profile between the candidate sites provides only marginal differentiation. However, it is still an important criterion to be assessed. This option includes the potential for shorter HDD drill lengths and sedimentry cover. Similarly, there is a potential for punch out in water depths of 10m.	The potential HDD duct drill lengths required to punch out into a suitable water depth are problematic. It would result in extreme maximum allowable cable tensions. The potential HDD duct drill lengths required to achieve a suitable punch-out water depth are considered problematic, as they would result in excessively high maximum allowable cable tensions. The increased drill length directly influences the pull-in forces during installation, potentially approaching or exceeding the mechanical limits of the cable system. This may necessitate enhanced cable design specifications, such as increased tensile strength or additional armouring, which could have implications for cost, manufacturability, and installation complexity. Furthermore, elevated pull-in tensions increase the risk of installation failure, including potential damage to the cable or duct, and may require specialised installation techniques or equipment. Collectively, these factors introduce additional technical risk and could adversely impact both the constructability and overall programme for the works.
MCA Ranking (Deliverability)			

C.2 Evaluation of Grid Connection Subzones

C.2.1 Technical Considerations

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
Compliance with Health and Safety Standards	**220kV OHL connection works health and safety considerations:** ● This subzone must consider routing the grid connection cable/OHL from the subzone to the southern OHL (900 m) and the northern OHL (2.2 km). ● The northern OHL connection route may be within the N25 and an offroad portion going around Ballynaboola. ● This option has the longest new grid connection work and therefore the greatest health and safety implications. **Existing subzone infrastructure health and safety considerations:** ● Current use as crop forest and proximity to waterways indicating a high ground water table will require extensive enabling works with associated implications. **Site access sightlines:** ● Great sightlines in both directions along the N25.	**220kV OHL connection works health and safety considerations:** ● This subzone must consider routing the grid connection cable/OHL from the subzone to the northern OHL (2.4km) and the southern OHL (400m) which will have health and safety considerations. **Existing subzone infrastructure health and safety considerations:** ● The MV OHL present on the north of the site will require design and construction setback distances or enabling works: **Site access sightlines:** ● Sight bends are present on the R736 both to the north and south of the site entrance. Further investigation required to determine if sightlines are clear.	**220kV OHL connection works health and safety considerations:** ● This substation must consider routing the cable/OHL from the subzone to the northern OHL (1.4km) and to the southern OHL (800m). ● The southern OHL route will require one watercourse crossing. ● These new grid connection works will have health and safety considerations. **Existing subzone infrastructure health and safety considerations:** ● The MV OHL present on the north of the site will require design and construction setback distances or enabling works: **Site access sightlines:** ● There is a bend present in the L4023 to the south of the site entrance. Further investigation required to determine if sightlines are clear.	**220kV OHL connection works health and safety considerations:** ● The northern OHL connection is at the southern boundary of the subzone. ● This subzone must consider routing the grid connection cable/OHL from the subzone to the southern OHL which is ca. 1.8 km which will have health and safety considerations. **Existing subzone infrastructure health and safety considerations:** ● The 220kV OHL runs on the southern edge of the site which will require construction setback distances. **Site access sightlines:** ● There is a bend present in the L8057 to the south of the site entrance. Further investigation required to determine if sightlines are clear.	**220kV OHL connection works health and safety considerations:** ● The northern OHL connection is at the southern boundary of the subzone. ● This subzone must consider routing the grid connection cable/OHL from the subzone to the southern OHL which is. ca. 0.75 km which will have health and safety considerations. **Existing subzone infrastructure health and safety considerations:** ● The 220kV OHL runs on the southern edge of the site which will require construction setback distances. **Site access sightlines:** ● Slight bends are present on the L4021 both to the north and south of the site entrance. Further investigation required to determine if sightlines are clear.	**220kV OHL connection works health and safety considerations:** ● The subzone is positioned in between both of the OHLs which are at the subzone boundaries. **Existing subzone infrastructure health and safety considerations:** ● Both of the 220kV OHLs are on the border of the subzone which will require design and construction setback distances. **Site access sightlines:** ● Sightlines will require further investigation as the proposed site entrance will be located on a five-way intersection.	**220kV OHL connection works health and safety considerations:** ● The southern OHL connection is at the northern boundary of the subzone. ● This subzone must consider routing the grid connection cable/OHL from the subzone to the southern OHL which is ca. 0.35 km which will have health and safety considerations. **Existing subzone infrastructure health and safety considerations:** ● The 220kV OHL runs on the northern edge of the site which will require construction setback distances. **Site access sightlines:** ● Bends are present on the L4031 both to the north and south of the site entrance. Further investigation required to determine if sightlines are clear.	**220kV OHL connection works health and safety considerations:** ● The subzone is positioned in between both of the OHLs which are at the subzone boundaries. **Existing subzone infrastructure health and safety considerations:** ● Both of the 220kV OHLs are on the border of the subzone which will require design and construction setback distances. ● A 38kV OHL passes straight through the middle of the site which would require enabling works. **Site access sightlines:** ● Bends are present on the L4031 both to the north and south of the site entrance. Further investigation required to determine if sightlines are clear.	**220kV OHL connection works health and safety considerations:** ● The subzone is positioned in between both of the OHLs which are at the subzone boundaries. **Existing subzone infrastructure health and safety considerations:** ● Both of the 220kV OHLs are on the border of the subzone which will require design and construction setback distances. **Site access sightlines:** ● Bends are present on the L4031 both to the north and south of the site entrance. Further investigation may be required to determine if sightlines are clear.
Expansion or Extendibility	There is a large amount of land available but constraints within the subzone allow little room for expansion. For example, a few acres along the eastern border are within a floodzone. Possible historic quarrying activity may limit space for expansion.	There is sufficient land available for expansion.	There is sufficient land available for expansion.	Very large area of spare land available after substation construction. Some acres along the southern border of the subzone lie within a floodzone.	There is some spare land available for expansion.	Very large area of spare land available after substation construction. .	There is some spare land available for expansion.	There is sufficient land available for expansion.	There is sufficient land available for expansion although this excess may be taken up with solar panels from Shelbourne.
Constructability (Ground Conditions and Marine Processes)	**Topography:** ● Approx. 85% of the subzone contains a slope of <4% **Geotechnical and geophysical:** ● No Faults identified on or adjacent to this site.	**Topography:** ● Approx. 90% of the subzone contains a slope of <4%. **Geotechnical and geophysical:** ● A fault is located approximately 300m from the substation zone boundaries.	**Topography:** ● Approx. 90% of the subzone contains a slope of <4%. **Geotechnical and geophysical:** ● A fault is located approximately 100m from the substation zone boundaries.	**Topography:** ● Approx 90% of the subzone contains a slope of <4% **Geotechnical and geophysical:** ● No Faults identified on or adjacent to this site.	**Topography:** ● Approx. 60% of the subzone contains a slope of <4% requiring additional cut and fill. **Geotechnical and geophysical:** ● A fault is located approximately 100m from the substation zone boundaries.	**Topography:** ● Approx. 65% of the subzone contains a slope of <4% which would lead to a certain amount of cut and fill. **Geotechnical and geophysical:** ● A fault is located approximately 200m	**Topography:** ● Approx. 60% of the subzone contains a slope of <4% which would lead to a certain amount of cut and fill. **Geotechnical and geophysical:** ● A fault is located approximately 200m from	**Topography:** ● Approx. 75% of the subzone contains a slope of <4% which would lead to a certain amount of cut and fill. **Geotechnical and geophysical:**	**Topography:** ● Approx. 50% of the subzone contains a slope of >4% requiring additional cut and fill. **Geotechnical and geophysical:** ● A bedrock outcrop or subcrop is recorded

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	● No Karst features were recorded on or adjacent to the site. ● Landslide susceptibility is not recorded within this subzone. ● No active quarries are recorded on site. ● Three small (<50m) ponds are visible on site. These may be related to potential quarrying which is not shown on historic mapping but is recorded on recent mapping. Quarrying may be indicative of unknown backfill and potentially soft sediments associated with water features. ● Mapping shows historic rough pasture and present-day woodland. Marshy ground is likely and potential for soft ground. **Ground Conditions:** ● The presence of Alluvium indicates possible soft ground conditions. Possible quarrying may be indicative of unknown backfill and potentially soft sediments associated with water features. Historical mapping shows the entire site as marshy land. ● Current use as crop forest and proximity to waterways indicates a high ground water table. ● Silt traps required for all bordering a waterway	● No Karst features were recorded on or adjacent to the site. ● Areas of low landslide Susceptibility are recorded to the west of the site. ● No active quarries are recorded on site. ● Mapping shows agricultural land. **Ground Conditions:** ● The presence of Alluvium and Lacustine sediments indicate possible soft ground conditions that may require additional civil works. ● Silt traps required for all bordering a waterways.	● No Karst features were recorded on or adjacent to the site. ● Landslide susceptibility is not recorded within this subzone. ● No active quarries are recorded on site. ● Mapping shows agricultural land. **Ground Conditions:** ● No other apparent constraints related to ground conditions	● No Karst features were recorded on or adjacent to the site. ● An area of low landslide Susceptibility is recorded on site. ● No active quarries are recorded on site. ● Mapping shows site is in historical and present-day woodland. **Ground Conditions:** ● The presence of Alluvium and indicate possible soft ground conditions. Mapping shows site is in historical and present-day woodland. Floodzone crosses over the access road. A temporary bridge may have to be constructed to allow for initial site works. ● Current use as crop forest and proximity to waterways indicates a high ground water table. There are ponds present on old aerial photos. ● Silt traps required for all bordering a waterways.	● No Karst features were recorded on or adjacent to the site. ● Landslide susceptibility is not recorded within this subzone. ● No active quarries are recorded on site. ● Mapping shows agricultural land and a track running through the centre of the site. **Ground Conditions:** ● No other apparent constraints related to ground conditions	from the substation zone boundaries. ● No Karst features were recorded on or adjacent to the site. ● An area of low landslide susceptibility is recorded to the north of the site. ● No active quarries are recorded on site. ● Mapping shows rough pasture and agricultural land. A possible water feature is recorded to the east of the site with surrounding marsh land. **Ground Conditions:** ● The presence of Alluvium and indicate possible soft ground conditions. Mapping shows rough pasture and agricultural land. A watercourse is present to the east of the site on historical mapping with surrounding marshy land, further site investigation will be required to confirm. ● Silt traps required for all bordering a waterways	the substation zone boundaries. ● No Karst features were recorded on or adjacent to the site. ● Landslide susceptibility is not recorded within this subzone. ● No active quarries are recorded on site. ● Mapping shows agricultural land and rough pasture. Site is adjacent to drainage. **Ground Conditions:** ● The presence of Alluvium and indicate possible soft ground conditions that may require additional civil works. Historical marshy land to the north of the subzone.	● A fault is located approximately 200m from the substation zone boundaries. ● No Karst features were recorded on or adjacent to the site. ● Landslide susceptibility is not recorded within this subzone. ● No active quarries are recorded on site. ● Mapping shows agricultural land. **Ground Conditions:** ● No significant apparent constraints related to ground conditions.	adjacent to the east of the site ● Two faults are recorded to the south and east of the site area. A N-W to S-E trending fault crosses the east of the site and a N-E to S-W trending fault is present adjacent to the southeast of the site. ● No Karst features were recorded on or adjacent to the site. ● Low landslide susceptibility is recorded on site. An area of moderately low landslide susceptibility to the immediate southeast of the site. ● No active quarries are recorded on site. ● Mapping shows agricultural land with the current alignment of the road at the northeast of the site shown to be present. The water feature adjacent to the northwest of the site is not shown on historic mapping. A sand pit is located 300m northeast of the site on the 1897 - 1913 but no further quarrying activity is recorded.
Access	Some off-road routing through third party lands may be required between the R736 and the N25. The connection to the northern OHL is ca. 2.2km and ca. 900m to the southern OHL **Cable Route Access** ● Only feasible access to one potential cable route.	Good access to potential cable routes. The connection to the northern OHL is ca. 2.4km and ca. 400m to the southern OHL. Present access road may require some improvement works. **Cable Route Access** ● Good access to cable route, an offroad	There will be some off-road routing in third party lands required between the R736 and the L4023 in order for potential cable routes to reach the subzone. The connection to the northern OHL is ca. 800m and ca. 1.4km to the southern OHL. An access road to the substation must also be constructed. **Cable Route Access**	Connection to southern OHL is long and complex. Narrow access road passing a national school. Ca. 900m access road may require improvements. Possible bridge installation along access road. **Cable Route Access** ● Poor access to all potential cable routes.	Good access to one potential cable route. Northern OHL passes over the site while it is ca. 730m to the southern OHL. Junction with the R734 and the L4031 may present as challenge for HGV's. **Cable Route Access** ● Great access to one potential cable route, no off-roading required.	OHLs cross the subzone and the site borders the R734 for a small section. Access road may have to be constructed, or improvements made to the existing access road. **Cable Route Access** ● Great access to potential cable routes, no off-roading required. ● No infrastructure present that would block access.	Good access for potential cable routes if the cable can run parallel to the medium pressure gas line. Its ca. 350m from the subzone to the northern OHL while the southern OHL crosses the subzone. Junction with the R734 and the L4031 may present as challenge for HGV's. **Cable Route Access**	Good access for potential cable routes if the cable can run parallel to the medium pressure gas line. Both OHLs cross over the subzone. Junction with the R734 and the L4031 may present as challenge for HGV's. **Cable Route Access** ● Good access to potential cable routes.	Good access for potential cable routes if the cable can run parallel to the medium pressure gas line. Both OHLs cross over the subzone. Junction with the R734 and the L4031 may present as challenge for HGV's. ● **Cable Route Access:** Good access to potential cable routes.

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	● Route would run approx. 700m off road and cross the N25 to avoid Ballinaboola **OHL Grid Connection** ● The route to the northern subzone is approx. 2.2km. ● The route to the southern OHL is approx. 900m from the centre of the subzone and crosses 2 waterways **HGV Access:** ● Site has direct access to the N25 that is already suitable for logging vehicles. **Access Road:** ● Multiple access routes are already present in the site.	route of ca. 350m would be required. ● No infrastructure around the site that would block access **OHL Grid Connection** ● The Northern route the OHL runs for approx. 2.4km. The route to the OHL will either have to cross the N25 or a waterway in order to avoid Ballinaboola ● The southern route to the OHL runs for approx. 400m from the centre of the site. The land is historically marshy. **HGV Access** ● Access via the R736, approx. 1km off the N25. Turn off the N25 at Ballinaboola may be difficult. ● MV OHL is present over the proposed site access road **Access Road:** ● An access road already exists to the farm of approx. 300m. This lane is closely lined with trees so road improvements may be required	● Good access to potential cable routes, offroad route between R736 and L4023 is required. ● No infrastructure around the site that would block access **OHL Grid Connection:** ● The route to the northern OHL is approx. 800m. ● The route to the southern OHL is approx. 1.4km **HGV Access:** ● Access via the L4023, approx. 1.5km off the N25. Second access point exists at the north of the site, but this is less favourable as it is through a farmyard and the L8057 contains a school. **Access Road:** ● An access road will have to be constructed on site of approx. 180m	● Long offroad routes will be required **OHL Grid Connection** ● The northern OHL passes over the border of the site. ● The route to the southern OHL connection would run for approx. 1.8km. It may have to cross a river. It must avoid a build-up of houses. There also appear to be an estate/large residential property on this route. **HGV Access** ● Site can be accessed from the N25 via the L8057, approx. 2km ● The L8057 passes in front of a national school. 220kV OHL is present over the current site access road **Access Road** ● Access is through a laneway to the site approx. 920m in length. Possible bridge installation along access road. This laneway seems to be of good quality. ● Access road may have to be constructed for this site	● No infrastructure present that would block access. ● Some watercourses will have to be traversed. **OHL Grid Connection** ● The northern OHL borders the site. ● The route to the southern OHL is approx. 730m. ● Access to the southern OHL will have to pass through subzone WXD-06 **HGV Access:** ● Access for construction vehicles comes off the N25 along the R734 and then up the L4021, approx. 7km on local and regional roads. The turn from the R734 to the L4021 is nearly 360 degrees. Alternative route along the L4023 is available. Construction vehicles will have to pass under the 220kV OHL at the junction between the R734 and the L4021. **Access Road:** ● Access gate and lane already present on site	● Some watercourses will have to be traversed. **OHL Grid Connection:** ● Both 220kV OHL pass over the site. **HGV Access:** ● Site is accessed from the N25 via the R734, approx. 7km. Construction vehicles will have to pass under the 220kV OHL at the junction between the R734 and the L4021. **Access Road:** ● An access road is already present to the centre of the site but is poor quality. Access road may have to be constructed anyway	● Good access to potential cable routes ● Route would have to run parallel to a medium pressure gas line **OHL Grid Connection:** ● The route to the northern OHL from the centre of the subzone is approx. 350m. ● The southern OHL crosses the NW corner of the subzone. ● Access to the northern OHL will have to pass though WXD-08. **HGV Access:** ● Site can be accessed from the N25, along the R734 along a single lane road at the junction in Dunmain, approx. 10km along local and regional roads. This turn at Dunmain will be tight for construction vehicles. MV OHL passes over area where construction access road will be constructed. **Access Road:** ● A 200m access road must be constructed for access also.	● Route would have to run parallel to a medium pressure gas line if this is possible. **OHL Grid Connection:** ● Both 220kV OHL pass over the site. **HGV Access** ● Site can be accessed from the N25, along the R734 along a single lane road at the junction in Dunmain, approx. 10km along local and regional roads. This turn at Dunmain will be tight for construction vehicles. ● MV and 38 kV OHL passes over the L4031 close to the site entrance surveys required to assess 4.5m clearance. **Access Road:** ● Depending on the placement of the substation within the subzone the length of access road may vary between 50m and 150m.	● Route would have to run parallel to a medium pressure gas line if this is possible. **OHL Grid Connection:** ● Both 220kV OHL pass over the site. **HGV Access:** ● Site can be accessed from the N25, along the R734 along a single lane road at the junction in Dunmain, approx. 10km along local and regional roads. This turn at Dunmain will be tight for construction vehicles. **Access Road:** ● Depending on the placement of the substation within the subzone the length of access road may vary between 50m and 300m
Physical Constraints	Forested site bordering a floodzone. Tree and root removal required that would displace a lot of soil. Potential marks of previous quarrying **Above Ground Utilities:** ● The 220kV OHL runs over the western edge of the site. ● An MV OHL runs along the eastern edge. **Underground utilities:** ● No known underground utilities pass through this subzone. **Waterways:** ● No waterways pass through this subzone **Flooding:**	Site boarders a floodzone. **Above Ground Utilities:** ● MV OHL passes over the access road. ● MV OHL also present on the northern border of the site. **Underground utilities:** ● No known underground utilities pass through this subzone. **Waterways:** ● No waterways appear to pass through this subzone. **Flooding:** ● Flood zone located to the south and east of the subzone.	There is only an MV OHL present on the north of the site. **Above Ground Utilities:** ● MV OHL runs along the northern border of the site. **Underground utilities:** ● No known underground utilities pass through this subzone. **Waterways:** ● No waterways pass through this subzone **Flooding:** ● Subzone not located within any floodzone **Other physical constraints:** ● None identified	Forested site bordering a floodzone. Site is covered in heavy woodland. Tree and root removal required that would displace a lot of soil. **Above Ground Utilities:** ● The 220kV OHL runs over the eastern edge of the site **Underground utilities:** ● No known underground utilities pass through this subzone. **Waterways:** ● There is a stream crossing the access road the running down the eastern border of the site. **Flooding:** ● A floodzone crosses the access road and runs	220kV and MV OHL present in the subzone **Above Ground Utilities:** ● The 220kV OHL runs over the western edge of the site. ● An MV OHL runs along the eastern edge. **Underground utilities:** ● No known underground utilities pass through this subzone. **Waterways:** ● No waterways pass through this subzone **Flooding:** ● This subzone is not located within any flood zones. **Other physical constraints:** ● None identified	Both OHLs pass over the subzone boundary, along with a river and a floodzone. Site is large enough to avoid the floodzone. **Above Ground Utilities:** ● The 220kV OHL runs over the western edge of the site. Multiple OHLs present at the southern edge of the site **Underground utilities:** ● No known underground utilities pass through this subzone. **Waterways:** ● There is a stream running along the southern and eastern edge of the site. There is a possible ditch present in the middle of the site.	220kV and MV OHL present in the subzone. Medium pressure gas line runs through the L4031 which is used to access the site. **Above Ground Utilities:** ● The 220kV OHL runs over the western edge of the site. An MV OHL runs over the access road. **Underground utilities:** ● A 400mm, 4-bar gas pipeline is present in the local road bordering the front of the site. ● No known water infrastructure. **Waterways:** ● No waterways appear to pass through the subzone.	Both 220kV and a 38kV OHL present in the subzone. Medium pressure gas line runs through the L4031 which is used to access the site. **Above Ground Utilities** ● Both 220kV OHLs run over the western edge of the site. A 38kV OHL runs straight through the subzone, which would be considered for diversion. **Underground utilities** ● A 400mm, 4-bar gas pipeline is present in the local road bordering the front of the site	Both 220kV OHL present in the subzone. Medium pressure gas line runs through the L4031 which may be used to access the site. Wexford CDP labelled area to West as Floodzone but understood from Developer that this may be a mislabel. Further flood risk study will be required if this option is brought forward. **Above Ground Utilities:** ● Both 220kV OHLs run over the western edge of the site. **Underground utilities:** ● A 400mm, 4-bar gas pipeline is present in the local road bordering the east of the site. No known water infrastructure.

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	● Floodzone crosses the eastern and northern borders of the subzone. The whole subzone flows down to these floodzones. This subzone is not located within any flood zones. **Other physical constraints:** ● This site is forested by Coillte so a removal of a large number of trees would be required.	**Other physical constraint:** ● None identified		along the eastern border of the subzone. **Other physical constraints:** ● The site is heavily forested which is not entirely state owned.		**Flooding:** ● The southern and eastern boundary of the subzone are located within a floodzone. Everything slopes down to these floodzones. **Other physical constraints:** ● None identified	**Flooding:** ● No floodzone present on site. **Other physical constraints:** ● None identified	● No known water infrastructure. **Waterways** ● No waterways pass through this subzone **Flooding** ● This subzone is not located within any flood zones. **Other physical constraints:** ● None identified	**Waterways:** ● A stream and small lake border the west of the subzone **Flooding:** ● Wexford CDP labelled area to West as Floodzone but understood from Developer that this may be a mislabel. Further flood risk study will be required if this option is brought forward. **Other physical constraints:** ● None identified
MCA Ranking (Technical)									

C.2.2 Economic Considerations

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
Capital Cost	Long cable or OHL required to connect into OHL. Ground investigations, significant civil ground works to create a platform and tree felling may all be required. **Proximity to 220kV OHL connection:** ● Total distance to connect to OHLs is approx. 3.1km. **Landholding Requirement:** ● Substation and access road can all be built on one Landholdings site which would necessitate only one landowner agreement. This land is owned by the state. ● Subzone size of 20 - 62 Acres **Additional works:** ● Ground investigations and extra foundations may be required due to presence of marshy land. Extra time needed to fell trees on site	Long cable or OHL required to connect into OHL. Significant civil ground works needed to create a platform, access road upgrades and culverting may be required. **Proximity to 220kV OHL connection:** ● Total distance to connect to OHLs is approx. 2.8km. **Landholding Requirement:** ● The substation would be constructed on a parcel involving 5 Landholdings with the access road requiring another. ● This subzone encompasses the largest number of individual landowners which may necessitate the establishment of multiple landowner agreements. ● Subzone size of 20 - 38 Acres **Additional works:** ● More substantial civil works may be required due to presence of marshy land nearby.	Long cable or OHL required to connect into OHL. Significant civil ground works needed to create a platform, access road upgrades and culverting may be required. Subzone requires the construction of an access road. **Proximity to 220kV OHL connection:** ● Total distance to connect to OHLs is approx. 2.2km. **Landholding Requirement:** ● Subzone and access road can be built on a single Landholdings site. which would necessitate only one landowner agreement ● Subzone size of 20 - 45 Acres **Additional works:** ● Ca. 180m of access road	Long cable or OHL required to connect into OHL. Ground investigations, significant civil ground works needed to create a platform and tree felling may all be required. **Proximity to 220kV OHL connection:** ● Total distance to connect to OHLs is approx. 1.8km **Landholding Requirement:** ● Substation and access road can be constructed on a parcel involving 2 Landholdings, which would necessitate minimal landowner agreements. One of these Landholdings is the state ● Subzone size of 20 - 33 acres **Additional works:** ● Ground investigations and extra foundations may be required due to presence of marshy land. Runoff to Owenduff river will require extra drainage. Extra time needed to fell trees on site.	Extra drainage may be required due to site sloping to nearby river. The OHL connection will go beyond the sub-zone for a short distance. **Proximity to 220kV OHL connection:** ● Total distance to connect to OHLs is approx. 750m. **Landholding Requirement:** ● Substation and access road can all be built on one Landholdings site which would necessitate only one landowner agreement ● Subzone size of 20 - 46 Acres **Additional works:** ● Extra drainage may be required due to site sloping to nearby river.	Extra drainage may be required due to site sloping to nearby river. The OHL connection is within the subzone. **Proximity to 220kV OHL connection:** • The existing 220kV OHLs intersect this subzone, thus the shortest 220kV loop-in connection. **Landholding Requirement:** ● Substation and access road can all be built on one Landholdings site which would necessitate only one landowner agreement ● Subzone size of 20 - 121 acres **Additional works:** ● Drainage system will be required due to site sloping towards a nearby river. Access road will have to be upgraded or possibly built from scratch.	Construction of access road, extra foundations and culverts may be required. The OHL connection will go beyond the sub-zone for a short distance. **Proximity to 220kV OHL connection:** ● Total distance to connect to OHLs is approx. 350m. **Landholding Requirement:** ● Substation and access road can be constructed on a parcel involving 3 Landholdings which would necessitate a few landowner agreements. **Subzone size:** ● 20 - 38 acres **Additional works** ● A 200m access road has to be constructed for access also. ● Extra foundations may be required due to presence of marshy land nearby. Culverting may also be required.	Construction of a small access road will be required. The OHL connection is within the subzone. **Proximity to 220kV OHL connection:** • The existing 220kV OHLs intersect this subzone, thus the shortest 220kV loop-in connection. **Landholding Requirement:** ● Substation and access road can be constructed on a parcel involving 2 Landholdings which would necessitate minimal landowner agreements. ● Subzone size of 20 - 46 acres **Additional works:** ● This site will require a minimal access road, if any.	Construction of a small access road may be required. The OHL connection is within the subzone. **Proximity to 220kV OHL connection:** • The existing 220kV OHLs intersect this subzone, thus the shortest 220kV loop-in connection. **Landholding Requirement:** ● Substation and access road can be constructed on a parcel involving 1 - 2 Landholdings which would necessitate minimal landowner agreements. ● Subzone size of 20 - 75 acres **Additional works:** ● There may be drainage work required due to nearby river and some civil works may be required due to some areas containing a slope of over 4%.

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
		Upgrading of access road.							
Life Cycle Costs	Maintenance of ca. 3.1km of cable or OHL from site to OHL connection along with LCIMs external to the grid infrastructure site.	Maintenance of ca. 2.8km of cable or OHL from site to OHL connection along with LCIMs external to the grid infrastructure site.	Maintenance of ca. 2.2km of cable or OHL from site to OHL connection along with LCIMs external to the grid infrastructure site.	Potential bridge along access road will need maintaining. Maintenance of ca. 1.8km of cable from site to OHL connection along with LCIMs external to the grid infrastructure site.	Maintenance of ca. 750m of cable or OHL from site to OHL connection along with LCIMs external to the grid infrastructure site.	Maintenance costs will be minimal due to short length.	Maintenance of ca. 350m of cable or OHL from site to OHL connection.	Maintenance costs will be minimal due to short length.	Maintenance costs will be minimal due to short length.
MCA Ranking (Economic)									

C.2.3 Environmental Considerations

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
Land use compatibility, other site users and planning policy	**Current land use**: Site is within forestry land. **Planning applications:** No planning applications associated with the lands at the time of checking (26 Feb 26). Nothing of obvious note recorded in Historic 6-inch mapping. Possible ponds shown on historic aerial imagery **Land ownership**: State owned lands. **Zoning:** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use:** Site is within agricultural fields with residential and agricultural dwellings are adjacent **Planning applications**: No planning applications associated with the lands at the time of checking (26 Feb 26). Historic 6-inch mapping suggests that lands may have formed part of Ballynabola House. **Land ownership:** land contains privately owned agricultural fields. **Zoning:** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use:** Site is within agricultural fields with residential and agricultural dwellings adjacent **Planning applications:** No planning applications associated with the lands at the time of checking (26 Feb 26). Nothing of obvious note recorded in Historic 6-inch mapping **Land ownership:** land contains privately owned agricultural fields **Zoning:** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use:** Site is within agricultural fields and forestry land. **Planning applications:** No planning applications associated with the lands at the time of checking (26 Feb 26) Nothing of obvious note recorded in Historic 6-inch mapping. **Land ownership:** land contains privately owned agricultural fields. **Zoning:** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use:** Site is within agricultural fields. **Planning applications:** No planning applications associated with the lands at the time of checking (26 Feb 26) Nothing of obvious note in the Historic 6-inch mapping. **Land ownership:** land contains privately owned agricultural fields. **Zoning**: The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use**: Site is within agricultural fields with residential and agricultural dwellings are adjacent **Planning applications**: No planning applications associated with the lands at the time of checking (26 Feb 26). Nothing of obvious note recorded in Historic 6-inch mapping. **Land ownership:** land contains privately owned agricultural fields. **Zoning** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use:** Site is within agricultural fields with residential and agricultural dwellings are adjacent. **Planning applications**: No planning applications associated with the lands at the time of checking (26 Feb 26). Nothing of obvious note recorded in Historic 6-inch mapping **Land ownership**: land contains privately owned agricultural fields. **Zoning** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.	**Current land use:** Site is within agricultural fields with residential and agricultural dwellings are adjacent **Planning applications:** No planning applications associated with the lands at the time of checking (26 Feb 26). Nothing of obvious note recorded in Historic 6-inch mapping **Land ownership:** land contains privately owned agricultural fields. **Zoning** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022\	**Current land use:** Site is within agricultural fields with residential and agricultural dwellings are adjacent. **Planning applications**: One planning application is under review for a solar farm and battery energy storage system. Nothing of obvious note recorded in Historic 6-inch mapping **Land ownership:** Landowner agreement in place for energy development. **Zoning:** The subzone is located in an area identified as "Stronger Rural Areas" according to the Wexford County Development Plan 2022.
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Description**: Clayey Shale till (Lower Palaeozoic) Till is sediment deposited by or from glacier ice. Adjacent an area of Alluvium. **Geological Heritage Sites:** Geoheritage site WX013 is within 1km of the site. **Bedrock**: Solid Geology comprises Campile Formation (Rhyolitic	**Description**: Clayey Shale till (Lower Palaeozoic) Till is sediment deposited by or from glacier ice. Adjacent an area of Alluvium to the east. **Geological Heritage Sites:** Geoheritage site WX013 within 1km of the site. The site comprises a Farm hedge bank and field exposures. This is one of the richest mid	**Description**: Till derived from Lower Palaeozoic shales. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock**: Bedrock geology consists of Ballylane Formation	**Description**: Alluvium is recorded underlying the site. Till derived from Lower Palaeozoic shales to the west of the site. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock:** Solid Geology comprises Ballylane Formation (green & grey slate with thin siltstone).	**Description**: Till derived from Lower Palaeozoic shales. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock**: Solid Geology comprises Campile Formation (Rhyolitic volcanics, grey & brown slates)	**Description**: Till derived from Lower Palaeozoic shales. Alluvium is recorded to the east of the site. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock**: Solid Geology comprises Campile Formation (Rhyolitic volcanics, grey & brown slates) and Campile Formation (Felsic volcanics).	**Description**: Shale till (Lower Palaeozoic) is sediment deposited by or from glacier ice. Adjacent an area of Alluvium. **Geological Heritage Sites:** No geoheritage sites recorded at this location.	**Description**: Clayey Shale till (Lower Palaeozoic) Till is sediment deposited by or from glacier ice. **Geological Heritage Sites:** No geoheritage sites recorded at this location.	**Description:** Clayey Shale till (Lower Palaeozoic) Till is sediment deposited by or from glacier ice. **Geological Heritage Sites:** No geoheritage sites recorded at this location. **Bedrock:** Solid Geology comprises Campile Formation (Rhyolitic

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	volcanics, grey & brown slates) **Superficial cover**: Till derived from Lower Palaeozoic shales and Alluvium **Bedrock aquifer**: The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features or faults at or in close proximity to this subzone **Groundwater vulnerability**: Groundwater vulnerability is moderate to high. **Landslide susceptibility**: Low Landslide Susceptibility Classification	Ordovician fossil localities in Ireland. **Bedrock**: Bedrock geology consists of Campile Formation (Rhyolitic volcanics, grey and brown slates). **Superficial cover**: Till derived from Lower Palaeozoic shales and Alluvium **Bedrock aquifer:** The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features identified on GSI viewer. **Groundwater vulnerability:** Groundwater vulnerability is classified as moderate. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is "Low".	(Green & grey slate with thin siltstone) **Superficial cover**: Till derived from Lower Palaeozoic shales **Bedrock aquifer:** The bedrock aquifer is classified as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. **Karst features:** No karst features identified on GSI viewer. A fault is however located approximately 100m from the boundary. **Groundwater vulnerability**: Groundwater vulnerability is classified as high. **Landslide susceptibility**: GSI Landslide Susceptibility Classification description is "Low".	**Superficial cover:** Till derived from Lower Palaeozoic shales. **Bedrock aquifer**: The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features or faults at or in close proximity to this subzone. **Groundwater vulnerability**: Groundwater vulnerability is low. **Landslide susceptibility:** Low Landslide Susceptibility Classification	and Campile Formation (Felsic volcanics) **Superficial cover:** Till derived from Lower Palaeozoic shales **Bedrock aquifer:** The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features:** No karst features at or in close proximity to this subzone. A fault is however located approximately 100m from the boundary **Groundwater vulnerability**: Groundwater vulnerability is moderate to high. **Landslide susceptibility**: Low Landslide Susceptibility Classification	**Superficial cover:** Till derived from Lower Palaeozoic shales **Bedrock aquifer**: The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features or faults at or in close proximity to this subzone. **Groundwater vulnerability**: Groundwater vulnerability is low. **Landslide susceptibility**: Low Landslide Susceptibility Classification	**Bedrock:** Solid Geology comprises Campile Formation (Rhyolitic volcanics, grey & brown slates). **Superficial cover**: Till derived from Lower Palaeozoic shales and Till derived from acidic volcanic rocks. **Bedrock aquifer**: The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features or faults at or in close proximity to this subzone **Groundwater vulnerability**: Groundwater vulnerability is moderate. **Landslide susceptibility**: Low Landslide Susceptibility Classification	**Bedrock**: Solid Geology comprises Campile Formation (Rhyolitic volcanics, grey & brown slates). **Superficial cover**: Till derived from Lower Palaeozoic shales **Bedrock aquifer:** The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features or faults at or in close proximity to this subzone. **Groundwater vulnerability**: Groundwater vulnerability is moderate. **Landslide susceptibility**: Low Landslide Susceptibility Classification	volcanics, grey & brown slates). **Superficial cover:** Till derived from Lower Palaeozoic shales Bedrock aquifer: The bedrock aquifer is classified as a Regionally Important Aquifer - Fissured bedrock. **Karst features:** No karst features or faults at or in close proximity to this subzone. **Groundwater vulnerability:** Groundwater vulnerability is low to moderate. **Landslide susceptibility:** Low Landslide Susceptibility Classification
Water Resources	● Heathpark Stream (IE_SE_13H010020) flows in a southerly direction along the eastern boundary of this subzone. The River Waterbody WFD Status 2019-2024 for IE_SE_13H010020 was Moderate, with the watercourse classified as being At Risk ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● Heathpark Stream (IE_SE_13H010020) flows in a southerly direction to the east of this subzone. The River Waterbody WFD Status 2019-2024 for IE_SE_13H010020 was Moderate, with the watercourse classified as being At Risk ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● No EPA watercourses at this location. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● Begerin Stream (IE_SE_13B050050) flows in a southerly direction along the eastern boundary of this subzone. The River Waterbody WFD Status 2019-2024 for IE_SE_13B050050 was Moderate, with the watercourse classified as being At Risk. ● No protected Salmonid Rivers, Nutrient sensitive rivers or drinking water rivers at this location	● No EPA watercourses within this subzone. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● Corderraun (part of the Owenduff River) (IE_SE_13O0101000) flows in a southerly direction along the eastern boundary of this subzone. Tellarought (IE_SE_13O010100) flows in a north easterly direction along the southern boundary of this subzone. ● The River Waterbody WFD Status 2019-2024 status for IE_SE_13O010100 was Moderate, with the watercourse classified as being At Risk. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● No EPA watercourses within this subzone. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● No EPA watercourses within this subzone. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location	● Carrowanree_010 is adjacent to the western boundary of the subzone. It is classified as of Poor WFD Status. ● A small lake is adjacent to the northwest boundary of the subzone. ● No protected Salmonid Rivers, nutrient sensitive rivers or drinking water rivers at this location
Climate, including flood risk and Sustainable Development	● No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data Viewer associated with this location.	● No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data Viewer associated with this location.	No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data	● Floodmaps.ie indicates that the area directly adjacent may be at risk of flooding (100 to 1 probability medium probability). Further	● No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data	● Floodmaps.ie indicates that this zone borders an area that may be at risk of flooding (100 to 1 probability medium probability). Further flood	● No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data Viewer	No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data	● No flood risk identified at Floodinfo.ie or on Groundwater Flooding Data

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	● Extra groundworks may be required due to land conditions, including felling of trees. Felling of trees will reduce the carbon storage capacity of the area. ● Drainage interventions likely to be required at North and East sides potentially impacting a flood plain	● Drainage interventions likely which may necessitate a significant volume of cut and potential importation of material to raise the site	Viewer associated with this location	flood risk studies will be required if this option is brought forward. ● Drainage interventions likely. A bridge may be required for access	Viewer associated with this location. ● Extra drainage works may be required to tie into nearby river, potential for temporary changes to natural river flows and sedimentation	risk studies will be required if this option is brought forward. ● Extra drainage required due to site sloping towards a nearby river, and possible infrastructure to traverse a stream on site.	associated with this location. ● Significant drainage interventions likely	Viewer associated with this location	Viewer associated with this location ● Wexford CDP labelled area to West as Floodzone but understood from Developer that this may be a mislabel. Further flood risk study will be required if this option is brought forward.
Biodiversity	● Not located within or near (within 2km) of a designated site. ● Subzone consists of a mature conifer plantation. Mature treelines from old field boundaries and unidentified other features (possible ponds) are evident. ● The site is likely to be used by protected species including red squirrel, pine marten, woodcock, frogs and other protected fauna. Deer and commoner breeding bird species will occur at relatively higher densities compared to farmland. ● The Heathpark Stream (EPA_Code: 13H01) flows in a southerly direction along the eastern boundary of this subzone. Hedgerows / treeline field boundaries, woodland and wet grassland are of local (higher) ecological value.	● Not located within or near (within 2km) of a designated site. ● Habitats consisting largely of cultivated and improved grassland with a relatively dense network of hedgerows/ treelines. In addition, there is a strip of wet grassland/ wetland at the centre and a patch of semi natural deciduous woodland in the northeast corner. ● The Heathpark Stream (EPA_Code: 13H01) occurs <0.1km east of the site. Hedgerows / treeline field boundaries, woodland and wet grassland are of local (higher) ecological value.	● Not located within or near (within 2km) of a designated site. ● Habitats within Subzone boundary are dominated by improved grassland and cultivated land - lower ecological Sensitivity. ● Hedgerows and treeline field boundaries are of local (higher) ecological value.	● Not located within or near (within 2km) of a designated site. ● Site consists of a mature conifer plantation. Mature treelines from old field boundaries are evident. Part of the site includes scrub/ semi natural woodland. ● The Owenduff (County Wexford)_010 (high ecological Sensitivity) and riparian zone occurs <0.1km from eastern boundary. ● Likely site is a former wetland and may have botanic species of interest. The Subzone is likely to be used by protected species including red squirrel, pine marten, woodcock, frogs and other protected fauna. Deer and commoner breeding bird species will occur at relatively higher densities compared to farmland. ● Subzone is likely to of Local Important (Higher value)	● Not located within or near (within 2km) of a designated site. ● Habitats within Subzone boundary are dominated by improved grassland and cultivated land - lower ecological Sensitivity. ● Hedgerows and treeline field boundaries are of local (higher) ecological value.	● Not located within or near (within 2km) of a designated site. Habitats within Subzone boundary are dominated by improved grassland and cultivated land - lower ecological Sensitivity. ● Hedgerows and treeline field boundaries are of local (higher) ecological value. ● Corderraun (part of the Owenduff River) (County Wexford)_010 occurs on the boundary of the site.	● Not located within or near (within 2km) of a designated site. ● Habitats within Subzone boundary are dominated by improved grassland and cultivated land - lower ecological Sensitivity. ● Hedgerows and treeline field boundaries are of local (higher) ecological value.	● Not located within or near (within 2km) of a designated site. ● Habitats within Subzone boundary are dominated by improved grassland and cultivated land - lower ecological Sensitivity. ● Hedgerows and treeline field boundaries are of local (higher) ecological value.	● Habitats within the Subzone boundary are dominated by large, improved farmland fields of low ecological value. The internal field boundaries are mainly relatively managed hedgerows. There are some buildings surrounded by the site where bat surveys may be required. ● An area of semi natural woodland and a pond occur immediately to the west of the site and will be avoided. ● The Carrowanree Stream (EPA Code: 13C22) forms the western boundary of the site. This stream provides hydrological connectivity to the River Barrow and Nore SAC approximately 4.6km downstream.
Cultural Heritage, including Underwater Archaeology	Two undesignated cultural heritage receptors (CH092 Unfenced trackway and CH133 Possible archaeological features, 2 areas of archaeological potential (CH106 Bogland and CH107 Possible stream), 2 townland boundaries (CH128 and CH129), potential settings impact on 3 RMPs (CH025 Ringfort-rath, CH026 Moated site and CH032 Monumental	One area of archaeological potential (CH015 Bogland), and potential settings impact on 1 RMP/NIAH receptor (CH032 Monumental structure) and 2 NIAH receptors (CH063 Farm house and CH064 Kiln).	One undesignated cultural heritage receptor (CH131 Lime kiln) , 1 townland boundary (CH029), potential settings impact on 3 RMP receptors (CH027 Ringfort-rath, CH028 Moated site and CH029 Moated site, which is	Three undesignated cultural heritage receptors (CH091 Quarry and CH131 and 131 Possible ringforts), 2 areas of archaeological potential (CH013 Marsh and CH104 Stream), 2 townland boundaries (CH125 and 126), potential settings impact on 4 RMPs (CH024 Moated site, CH027 Ringfort-rath, CH028 Moated site and CH029 Moated site)	Three undesignated cultural heritage receptors (CH088 Four vernacular structures with extant remains, CH089 Well and CH090 Lime kiln), potential settings impact on 4 RMP receptors (CH007 Ritual site - holy well, CH010 Ringfort - rath, CH011 Church and CH012 Castle - tower	Six undesignated cultural heritage receptors (CH085 and CH087 Vernacular structures, CH086 and CH090 Lime kilns, CH089 Well and CH088 Four vernacular structures with extant remains), 3 areas of archaeological potential (CH100 Marsh, CH101 Bogland and CH102 Stream), 5 townland boundaries (CH120-124), potential settings impact on 4 RMPs (CH007 Ritual site - holy well, CH010	Four areas of archaeological potential (CH096 Marsh, CH097 Bogland, CH098 and CH099 Streams) and 2 townland boundaries (CH118 and CH119).	Two undesignated cultural heritage receptors (CH083 and CH084 Lime kilns), 2 areas of archaeological potential (CH096 Marsh and CH098 Stream), 1 townland boundary (CH118).	No designated receptors within the site, with 1 Area of Archaeological Potential (a stream on the western boundary) and 1 townland boundary within the site. Nine Recorded Monuments within 1km.

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	structure) and 1 NIAH (CH064 Kiln).		also a historic monument).	one of which is a Historic Monument (CH029).	house), 2 SMRs (CH013 Ritual site - holy well and CH020 Moated site) and an undesignated cultural heritage receptor (CH088 Four vernacular structures with extant remains). Hydrological assessment required to assess impacts on the holy well.	Ringfort - rath, CH011 Church and CH012 Castle - tower house), 2 SMRs (CH013 Ritual site - holy well and CH020 Moated site) and an undesignated cultural heritage receptor (CH088 Four vernacular structures with extant remains).			
Traffic and Transport	● Access would be from the N25 national road to the southwest. The N25 is double vehicle width with a dividing road line and hard shoulders. There are clear sightlines for site access along N25 and direct access is available and already suitable for logging vehicles. ● Tree and root removal required could increase volume of machinery and HGVs within the area, contributing to increased disruption to traffic. This has the potential to cause significant disruption as the main road is a commuting corridor. ● 15% of the subzone contains a slope over 4% which could require cut and fill which could increase the number and frequency of HGV movement within the area. ● The nearest bus stops are in Ballinaboola, approx. 1.5km from the site entrance along the N25. ● The subzone is contained in forestry land and would not pose disruption risk to farmers.	● Access would be from the R736 to the southwest. The R736 road is double vehicle width with a dividing road line. Slight bends are present on the site entrance, it is unclear whether clear sightlines are achievable. ● Access is likely to pass through a gravel access road off the R736 which leads to agricultural outhouses, the route may require upgrading as it is closely lined with trees and may not be suitable for HGVs. More substantial civil works may be required due to land conditions, this may involve a higher number of HGVs moving in and out of the site and causing disruption to local residents and farmers. There is also a main road (N25) running 200m to the north. ● 10% of the subzone contains a slope over 4%. ● Nearest bus stops are in Ballinaboola along the N25, approx. 1.5km northwest of the subzone access. ● The subzone is contained within agricultural farmland, with one farm directly to the northwest which may be impacted when moving vehicles around the property, moving livestock or during harvest.	● Access would be from local road L4023 Cushenstown to the south of the subzone. The local road is double vehicle width with a dividing road line, however entrance to site is at a point with a bend within the road, it is unclear whether clear sightlines are achievable. ● Access via L8057 is through a farmyard and has the Cuhsinstown National School so this is not preferable to use as an access road. ● 10% of the subzone contains a slope over 4% which could require cut and fill which could increase the number and frequency of HGV movement within the area. ● Nearest bus stops are in Ballinaboola along the N25, approx. 1.5km northeast of the subzone access.	● Site can be accessed from the N25 via the L8057. There is a bend present in the L8057 to the south of the site entrance. Further investigation required to determine if sightlines are clear. ● Narrow access road passes a Cushinstown National School and there are various sized residential properties on the route. ● Floodzone crosses over the existing access road and a temporary bridge may have to be constructed to allow for initial site works. ● Significant civil ground works needed to create a platform and tree felling may all be required. Tree and root removal required that would displace a lot of soil. ● All of these works could increase volume of machinery and large vehicles within the area, creating further disruption to residents ● 10% of the subzone contains a slope over 4%, which could require cut and fill which could increase the number and frequency of HGV movement within the area. ● The nearest bus stop is in Ballinaboola approx. 5km away.	● Access is along local and regional roads, turn between regional (R734) and local (L4201) road is almost 360 degrees which may not be suitable for HGVs. ● Access would be from the local road L4021 to the west, this is narrow in width (single vehicle width). Slight bends are present on the site entrance, it is unclear whether clear sightlines are achievable. ● Approx. 40% of the subzone contains a slope over 4%. Extra drainage may be required due to site sloping to nearby river, this could result in an increase in number and frequency of HGV movement and cause disruption along local road network surrounding the subzone. ● The nearest bus stop is approx. 5.5km north in Ballinteskin. ● The subzone is contained within agricultural farmland and	● Access would be located at a five-way intersection between R734, L4021 and L8075. The roads are a mix of double and single lane. Sightlines will require further investigation as the proposed site entrance will be located on the five way intersection. ● Elevations will necessitate additional cut and fill. Extra drainage may be required due to site sloping towards nearby river, this could require additional machinery and more frequent HGV movement on roads in and out of the subzone, creating traffic and disturbance to local road users. ● The nearest bus stop is approx. 2.5km away in Dunmain. ● The subzone is contained within agricultural farmland and does not intersect any roads. Agricultural farm to the south of the subzone with livestock in adjacent fields, the farmer may be impacted by increased HGV presence surrounding the subzone site entrance if trying to move livestock between fields.	● Access would be from Dunmain road to the southwest. The local road is narrow in width (single vehicle width). Bends are present to the north and south of the site entrance, it is unclear whether clear sightlines are achievable. ● 40% of the subzone contains a slope over 4%, will require additional cut and fill. Extra foundations may be required due to presence of marshy land nearby. Culverting may also be required. This could increase HGV movement within the surrounding area and along the roads leading to subzones, increasing traffic and causing delays to locals. ● The subzone is contained within agricultural farmland and does not intersect any roads. There is an agricultural property to the northwest of the site, the farmer may face	● Access would be from Dunmain road to the southwest. The local road is narrow in width (single vehicle width). Bends are present to the north and south of the site entrance, it is unclear whether clear sightlines are achievable. ● 25% of the subzone contains a slope over 4%, will require additional cut and fill. This could increase HGV movement within the surrounding area and along the roads leading to subzones, increasing traffic and causing delays to locals. ● The subzone is contained within agricultural farmland and does not intersect any roads. There is an agricultural property to the north of the site and another to the west, the farmers may face disruption when trying to move machinery	● Access would be from the L4031. The local road is narrow in width (single vehicle width). Bends are present on the L4031 both to the north and south of the site entrance. ● 50% of the subzone contains a slope over 4%, will require additional cut and fill. This could increase HGV movement within the surrounding area and along the roads leading to subzones, increasing traffic and causing delays to locals. ● The subzone is contained within agricultural farmland and does not intersect any roads. The are agricultural properties to the north, east and south of the subzone, the farmers may face disruption when trying to move machinery between fields or during harvest. ● The nearest bus stop is Dunmain bus stop approx. 1.5km away.

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
			● The subzone is contained within agricultural farmland, with one arable farm directly to the north and one to the west, both of which may be impacted when moving vehicles around the property or during harvest.		does not intersect any paved roads.		disruption when trying to move machinery between fields or during harvest. ● The nearest bus stop is Dunmain bus stop approx. 1.5km away.	between fields or during harvest. ● The nearest bus stop is Dunmain bus stop approx. 1.5km away.	
Seascape, Landscape and Visual	● This Subzone is contained in forestry within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the Tinnacarrick AoGS is 1km to the south and the Carrickbyrne Hill AoGS is ca. 1 km to the east. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. ● There are no dwellings within 350m of the subzone and very few within 1km, albeit a small settlement occurs beyond 900m to the west. ● A main road runs adjacent to the south.	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the Tinnacarrick AoGS is less than 500m to the south and the Carrickbyrne Hill AoGS is 1.3km to the east. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. ● There is a scattering of rural dwellings / farmsteads within 400m to the west and south and others slightly further distant to the east. There is a small settlement beyond 650m to the northwest but little residential development to the north and a main road running 200m to the north.	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the Tinnacarrick AoGS is less than 1.4km to the southeast. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. ● There is a scattering of rural dwellings / farmsteads within 400m throughout all quarters and a cluster of five immediately southeast. There is a small settlement beyond 1km to the northeast.	● This Subzone is contained in a combination of forestry and agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the Tinnacarrick AoGS is 2.5km to the southeast. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning. ● There are few rural residences within 700m of this subzone but there appears to be a stately house at Carnagh just beyond 1km to the southeast.	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the 'Slieve Coillte' AoGS is less than 1.7km to the west. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning and there is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 2.5km to the southeast. ● There is a scattering of rural dwellings / farmsteads within 400m to both the northwest and southwest and there is a one adjacent dwelling across the local road to the west.	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the 'Slieve Coillte' AoGS is less than 1.7km to the west. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning and there is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 2.4km to the southeast. ● There is a scattering of rural dwellings / farmsteads within 400m to the southwest and there are four adjacent dwellings to the south and west.	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the 'Slieve Coillte' AoGS is less than 1.8km to the northwest. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning and there is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 1.5km to the west and affords elevated southerly views from the visitors' centre. ● There is one enclosed dwelling immediately to the south and small clusters of dwellings to both the northwest	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitivity. However, the 'Slieve Coillte' AoGS is less than 1.6km to the northwest. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning and there is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 1.2km to the west and affords elevated southerly views from the visitors' centre. ● There is a scattering of rural dwellings / farmsteads close to the southwestern	● This Subzone is contained in agricultural farmland within the 'Lowlands' Landscape Character unit which is not within an 'Area of Greater Sensitvity. However, the 'Slieve Coillte' AoGS is less than 1.5km to the northwest. ● Whilst Wexford CDP does not have scenic route / view designations, scenic amenity is deemed higher in Landscape of Greater Sensitivity zoning and there is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 850m to the west and affords elevated southerly views from the visitors' centre. ● There is a scattering of rural dwellings / farmsteads envleoped by the northeastern portion of the subzone and others a short distance to the southeast. The area to the west well vegetated and lightly settled. ● Only sporadic visibility in all directions is expected, and

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
							and west, but otherwise the surrounding area is lightly settled.	and northwestern boundaries of the subzone, but otherwise the surrounding area is lightly settled.	particularly where housing occurs.
Aviation and Telecommunications	No location specific risks identified at this location. EirGrid will continue to engage with key stakeholders such as other developers, Met Eireann etc as the project develops.								
MCA Ranking (Environmental)									

C.2.4 Social Considerations

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
Settlement and Communities, including coastal and fishing communities	• The nearest settlement is Newbawn, approximately 2.6km to the southeast. • There are no dwellings within 350m of the subzone and very few within 1km. The village of Ballinaboola is 1km to the northwest and hosts some local amenities useful for residents in surrounding hamlets and isolated properties. There is potential for disruption to these communities. • Subzone is within 400m of OHLs and borders a National Road (N25). The subzone is located within forestry. It is likely that residents will be impacted by the proposed substation as this is a rural setting and would not be in keeping with the local sense of place and tranquillity associated with the forestry.	• The nearest settlement is Newbawn, approximately 2.3km to the southeast. • The village of Ballinaboola is 650m to the northwest and hosts some local amenities useful for residents in surrounding hamlets and isolated properties. There is potential for disruption to these communities. • Subzone is within 150m of OHLs and between both a National Road (N25) and Regional Road (R736). The subzone is located within private agricultural land. Given the road infrastructure surrounding, whilst the proposed substation may not be in keeping with the rural setting, the sense of settlement and community is expected to remain similar to the existing baseline.	• The nearest settlement is Newbawn, approximately 3.5km to the southeast. • There is a scattering of rural dwellings / farmsteads within 400m of all boundaries of the subzone and cluster of five immediately to the south. • The village of Ballinaboola is approximately 1.5km to the northeast of the subzone and hosts some local amenities useful for residents in surrounding hamlets and isolated properties. There is potential for disruption to these communities as a result of temporary road closures. • Rathgarogue Cushinstown GAA Club is approximately 300m to the east of the subzone, the club is used for national sports and supports community spirit through promoting the Irish language and culture. • Subzone is within 600m of OHLs, with limited infrastructure surrounding. The subzone is located within private agricultural land. It is	• The nearest settlement is Newbawn, approximately 4.6km to the east. • There are few rural residences within 700m of this subzone, and one agricultural dwelling and outhouses within 400m to the south. Mixture of linear housing along local roads and agricultural dwellings. • A 220KV OHL passes through the eastern border of the subzone. The subzone is located within a mix of agricultural fields and forestry. It is likely that residents will be impacted by the scale of the proposed substation as this is a rural setting and this would not be in keeping with the local sense of place and tranquillity.	• The nearest settlement is Campile, approximately 5.3km to the southwest. • There is a scattering of rural dwellings / farmsteads within 400m to both the northwest and southwest and there is a one adjacent dwelling across the local road to the west. • The nearest village of Cassagh is approximately 2km to the northeast. • A 220KV OHL passes through the southeast border of the subzone and alongside Local Road L4023 and within 150m of Regional Road R734. Given the energy and road infrastructure surrounding, whilst the proposed substation may not be in keeping with the rural setting, the sense of settlement and community is expected to remain similar to the existing baseline.	• The nearest settlement is Newbawn, approximately 5.2km to the east. • There is a scattering of rural dwellings / farmsteads within 400m to the southwest and there are four adjacent dwellings to the south and west. The nearest village of Cassagh is approximately 2.5km to the northeast. • Two 220KV OHL pass through the subzone. Subzone abuts Local Road L4023 and Regional Road R734. Given the energy and road infrastructure surrounding, whilst the proposed substation may not be in keeping with the rural setting, the sense of settlement and community is expected to remain similar to the existing baseline.	• The nearest settlement is Campile, approximately 3.7km to the southwest. • There is one enclosed dwelling immediately to the south and small clusters of dwellings to both the northwest and west, but otherwise the surrounding area is lightly settled. • A 220KV OHL passes through the subzone. Whilst the proposed substation may not be in keeping with the rural setting, the sense of settlement and community is expected to remain similar to the existing baseline. • The community likely place high value on neighbouring JFK Arboretum, a planted area of 252 hectares with a garden and lake visited by waterfowl, and on the Slieve Coillte which offers panoramic views of the surrounding landscape. • There is also the John F. Kennedy Trust, a charitable trust dedicated to the	• The nearest settlement is Campile, approximately 3.3km to the southwest. • There is one enclosed dwelling immediately to the south and small clusters of dwellings to both the northwest and west, but otherwise the surrounding area is lightly settled. • Two 220KV OHL pass through the subzone. Whilst the proposed substation may not be in keeping with the rural setting, the sense of settlement and community is expected to remain similar to the existing baseline. The subzone is located within private agricultural land. • The community likely place high value on neighbouring JFK Arboretum, a planted area of 252 hectares with a garden and lake visited by waterfowl, and on the Slieve Coillte which offers panoramic views of the surrounding landscape.	• The nearest settlement is Campile, approximately 2.6km to the southwest. • There are two residential properties directly adjacent to the subzone on the eastern border, one on the northeast border, with more enclosed dwellings to the southeast, but otherwise the surrounding area is lightly settled. • Two 220KV OHL pass through the subzone. The zone is located within private agricultural land. Whilst the proposed substation may not be in keeping with the rural setting, the baseline for sense of settlement and community is expected to change in relation to proposed planning application for a solar farm in this subzone and surrounding area. • The community likely place high value on neighbouring JFK Arboretum, a planted area of 252 hectares with a garden and lake visited by waterfowl, and on the Slieve Coillte which

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
			likely that residents will be impacted by the scale of the proposed substation as this is a rural setting and this would not be in keeping with the local sense of place and tranquillity.				cultural and environmental development of towns and environment surrounding New Ross. This charity is used to encourage regeneration of the area, it is run by volunteers from the local area who have a deep commitment to and place high value on their involvement within the community.	● There is also the John F. Kennedy Trust, a charitable trust dedicated to the cultural and environmental development of towns and environment surrounding New Ross. This charity is used to encourage regeneration of the area, it is run by volunteers from the local area who have a deep commitment to and place high value on their involvement within the community.	offers panoramic views of the surrounding landscape. ● There is also the John F. Kennedy Trust, a charitable trust dedicated to the cultural and environmental development of towns and environment surrounding New Ross. This charity is used to encourage regeneration of the area, it is run by volunteers from the local area who have a deep commitment to and place high value on their involvement within the community.
Visitors and Commuters	● Commuters passing through Ballinaboola along the N25 national road will be impacted by the proposed infrastructure. The sense of place associated with the local area will be disrupted by the presence of a large substation potentially contributing to altered wellbeing within the local residents. ● Users of the facilities in Ballinaboola will be affected by the partial road closures during construction.	● This subzone is in-between a national road and a regional road, both used regularly by commuters. The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents. ● Users of the facilities in Ballinaboola will be affected by the partial road closures during construction. ● Visitors to the Browne-Clayton Column may be impacted by the presence of a large substation adjacent to the historical landmark, detracting from the cultural value associated with visiting this area.	● There are no settlements within proximity to the subzone, therefore the L4023 is likely to only sometimes be used as a commuter route to join the regional and national roads passing through Ballinaboola. Commuters are unlikely face significant disruption. ● The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents. ● Users of the facilities in Ballinaboola will be affected by the partial road closures during construction.	● Local road L8056 is unlikely to connect any major commuter hubs, however road severance could cause detours of between 5-10km as there are limited deviation routes due to the River Owenduff dividing the area. This may have an impact on commuters and affect their wellbeing if their daily commute is significantly longer. ● The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents.	● This subzone is adjacent to small local roads that are unlikely to connect any major commuter hubs and are used only by local residents. The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents. Whilst these may naturally be partially screened, the presence of the substation will significantly alter the value associated with the rural setting. ● The viewpoint on Slieve Coillte (2km away) is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation from the viewpoint at the top, this has the potential to	● This subzone is adjacent to small local roads that are unlikely to connect any major commuter hubs and are used only by local residents. The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents. Whilst these may naturally be partially screened, the presence of the substation will significantly alter the value associated with the rural setting. ● The viewpoint on Slieve Coillte (2km away) is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation from the viewpoint at the top, this has the potential to	● This subzone is adjacent to small local roads that are unlikely to connect any major commuter hubs and are used only by local residents. The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents. ● The viewpoint on Slieve Coillte is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation from the viewpoint at the top, this has the potential to significantly alter the value associated with this recreational area as the landscape surrounding will be permanently altered by infrastructure that	● This subzone is adjacent to small local roads that are unlikely to connect any major commuter hubs and are used only by local residents. The sense of place associated with the local area will be disrupted by the presence of a large substation, making people's commutes and daily driving less enjoyable and potentially contributing to altered wellbeing within the local residents. ● The viewpoint on Slieve Coillte is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation from the viewpoint at the top, this has the potential to significantly alter the value associated with this recreational area as the landscape surrounding will be permanently altered by infrastructure that	● This subzone is adjacent to small local roads that are unlikely to connect any major commuter hubs and are used only by local residents. The sense of place associated with the local area will be disrupted by the cumulative presence of a new substation wit the solar farm development. Whilst the baseline for the immediate area will change and has the potential to make people's commutes and daily driving less enjoyable, the percentage of their journey likely to be impacted is limited. ● The viewpoint on Slieve Coillte is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation and solar farm from the viewpoint at the top, this has the potential to significantly alter the value associated with

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
					significantly alter the value associated with this recreational area as the landscape surrounding will be permanently altered by infrastructure that is not in keeping with the natural setting.	significantly alter the value associated with this recreational area as the landscape surrounding will be permanently altered by infrastructure that is not in keeping with the natural setting.	is not in keeping with the natural setting. ● Visitors to the neighbouring JFK Arboretum will also be impacted by the substation affecting the landscape setting of the area.	is not in keeping with the natural setting. ● Visitors to the neighbouring JFK Arboretum will also be impacted by the substation affecting the landscape setting of the area.	this recreational area as the landscape surrounding will be permanently altered by infrastructure that is not in keeping with the natural setting. ● Visitors to the neighbouring JFK Arboretum will also be impacted by the substation affecting the landscape setting of the area.
Amenities, Recreation and Tourism	● The national road N25 is a key connecting road between Wexford and Waterford, visitors to the area will pass the proposed subzone when travelling around the area, potentially detracting from the natural beauty and landscape they come to County Wexford for, affecting their sense of place and value associated with the area for tourism. ● The village of Ballinaboola is approximately 650m to the northeast of the subzone and hosts amenities including a hotel, a B&B, two auto-repair centres, two fast-food establishments, a petrol station and a convenience store. There is potential for disruption to these amenities.	● The national road N25 is a key connecting road between Wexford and Waterford, visitors to the area will pass the proposed subzone when travelling around the area, potentially detracting from the natural beauty and landscape they come to County Wexford for, affecting their sense of place and value associated with the area for tourism. ● The village of Ballinaboola is approximately 650m to the northeast of the subzone and hosts amenities including a hotel, a B&B, two auto-repair centres, two fast-food establishments, a petrol station and a convenience store. There is potential for disruption to these amenities.	● Users of the Rathgarogue-Cushinstown GAA will have a direct view of the substation when playing sports outside. This may detract from the joy of the sports and impact on community and mental wellbeing. Ashgrove Yoga is a further 200m to the east along the L4023 Cushenstown road, users of this facility who aspire for a relaxed atmosphere may also be impacted by the introduction of new intrusive infrastructure into the landscape. ● The village of Ballinaboola is approximately 1.5km to the northeast of the subzone and hosts amenities including a hotel, a B&B, two auto-repair centres, two fast-food establishments, a petrol station and a convenience store. There is potential for disruption to these amenities.	● A few local amenities within the immediate vicinity including ABP Permanent Makeup along the L8056 to the west, Lodge Road Therapy to the east, and MD's takeaway restaurant in Cassagh to the south. ● Visitors to these amenities are likely to be able to see the substation during their journey, this is likely to detract from the natural beauty of the landscape and potentially affect value associated with the area.	● Terrerath Community Centre to the north may be affected by temporary localised road closures along the L4021 Tellarought road. Peter J McDonald Engineering and Alushield Glazing Limited may also be impacted. Users of the community centre may also be impacted by the substation, and may find that the presence of it impacts on their mental wellbeing and enjoyment of using the local area. ● The viewpoint on Slieve Coillte (2km away) is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation from the viewpoint at the top, this has the potential to significantly alter the value associated with this recreational area as the landscape surrounding will be permanently altered by infrastructure that is not in keeping with the natural setting.	● Terrerath Community Centre runs activities and events for the local communities and these may be impacted by development in the area. Peter J McDonald Engineering and Alushield Glazing Limited may also be impacted. Users of the community centre may find that the presence of it impacts on their mental wellbeing and enjoyment of using the local area. ● The viewpoint on Slieve Coillte (2km away) is approximately 268.5 metres (881 feet) high, making it the highest point on the Hook Peninsula. Visitors to the Slieve Coillte will be able to see the substation from the viewpoint at the top, this has the potential to significantly alter the value associated with this recreational area as the landscape surrounding will be permanently altered by infrastructure that is not in keeping with the natural setting.	● JFK Arbortoreum and Slieve Coillte are located ca 1.1 km to the northwest of this subzone. Tourism is likely to be impacted by the substation within this vicinity as it is not in keeping with the rural and natural setting of the area and will be visible from the top of the 282m peak of Slieve Coillte. This will impact on the perceived natural value of the area. There are no recreational facilities adjacent to the boundary. ● Foley's Cottage homestay to the west and Gusserane National School may be affected by any temporary road closures, however there are multiple roads in the surrounding area that can be used as a diversion without changing journey duration significantly.	● JFK Arbortoreum and Slieve Coillte are located ca 1.1 km to the northwest of this subzone. Tourism is likely to be impacted by the substation within this vicinity as it is not in keeping with the rural and natural setting of the area and will be visible from the top of the 282m peak of Slieve Coillte. This will impact on the perceived natural value of the area. There are no recreational facilities adjacent to the boundary. ● Foley's Cottage homestay to the west and Gusserane National School may be affected by any temporary road closures, however there are multiple roads in the surrounding area that can be used as a diversion without changing journey duration significantly.	● JFK Arbortoreum and Slieve Coillte are located ca 800m to the northwest and 3km north of this subzone respectively. Tourism is likely to be impacted by the substation and solar farm within this vicinity as it is not in keeping with the rural and natural setting of the area and will be visible from the top of the 282m peak of Slieve Coillte. This will impact on the perceived natural value of the area. There are no recreational facilities adjacent to the boundary. ● Gusserane National School may be affected by any temporary road closures, however there are multiple roads in the surrounding area that can be used as a diversion without changing journey duration significantly.
Nuisance and Disturbance	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	Background noise associated with the N25 can be expected to be elevated by background noise from the substation,	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.	The construction phase can be expected to cause nuisance and disturbance to local residents and visitors, particularly if the

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
		impacting nearby residents. The construction phase can be expected to cause nuisance and disturbance to local residents and visitors.							construction period is prolonged for both the substation and solar farm within the subzone and surrounding lands.
Visual Effects	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The Tinnacarrick AoGS is 1km to the south and the Carrickbyrne Hill AoGS is 1 km to the east. ● There are no dwellings within 350m of the subzone and very few within 1km, albeit a small settlement occurs beyond 900m to the west. A main road runs adjacent to the south. ● Due to screening by the forestry, there is expected to be very limited visibility within western quarters. Sporadic visibility occurs throughout the eastern quarters but does not coincide with residential development. There will be close visibility from the main road to the southeast.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The Tinnacarrick AoGS is less than 500m to the south and the Carrickbyrne Hill AoGS is 1.3km to the east. ● There is a scattering of rural dwellings / farmsteads within 400m to the west and south and others slightly further distant to the east. There is a small settlement beyond 650m to the northwest but little residential development to the north and a main road running 200m to the north. ● Sporadic potential for visibility of key structures from all quarters especially those containing residential development. Only some of the nearest dwellings to the west have good potential for visibility and there is almost no visibility from the settlement to the northwest.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The Tinnacarrick AoGS is less than 1.4km to the southeast. ● There is a scattering of rural dwellings / farmsteads within 400m throughout all quarters and a cluster of 5 immediately southeast. There is a small settlement beyond 1km to the northeast. ● Comprehensive visibility expected from within the nearest 200-300m covering the local road and residences immediately south and east. However, visibility becomes sporadic beyond 300m especially in the northern quarters and with no visibility from the settlement to the northeast. Only some of the nearest dwellings to the west have good potential for visibility and there is almost not visibility from the settlement to the northwest. Substantive screening would be required from dwellings immediately to the southeast	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The Tinnacarrick AoGS is 2.5km to the southeast. ● There are few rural residences within 700m of this subzone but there appears to be a stately house at Carnagh just beyond 1km to the southeast. ● Very sporadic potential for visibility of key structures from all quarters at the distances that residential development occurs. There is minor potential for distant visibility from the stately house but it is in the direction of what appears to be a designed view.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The 'Slieve Coillte' AoGS is less than 1.7km to the west. There is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 2.5km to the southeast. ● There is a scattering of rural dwellings / farmsteads within 400m to both the northwest and southwest and there is a one adjacent dwelling across the local road to the west. ● Reasonable visibility from the east but more sporadic visibility from northern and western quarters, particularly around the two main clusters of nearby dwellings which appear to be at least partially screened.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The 'Slieve Coillte' AoGS is less than 1.7km to the west. There is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 2.4km to the southeast. ● There is a scattering of rural dwellings / farmsteads within 400m to the southwest and there are four adjacent dwellings to the south and west. ● Reasonable visibility within farmland surrounding the site throughout the northern quarters, but this is expected to dissipate beyond 600m. there is only sporadic visibility to west and southeast and generally this avoids the main clusters of dwellings.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The 'Slieve Coillte' AoGS is less than 1.8km to the northwest. There is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 1.5km to the west and affords elevated southerly views from the visitors' centre. ● There is one enclosed dwelling immediately to the south and small clusters of dwellings to both the northwest and west, but otherwise the surrounding area is lightly settled. ● Reasonable visibility within farmland immediately around the site, but this is expected to dissipate beyond 300m. There is only sporadic visibility thereafter and limited visibility from housing clusters which tend to be surrounded by mature vegetation.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, creating a permanent disturbance within the setting. ● The 'Slieve Coillte' AoGS is less than 1.8km to the northwest. There is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 1.5km to the west and affords elevated southerly views from the visitors' centre. ● There is one enclosed dwelling immediately to the south and small clusters of dwellings to both the northwest and west, but otherwise the surrounding area is lightly settled. ● Reasonable visibility within farmland immediately around the site, but this is expected to dissipate beyond 300m. There is only sporadic visibility thereafter and limited visibility from housing clusters which tend to be surrounded by mature vegetation.	● The area within and surrounding the subzone is predominantly rural and sparsely populated. The infrastructure proposed will not be in keeping with the sense of place, although the baseline environment is expected to change with the development of further energy infrastructure in the area . ● The 'Slieve Coillte' AoGS is less than 1.5km to the northwest. There is a lookout from the top of Slieve Coillte. ● The popular JFK Arboretum is approximately 850m to the west and affords elevated southerly views from the visitors' centre. There is a scattering of rural dwellings / farmsteads enveloped by the northeastern portion of the subzone and others a short distance to the southeast. The area to the west well vegetated and lightly settled. Only sporadic visibility in all directions is expected, and particularly where housing occurs.
MCA Ranking (Social)									

C.2.5 Deliverability Considerations

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
Implementation Timelines	Lengthy 220kV circuit grid connection works. Ground investigations, mitigations required related to significant civil ground works to create platform and tree felling may all be required. **Landholding:** Subzone and access road can all be built on one Landholdings site. This land is owned by the state. **Distance to OHL:** Approx. 3.1km total **Additional site works:** Ground investigations and extra foundations may be required due to presence of marshy land. **Distance to Road network:** Site is on the N25, multiple access routes present throughout the site. **Seasonal Constraints:** Proximity to waterway would imply higher levels of constraint related to ground water and flooding in winter months. **Timeline for construction**: Cut and fill may be required but this will be site specific and require micro-siting. The cable route or overhead line works is the longest to the OHL which may fall into the critical path.	Lengthy 220kV circuit grid connection works. Mitigations required related to significant civil ground works to create platform, access road upgrades and culverting may be required. **Landholding:** The substation would be constructed on a parcel involving 5 Landholdings. The access road may require another. **Distance to OHL:** Approx. 2.8km total **Additional site works:** Extra foundations may be required due to presence of marshy land nearby. Culverting may also be required. **Distance to Road network:** Approx 250m from the R736, current access road will need upgrading. **Seasonal Constraints:** Proximity to waterway would imply higher levels of constraint related to ground water and flooding in winter months **Timeline for construction:** Significant drainage and civil ground works would be required for the site platform and access road. One of the longest grid connection cable route or overhead line works may be a consideration to the grid connection infrastructure critical path.	Lengthy 220kV circuit grid connection works. Access road construction timeline. **Landholding:** Subzone and access road can be built on a single Landholdings site **Distance to OHL**: Approx. 2.2km total. **Additional site works:** No additional site works apparent currently. **Distance to Road network:** Subzone on L4023, Access road of approx. 180m must be constructed **Seasonal Constraints:** None apparent **Timeline for construction:** Cut and fill may be required but this will be site specific and require micro-siting. The grid connection cable route or overhead line works may be a consideration to the grid connection infrastructure critical path.	Lengthy 220kV circuit grid connection works. Ground investigations, mitigations required related to significant civil ground works to create platform and tree felling may all be required. Upgrading of significant access road including possible installation of a bridge. National school present along the access route for HGV's. **Landholding:** Substation and access road can be constructed on a parcel involving 2 Landholdings. One I state owned. **Distance to OHL:** Approx. 1.8km total. **Additional site works:** Ground investigations and extra foundations may be required due to presence of marshy land. Runoff to Owenduff river will require extra drainage. Extra time needed to fell trees on site. **Distance to Road network:** An access road of approx. 920m runs to the L8057. This road may require upgrading. **Seasonal Constraint:** National school located nearby on local access road. Proximity to waterway would imply higher levels of constraint related to ground water and flooding in winter months. Timeline for construction:: Cut and fill may be required but this will be site specific and require micro-siting. The grid connection cable route or overhead line works may be a consideration to the grid connection infrastructure critical path.	Extra drainage may be required due to site sloping to nearby river. **Landholding:** Substation and access road can all be built on one Landholdings site **Distance to OHL:** Approx. 750m total **Additional site works:** Extra drainage may be required due to site sloping to nearby river **Distance to Road network:** Site is on the L4021, access road already present. **Seasonal Constraints:** None apparent **Timeline for construction:** Cut and fill may be required but this will be site specific and require micro-siting.	Extra drainage may be required due to site sloping to nearby river. Site considered large enough to be out of floodzone/marshy lands. **Landholding:** Substation and access road can all be built on one Landholdings site **Distance to OHL:** Approx. 0m total **Additional site works:** If site is located west of the site then standard foundations may be adequate. Drainage system will be required due to site sloping towards a nearby river. **Distance to Road network:** Site has road access at the junction with the R734 and the L4021. An access road of approx. 300m may have to be constructed. **Seasonal Constraints:** Proximity to waterway would imply higher levels of constraint related to ground water and flooding in winter months **Timeline for construction**: Cut and fill may be required but this will be site specific and require micro-siting.	Construction of access road, extra foundations and culverts may be required. **Landholding:** Substation and access road can be constructed on a parcel involving 3 Landholdings. **Distance to OHL:** Approx. 350m total. **Additional site works:** Extra foundations may be required due to presence of marshy land nearby. Culverting may also be required. **Distance to Road network**: Site is approx. 220m from nearest road. Full access road must be constructed. **Seasonal Constraints:** None apparent **Timeline for construction:** Cut and fill may be required but this will be site specific and require micro-siting.	Small access road may be only additional site work. **Landholding:** Substation and access road can be constructed on a parcel involving 2 Landholdings. **Distance to OHL:** Approx. 0m total **Additional site works:** If site is located close to the road, then it may require no additional site works. **Distance to Road network:** Site is located on the road. Access road will have to be constructed. **Seasonal Constraints:** None apparent. **Timeline for construction:** Cut and fill may be required but this will be site specific and require micro-siting.	Extra drainage interventions due to proximity to stream and extra civil works due to the presence of a small hill running through the site may be required. **Landholding:** Substation and access road can be constructed on a parcel involving 1-2 Landholdings. **Distance to OHL:** Approx. 0m total **Additional site works:** Extra drainage and civil works may be required due to slope of over 4% running doe to a local river. **Distance to Road network:** Site is located on the road. Access road may not have to be constructed. **Seasonal Constraints:** None apparent **Timeline for construction:** Cut and fill may be required but this will be site specific and require micro-siting.
Dependence on other Projects	The Great Island – Kellis 220kV OHL Line Uprate Project is included in EirGrid's National Development Plan. Completion of this uprate project is required in order to maximise the wind farm export capability. This project is planned for completion prior to the construction phase of the PUOSC Project and so is not expected to have any negative impact.								Subzone is located within a site allocated for the Shelbourne solar farm, although PUOSC is not

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
									dependent on the Shelbourne Solar project.
Permits and Wayleaves	● This subzone contains only one landholding for the construction of the substation, this is the lowest number in this area but the connection to the OHL could require much more. ● Substation and access road can all be built on one Landholdings site. This land is owned by the state and so is therefore a planning consent opportunity. ● Covering the approx. 2.7km to the OHLs would possibly involve 8 more Landholdings, if it is not possible to cable within the N25.	● This subzone contains five landholders. ● The access road may require a sixth landholder. Covering the approx. 2.8km to the OHLs would possibly involve 10 more Landholdings, if moving offroad. (N25)	● The subzone contains four landholders. ● Substation and access road can all be built on one Landholdings site. ● Covering the approx. 2.2km to the OHLs would possibly involve 6 more Landholdings if going offroad.	● This subzone contains two Landholders in total. ● Substation and access road can be constructed on a parcel involving 2 Landholdings. One of these is state owned ● Covering the approx. 1.8km to the OHLs could possibly involve 5 extra Landholdings. One of which is the unregistered estate of Carnagh house.	● This subzone contains two landholders in total. ● Substation and access road can all be built on one Landholdings (landholding) site ● Covering the approx. 560m to the OHLs would involve at least 1 more Landholding	● This subzone contains three possible landholders but it is possible that only one landowner is required. ● Substation and access road can all be built on one Landholdings site ● With OHLs passing over the site no additional Landholdings are involved	● This subzone contains three Landholders in total. ● Covering the approx. 250m to the OHLs could possibly involve no extra Landholdings	● This subzone contains two Landholders in total. ● Substation and access road can be constructed on a parcel involving 2 Landholdings. ● With OHLs passing over the site no additional Landholdings are involved	● This subzone contains up to two Landholders in total. ● Substation and access road can be constructed on a parcel involving 1-2 Landholdings. ● With OHLs passing over the site no additional Landholdings are involved
Project Plan Flexibility	Substation footprint takes up less than half of the subzone. Cable can only access site from the south. **Remaining area:** Substation footprint will take up 40% of the subzone. **Orientation:** Site has a lot of availability within the subzone for selection of the most suitable orientation. **HGV Access:** Site has direct access to the N25 from both New Ross and Wexford town. **Cable Access:** Cable route will have to access subzone from the south to avoid Ballinaboola and the floodzone.	Substation footprint would take up more than half the subzone. Rivers and floodzones restrict the cables access. **Remaining area:** Substation footprint will take up 55% of the subzone. **Orientation:** Site orientation could change but this would bring it close to the site boundary and flooding zones. **HGV Access:** Only feasible construction access to the site is via the N25 and R736. **Cable Access**: Rivers and floodzones restrict cable access to the south.	Substation footprint would take up half the subzone with a second access route available. **Remaining area:** Substation footprint will take up 50% of the subzone. **Orientation:** Orientation of site could change if needed but this will add more Landholdings. **HGV Access:** Possible second construction access option to the north of the site. **Cable Access**: Very little restriction for cable access to the subzone.	Substation footprint takes up most of the subzone. Also, site access for the cable is restricted due to a waterways. **Remaining area:** Substation footprint will take up 70% of the subzone. **Orientation**: There is very little space for this site to move, It can change its orientation but this will take it very close to the Owenduff river. **HGV Access:** Possible to access site from both directions but this road is poor and the access road is long. **Cable Access:** Cable can only access the site from the south which is restricted by a waterway	Substation footprint would take up more than half the subzone. Orientation of the substation will not be able to change. Rivers and floodzones restrict the cables access. **Remaining area:** Substation footprint will take up 70% of the subzone **Orientation:** Footprint orientation cannot change within this substation. **HGV Access:** Second access route is available to site from the R733 if required. **Cable Access:** Cable will have to cross a floodzone to access the subzone.	Substation footprint takes up less than half of the subzone and its orientation can change. Some waterways to the south and east may restrict cable access. **Remaining area:** Substation footprint will take up 25% of the subzone. **Orientation:** The site can change its orientation to any that is appropriate but must stay close to the NW of the subzone. **HGV Access**: Site has good access via the R734 but can also be access via Campile and the R733 if necessary. **Cable Access**: Some streams and a floodzone must be crossed to the south for the cable to access the site.	Substation footprint takes up most of the subzone. Also, site access for the cable is restricted due to a medium pressure gas line. **Remaining area:** Substation footprint will take up 90% of the subzone. **Orientation:** Site has very little space to move. Changing orientation may lead to an extension of the sub-zone boundary. **HGV Access:** Site has good access via the R734 but can also be access via Campile and the R733 if necessary. **Cable Access:** The gas line restricts cable access from the south.	Substation footprint takes up more than half the subzone. Access for the cable is restricted due to a medium pressure gas line. **Remaining area:** Substation footprint will take up 60% of the subzone. **Orientation:** Orientation of the site can change but that will take it close to the OHLs. **HGV Access:** Site has good access via the R734 but can also be access via Campile and the R733 if necessary. **Cable Access**: The gas line restricts cable access from the south.	Substation footprint takes up less than half of the subzone and its orientation can change. Some waterways to the south and east may restrict cable access. A possible floodzone may also restrict footprint orientation. **Remaining area:** Substation footprint will take up a little more than 25% of the subzone. **Orientation:** The site can change its orientation to any that is appropriate, but this depends on the outcome of the further investigation into the floodzone. **HGV Access:** Site has good access via the R734 but can also be accessed via Campile and the R733, if necessary **Cable Access:** The gas line restricts cable access from the east.
Design Complexity, Uncertainty, Risk	Ground investigations, significant civil ground works needed to create a platform and tree felling may all be required. SUDs intervention required for construction of platform.	Significant civil ground works needed to create a platform access road upgrades and culverting may be required. SUDs intervention required for construction of platform **Existing Infrastructure:**	No underground utilities and no additional site works needed. MV OHL crosses the north of the site. **Existing Infrastructure:**	Ground investigations, significant civil ground works needed to create a platform and tree felling may all be required. SUDs intervention required for construction of platform	Extra drainage may be required due to site sloping to nearby river **Existing Infrastructure:** ● The 220kV OHL runs over the western edge of the	Extra drainage may be required due to site sloping to nearby river. **Existing Infrastructure:** ● The 220kV OHL runs over the western edge of the	Significant civil ground works needed to create a platform and culverting may be required. Presence of a gas line on adjacent road.	Medium pressure gas line is present on the road bordering the subzone. **Existing Infrastructure:**	Medium pressure gas line is present on the road bordering the subzone. Extra drainage and civil works may be required. **Existing Infrastructure:**

Location	WXD-01	WXD-02	WXD-03	WXD-04	WXD-05	WXD-06	WXD-07	WXD-08	WXD-09
	Existing Infrastructure: ● The 220kV OHL runs over the western edge of the site. An MV OHL runs along the eastern edge. ● No underground utilities pass through this subzone. **Additional Site Works** Ground investigations and extra foundations may be required due to presence of marshy land.	● MV OHL passes over the access road. MV OHL also present on the northern border of the site. ● No underground utilities pass through this subzone. **Additional Site Works:** Extra foundations may be required due to presence of marshy land nearby. Culverting may also be required.	• MV OHL runs along the northern border of the site. • No underground utilities pass through this subzone. **Additional site works:** No additional site works apparent at this time	**Existing Infrastructure:** ● The 220kV OHL runs over the eastern edge of the site ● No underground utilities pass through this subzone. **Additional Site Works:** Ground investigations and extra foundations may be required due to presence of marshy land. Runoff to Owenduff river will require extra drainage. Extra time needed to fell trees on site. Bridge may have to be installed along the access road.	site. An MV OHL runs along the eastern edge. ● No underground utilities pass through this subzone **Additional Site Works:** Extra drainage may be required due to site sloping to nearby river.	site. Multiple OHLs present at the southern edge of the site. ● No underground utilities pass through this subzone. **Additional Site Works:** If site is located west of the site then standard foundations may be adequate. Drainage system will be required due to site sloping towards a nearby river.	SUDs intervention required for construction of platform. **Existing Infrastructure:** ● The 220kV OHL runs over the western edge of the site. An MV OHL runs over the access road. ● A 400mm, 4-bar gas pipeline is present in the local road bordering the front of the site. **Additional Site Works:** More extensive foundations may be required due to presence of marshy land nearby. Culverting may also be required.	● Both 220kV OHLs run over the western edge of the site. A 38kV OHL runs straight through the subzone. ● A 400mm, 4-bar gas pipeline is present in the local road bordering the front of the site. **Additional Site Works:** If site is located close to the road then it may require no additional site works.	● Both 220kV OHLs run over the western edge of the site. A 38kV OHL runs straight through the subzone. ● A 400mm, 4-bar gas pipeline is present in the local road bordering the east of the site **Additional Site Works:** Extra drainage works and civil works may be due to the subzone having a slope of over 4% in places running down to a river bordering the western edge of the site.
MCA Ranking (Deliverability)									

C.3 Evaluation of Indicative Onshore Transmission Cable Route Corridors

C.3.1 Technical Considerations

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Compliance with Health and Safety Standards	This route follows two two-lane regional roads (R735 & R736), therefore partial road closures may be required for the majority of the cable route trenching activities. This may increase the complexity of managing health and safety risks compared to full road closures. **During construction:** ● The entire 17km route follows two-lane regional roads. ● Partial closures with traffic management may be necessary along the entire route during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. **Maintenance:** ● Road closure unlikely for offroad joint bays.	Full road closures will be required for approx. 50% of the cable route trenching activities and approx. 30% of the route is completely off-road. This may reduce the complexity of managing health and safety risks compared to partial road closures on two-lane roads. **During construction:** ● There is a 2.6km stretch of two-lane regional road between where the route connects to the R734 from off-road and continues north to Dunmain (approx. 20% of the route). ● Partial closures with traffic management may be possible through this two-lane section during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the roads along this route are a mix of wide and narrow single lane roads and off-road sections. The single lane roads necessitate full road closures and would comply with all relevant health and safety standards. ● Some tree felling may be required on treelined single lane roads where there is potential to disturb ground stability and resultant root system damage from construction works. **Maintenance:** ● Road closure unlikely for offroad joint bays.	Full road closures will be required for approx. 55% of the cable route trenching activities and approx. 35% of the route is completely off-road. This may reduce the complexity of managing health and safety risks compared to partial road closures on two-lane roads. **During construction:** ● There is a 1km stretch of two-lane regional road between Gusserane and Dunmain along R735 (approx. 10% of the route). ● Partial closures with traffic management may be possible through this two-lane section during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the roads along this route are a mix of wide and narrow single lane roads and off-road sections. The single lane roads necessitate full road closures and would comply with all relevant health and safety standards. ● Some tree felling may be required on treelined single lane roads where there is potential to disturb ground stability and resultant root system damage from construction works. **Maintenance:** ● Road closure unlikely for offroad joint bays.	Full road closures will be required for the approx. 25% of the cable route trenching activities and approx. 50% of the route is completely off-road. This may reduce the complexity of managing health and safety risks compared to partial road closures on two-lane roads. **During construction:** ● There is a 2.6km stretch of two-lane regional road between where the route connects to the R734 from off-road and continues north to Dunmain (approx. 20% of the route). ● Partial closures with traffic management may be possible through this two-lane section during installation. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. ● The remainder of the roads along this route are a mix of wide and narrow single lane roads and long off-road sections. The single lane roads necessitate full road closures and would comply with all relevant health and safety standards. ● Some tree felling may be required on treelined single lane roads where there is potential to disturb ground stability and resultant root system damage from construction works. **Maintenance**: ● Road closure unlikely for offroad joint bays.	Partial road closures will be required for 100% of the route as 100% of the route runs along the two-lane road R736. If the cable route has to cross the road a full road closure may be required for a short time. **During Construction:** ● A total of 13.5km of this route runs along a two-lane road (R736), partial closures with traffic management may be possible. For the safety of the public and construction crew, a stop-and-go system rather than contraflow may be required. **Maintenance:** ● Road closure unlikely for offroad joint bays.
Compliance with Specifications	**Cable routing principal:** ● The principal concept of this option is routing within the regional road network. **Extent of off-road routing:** ● Less off-road routing required in comparison to other options. ● A high-pressure PE gas distribution main exists within the road for 65% of the route. Appropriate clearance will be required between the gas pipeline and the HV cable which may necessitate off-road cable routing. ● The ranking of this criterion may change dependent upon the verified positioning of the gas pipeline. ● There is one section which may require a HDD through third party lands to cross the River Owenduff. ● There will be some sections of routing required in third party land for 10 other potential watercourse	**Cable routing principal:** ● The principal concept of this option is routing within the local public road network initially and then transitioning onto the regional road network towards the subzone. **Extent of off-road routing:** ● Multiple stretches of off-road trenching through third party lands required (approx. 30% of total route length). ● The remaining 70% of the route follows mostly single-lane local roads. ● 1.3km of offroad trenching to bypass 2 Owenduff River crossings including 2 HDD crossings. ● Approx. 400m of off-road routing required to connect from the HDD site north of Wellingtonbridge to the L3037.	**Cable routing principal:** ● The principal concept of this option is routing within the local public road network initially and then transitioning onto the regional road network towards the subzone. **Extent of off-road routing:** ● Multiple stretches of off-road routing through third party lands required (approx. 35% of total route length). ● The remaining 65% of the route follows mostly single-lane local roads. ● Approx. 2km of offroad trenching to bypass an area of boggy land. ● Ca. 1.4km of offroad trenching cross the Owenduff River crossing via HDD ● Approx. 400m of off-road trenching required to connect from the HDD site	**Cable routing principal:** ● The principal concept for this cable route option is off-road routing and then transitioning onto the regional road network towards the subzone, with the initial section from Wellingtonbridge being on local public roads. **Extent of off-road routing:** ● 50% of the route (approx. 3.6km) requires off-road routing through third party lands. ● The remaining 50% of the route follows almost equal lengths of single-lane local roads and two-lane regional roads. ● Approx 1.4km of off-road routing for one Owenduff River HDD crossing. ● Approx. 400m of off-road routing required to connect from the HDD site	**Cable routing principal:** ● The principal concept of this option is routing within the regional road network. **Extent of off-road routing:** ● Much less off-road routing required in comparison to other options. ● A high-pressure PE gas distribution main exists within the road for 25% of the route. Appropriate clearance will be required between the gas pipeline and the HV cable which may necessitate off-road cable routing. ● The ranking of this criterion may change dependent upon the verified positioning of the gas pipeline. ● There will be some sections of routing required in third party land for 5 water crossings, and 1 cattle crossing with 2 HDDs likely to be required. **Joint bay positioning principle:** ● Most joint bays will be located on third party land.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
	crossings which require further assessment to confirm severity. **Joint bay positioning principle:** ● Most joint bays will be located on third party land.	● There will be some sections of routing required in third party land for up to 3 additional watercourse crossings. **Joint bay positioning principle:** ● Most joint bays will be located on third party land.	north of Wellingtonbridge to the L3037. ● There will be some sections of cable trenching required in third party land.for up to 6 additional watercourse crossings. **Joint bay positioning principle:** ● Most joint bays will be located on third party land.	north of Wellingtonbridge to the L3037. **Joint bay positioning principle:** ● Most joint bays will be located on third party land.	
Constructability (Ground Conditions and Marine Processes)	The majority of this route contains a PE gas distribution main which runs parallel with the road, significantly increasing the complexity of installation. **Ground conditions:** ● Majority of route is along well-established roads, and ground conditions are expected to be well understood, with low complexity in construction. ● Soil type around offroad HDDs may affect cable rating which requires consideration. **Route complexity:** ● 65% of this route contains a PE gas distribution main which runs parallel with the road. ● The road that contains the PE gas main is narrow with no verge and may not be able to accommodate a new trench. Sections of the route containing the gas main may necessitate crossing of this infrastructure and/or off-road trenching at corners due to bending radius requirements and in-road space constraints. Consultation with GNI will be necessary to confirm the exact location of this utility within the road and level of complexity involved for execution. ● A HDD is required to cross the Owenduff River.	This route may require 2 HDD crossings and at least one other major bridge crossing which significantly increases the complexity of installation **Ground conditions:** ● Soil type around offroad HDDs may affect cable rating which requires consideration. **Route complexity:** ● 2 HDD crossings may be required to cross the Owenduff River twice off-road. ● Route will run parallel to the railway line at various points. Consultation with Irish Rail will be required to assess the exact separation distance required. ● Approx 150m of this route contains a PE gas distribution main which runs parallel with the road. This will require consultation with GNI to confirm the exact location of this utility within the road and level of complexity involved for execution. ● Approx. 30% of the route length contains Uisce Éireann infrastructure within mostly single lane roads. Consultation with Uisce Éireann may be necessary. Information gathered via desktop assessment shows these pipes are PVC and approx. 70mm-100mm in diameter, however confirmation from Uisce Éireann will be necessary.	This route may require 1 HDD crossing and at least one other major bridge crossing which significantly increases the complexity of installation. **Ground conditions:** ● Soil type around offroad HDDs may affect cable rating which requires consideration. ● One area of wet/marshy land to be avoided along the off-road section. **Route complexity:** ● One HDD crossing may be required to cross the Owenduff River off-road. ● Route will run parallel to the railway line at various points. Consultation with Irish Rail will be required to assess the exact separation distance required. ● Approx. 10% of the route length contains a PE gas distribution main which runs parallel with the road. Consultation with GNI will be necessary to confirm the exact location of this utility within the road and level of complexity involved for construction. ● Approx. 40% of the route length contains Uisce Éireann infrastructure within single lane roads. Consultation with Uisce Éireann may be necessary.	Some areas with higher complexity relating to gas mains, marshy ground and the railway but none are over a significant distance. **Ground conditions:** ● One area of wet/marshy land to be avoided along the off-road section. **Route complexity:** ● One HDD crossing may be required to cross the Owenduff River off-road. ● Route will run parallel to the railway line at various points for long stretches. A route alignment which satisfies Irish Rail separation requirements is considered likely. ● Approx 150m of this route contains a PE gas distribution main which runs parallel with the road. This will require consultation with GNI to confirm the exact location of this utility within the road and level of complexity involved for execution. ● Approx. 10% of the route length contains Uisce Éireann infrastructure within single lane roads. Consultation with Uisce Éireann may be necessary.	This route may require 2 HDD crossings and contains a section that runs parallel to a PE gas main which significantly increases the complexity of installation due to uncertainty in its alignment. **Ground conditions:** ● Entirety of route is along well-established roads and ground conditions are expected to be well understood, with low complexity in construction. ● Soil type around offroad HDDs may affect cable rating which requires consideration. **Route complexity:** ● 2 HDD crossings may be required to cross the Owenduff River twice off-road. ● Route is predominantly straight with very few tight bends. ● Approx. 25% of the route runs parallel to a medium pressure PE gas line. ● The road that contains the PE gas main is a narrow two-lane with no verge and may not be able to accommodate a new trench. Sections of the route containing the gas main may necessitate crossing of this infrastructure and/or off-road trenching at corners due to bending radius requirements and in-road space constraints. Consultation with GNI will be necessary to confirm the exact location of this utility within the road and level of complexity involved for execution.
Access	This route is the longest and therefore contains significantly more joint bays in comparison to the other options. It also encounters the largest number of watercourse crossings and would require significant engagement with GNI and associated access to third party lands. **Extent of off-road access:** ● Approx. 24 offroad joint bays ● Up to 11 watercourse crossings may be required along this route including an off-road HDD to cross the Owenduff River. These may require offroad trenching into third party land if in-road crossing is unachievable. ● Approx. 65% of the route runs parallel with a PE gas distribution main. Depending on alignment within the road, off-roading may be required. Requires coordination with GNI. **Joint bays:**	This route requires a similar number of joints bays to WXD-03 and WXD-04 **Extent of off-road access:** ● Approx. 17 offroad joint bays ● Up to 5 watercourse crossings may be required along this route including 2 off-road HDDs to cross the Owenduff River. These may require offroad trenching into third party land if in-road crossing is unachievable. ● Approx. 150m of the route runs parallel with a PE gas distribution main. Depending on alignment within the road, off-roading may be required. Requires coordination with GNI, (although this is unlikely to be required). **Joint bays:** ● Approx. 17 offroad joint bays may be required. No road closures would be required for offroad joint bays. **Residential access:**	This route requires a similar number of joints bays to WXD-02 and WXD-04 **Extent of off-road access:** ● Approx. 17 offroad joint bays ● Up to 7 watercourse crossings may be required along this route including 1 off-road HDD to cross the Owenduff River. These may require offroad trenching into third party land if in-road crossing is unachievable. ● Approx. 1.5km of the route runs parallel with a PE gas distribution main. Depending on alignment within the road, off-roading may be required. Requires coordination with GNI. **Joint bays:** ● Approx. 17 offroad joint bays may be required. No road closures would be required for offroad joint bays.	This route requires a similar number of joints bays to WXD-02 and WXD-03. This route also has the greatest length of offroad trenching required, therefore increased landowner access may be necessary in comparison to the other routes. **Extent of off-road access:** ● Landowner access requirements for the approx. 3.6km of off-road route sections. ● Approx. 16 offroad joint bays ● Up to 4 watercourse crossings may be required along this route including 1 off-road HDD to cross the Owenduff River. These may require offroad trenching into third party land if in-road crossing is unachievable. ● Approx. 150m of the route runs parallel with a PE gas distribution	This route is the second longest and therefore contains more joint bays in comparison to the other options. It also encounters several watercourse crossings and would require significant engagement with GNI and associated access to third party lands. **Extent of off-road access:** ● Approx 21 offroad joint bays may be required. ● 5 watercourse crossings, cattle crossing and two possible HDDs are also required along this route. All of these may require offroad trenching into third party land. ● The route runs parallel to a medium pressure gas main for approx. 3km, depending the alignment of this pipe within the road off-roading may be required. **Joint Bays:** ● Approx. 21 offroad joint bays may be required. No road closures would be required for offroad joint bays.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
	● Approx. 24 offroad joint bays may be required. No road closures would be required for offroad joint bays. **Residential access:** ● Only partial road closures will be required during construction. ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route are able to always have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route can have permanent access for residents and emergency services at all times. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	**Residential access:** ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route are able to always have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	main. Depending on alignment within the road, off-roading may be required. Requires coordination with GNI, (although this is unlikely to be required). **Joint bays:** ● Approx. 16 offroad joint bays may be required. No road closures would be required for offroad joint bays. **Residential access:** ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route are able to always have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.	**Residential access:** ● Only partial road closures will be required during construction. ● The installation works will be done as a rolling site to reduce the extent of roads being closed at all times. ● All sections along the route are able to always have permanent access for residents and emergency services. **Sightlines:** ● To enable clear sightlines of entrances to offroad joint bays and structure crossings, vegetation removal or expansion of entrances may be required to accommodate vehicles for construction and maintenance.
Physical Constraints	Most of the cable route runs parallel with a PE gas distribution main and half of the route contains Uisce Éireann infrastructure. One HDD is required in addition to 10 other potential watercourse crossings. **Watercourse crossings (structures):** ● 11 watercourse crossings identified, offroad trenching may be required to bypass. This includes 1 HDD to cross the Owenduff River. **Underground utilities:** ● 65% of the route runs parallel with a 400mm PE gas distribution main. Sections of the route containing the gas main may necessitate crossing of this infrastructure and/or off-road trenching at corners due to bending radius requirements and in-road space constraints. ● Uisce Éireann utilities present within the road along approx. 45% of the total route. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	2 HDD crossings may be required in addition to 3 other potential watercourse crossings. Approx. 35% of the cable route runs parallel with GNI or Uisce Éireann infrastructure. **Watercourse crossings (structures):** ● 5 watercourse crossings identified, offroad trenching may be required to bypass. This includes 2 HDDs to cross the Owenduff River. **Underground utilities:** ● PE gas distribution main present within the road for approx. 2% of the total route within two-lane roads. ● Uisce Éireann utilities present within the road along approx. 30% of the total route within single-lane roads. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	1 HDD crossing may be required in addition to 6 other potential watercourse crossings. Approx. 50% of the cable route runs parallel with GNI or Uisce Éireann infrastructure. Route has to go offroad to avoid a wet/marshy area and possibly at several sharp bends along the route. **Watercourse crossings (structures):** ● watercourse crossings identified, offroad trenching may be required to bypass. This includes 1 HDD to cross the Owenduff River. **Underground utilities:** ● PE gas distribution main present within the road along approx. 15% of the total route within two-lane roads. ● Uisce Éireann utilities present within the road along approx. 40% of the total route within single-lane roads. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	1 HDD crossing may be required in addition to 3 other potential watercourse crossings. Approx. 10% of the cable route runs parallel with GNI or Uisce Éireann infrastructure. **Watercourse crossings (structures):** ● 4 watercourse crossings identified, offroad trenching may be required to bypass. This includes 1 HDD to cross the Owenduff River. **Underground utilities:** ● PE gas distribution main present within the road for approx. 1% of the total route within two-lane roads. ● Uisce Éireann utilities present within the road along approx. 10% of the total route within single-lane roads. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.	2 HDD crossings may be required in addition to 3 other potential watercourse crossings. Approx. 25% of the cable route runs parallel with GNI. **Watercourse crossings (structures):** ● 5 watercourse crossings identified, offroad trenching may be required to bypass. This includes 2 HDD to cross the Owenduff River. ● 1 Cattle crossing also present along this route. **Underground utilities:** ● 25% of the route (ca. 3km) runs parallel with a 400mm PE gas distribution main. Sections of the route containing the gas main may necessitate crossing of this infrastructure and/or off-road trenching at corners due to bending radius requirements and in-road space constraints. **Above ground utilities:** ● There does not appear to be any above ground utilities which present any physical constraints.
MCA Ranking (Technical)					

C.3.2 Economic Considerations

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Capital Cost	Longest cable connector route at approximately 17km in length. **Length of onshore cable:** • Route is approximately 17km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Extent of offroad routing:** ● Approx. 5% of the cable route consists of off-road trenching or HDD; ● Approx. 600m of offroad trenching and HDD to cross the Owenduff River. ● Ca. 10 other potential instances of offroad trenching due to watercourse crossings. ● Approx. 200m of off-road trenching required to connect from the HDD site north of Wellingtonbridge to the road. ● Sections of the route containing the existing PE gas distribution main may necessitate off-road trenching at corners due to bending radius requirements and in-road space constraints.	Cable connector route at approximately 12km in length. Three out of the four cable connector options have similar total lengths to this option. **Length of onshore cable:** • Route is approximately 12km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Extent of offroad routing:** ● Approx. 30% of the cable route consists of off-road trenching or HDD; ● Approx. 1.3km of off-road trenching and HDD to cross the Owenduff River at 2 separate points. ● Ca. 3 other potential instances of offroad trenching due to watercourse crossings. ● Approx. 400m of off-road trenching required to connect from the HDD site north of Wellingtonbridge to the road. ● Approx. 800m of additional off-road trenching to bypass the road network in general.	Cable connector route at approximately 12km in length. Three out of the four cable connector options have similar total lengths to this option. **Length of onshore cable:** • Route is approximately 12km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Extent of offroad routing:** ● Approx. 35% of the cable route consists of off-road trenching or HDD; ● Approx. 1.4km of off-road trenching and HDD to cross the Owenduff River. ● Ca. 5 other potential instances of offroad trenching due to watercourse crossings. ● Approx. 2km of off-road trenching required to bypass an area of boggy land near Boley. ● Approx. 400m of off-road trenching required to connect from the HDD site north of Wellingtonbridge to the road. ● Off-road trenching may be required through third party lands if appropriate cable bending radius is unachievable around some sharp corners.	Cable connector route at approximately 11.5km in length. Three out of the four cable connector options have similar total lengths to this option. **Length of onshore cable:** • Route is approximately 11.5km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Extent of offroad routing:** ● Approx. 50% of the cable route consists of off-road trenching or HDD; ● Approx. 1.4km of off-road trenching and HDD to cross the Owenduff River. ● Ca. 3 other potential instances of offroad trenching due to watercourse crossings. ● Approx. 400m of off-road trenching required to connect from the HDD site north of Wellingtonbridge to the road. ● Approx. 450m of off-road trenching may be required through third party lands if appropriate cable bending radius is unachievable around some sharp corners. ● Approx. 3.6km of additional off-road trenching to bypass the road network in general.	Second longest cable connector route at approximately 13.4km in length. Although, this is considerably shorter than the longest route. **Length of onshore cable:** • Route is approximately 13.4km from the HDD site north of Wellingtonbridge to the connection point at Ballinaboola. **Extent of offroad routing:** ● Approx. 5% of the cable route consists of off-road trenching or HDD; ● Ca. 3 other potential instances of offroad trenching due to watercourse crossings. ● Approx. 200m of off-road trenching required to connect from the HDD site north of Wellingtonbridge to the road. ● Sections of the route containing the existing PE gas distribution main may necessitate off-road trenching due to in-road space constraints.
Life Cycle Costs	This is the longest cable route connector. **Length of onshore cable:** • Route is approximately 17km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Joint bays:** • Approx 24 joint bays will be required for the 17km length of cable.	Three out of the four cable connector options have similar total lengths to this option. **Length of onshore cable:** • Route is approximately 12km from the HDD site north of Wellingtonbridge to the connection point with FGR5 at Dunmain. **Joint bays:** • Approx 17 joint bays will be required for the 12km length of cable.	Three out of the four cable connector options have similar total lengths to this option. **Length of onshore cable:** • Route is approximately 12km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Joint bays::** • Approx 17 joint bays will be required for the 12km length of cable.	Three out of the four cable connector options have similar total lengths to this option. **Length of onshore cable:** • Route is approximately 11.5km from the HDD site north of Wellingtonbridge to the connection point at Dunmain. **Joint bays:** • Approx 16 joint bays will be required for the 11.5km length of cable.	This is the second longest cable route connector. **Length of onshore cable:** • Route is approximately 13.4km from the HDD site north of Wellingtonbridge to the connection point at Ballinaboola. **Joint bays:** • Approx 21 joint bays will be required for the 13.4km length of cable.
MCA Ranking (Economic)					

C.3.3 Environmental Considerations

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Land use compatibility, other site users and planning policy	**Nearby infrastructure:** The corridor avoids passing directly through the village of Wellingtonbridge. It passes adjacent to private residential dwellings but predominantly follows two two-lane regional roads. **Current land use:** Land use is predominantly on existing regional roads with some offroad trenching into	**Nearby infrastructure:** The corridor avoids passing directly through the village of Wellingtonbridge. It passes adjacent to private residential dwellings and is predominantly on single lane local roads, with approximately 30% of the route completely off road. There is a 2.6km stretch of regional two-lane road along the R734.	**Nearby infrastructure:** The corridor avoids passing directly through the village of Wellingtonbridge. It passes adjacent to private residential dwellings and is predominantly on single lane local roads, approximately 35% of the route is completely off road. There is a 1km stretch or two lane regional road between Gusserane and Dunmain along the R375.	**Nearby infrastructure:** The corridor avoids passing directly through the village of Wellingtonbridge. It passes adjacent to private residential dwellings inc. agricultural premises. The route is predominantly off road (50%) through agricultural land, with approximately 25% of the route on single lane roads. There is	**Nearby infrastructure:** The corridor avoids passing through the village of Wellingtonbridge with lots of local amenities, however there is no major infrastructure. The route is 100% on road in the R736. **Current land use:** Land use is predominantly on existing roads with some agricultural land along the corridor at structure crossings.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
	agricultural land along the corridor required to pass watercourse crossings and GNI. **Planning applications**: One refused planning application from 2017 along the route at the Owenduff River HDD crossing, application was for construction of a house and associated site works (Ref: 20170089). One underpass construction granted in 2014 (Ref: 20140595) at Ballygarvan. Other previous applications include applications for one off dwellings and extensions to existing dwellings. **Land ownership:** Corridor includes mostly public roads with some agricultural property and private lands required for trenching to pass watercourse crossings. **Zoning:** No land use zoning associated with this route.	**Current land use:** Approximately 45% of the route follows single lane local roads. 31% will require offroad trenching through third party agricultural land and to bypass watercourses. **Planning applications:** One recently granted planning permission in 2024 for the erection of a fully serviced single story dwelling and associated site works (Ref: 20231471) at Yoletown, adjacent to the proposed HDD crossing of the Owenduff River. One application for the erection of a fully serviced dwelling house and garage from March 2026 under review (decision pending) (Ref:20260308W) at Yoletown, adjacent to where the offroad trenching will rejoin the L4038 in Boherboy. Other previous applications include applications for one off dwellings and extensions to existing dwellings. **Land ownership:** Corridor includes approximately 69% public roads, the remaining 31% is on agricultural property and private lands that will be required for trenching. **Zoning:** No land use zoning associated with this route.	**Current land use:** Approximately 55% of the route follows single lane local roads. 35% will require offroad trenching through agricultural land and to bypass areas of boggy land, river crossings and watercourses. **Planning applications:** There are no recent planning applications along the route. Previous applications include applications for one off dwellings and extensions to existing dwellings. **Land ownership:** Corridor includes approximately 65% public roads, the remaining 35% is on agricultural property and private lands that will be required for trenching. **Zoning:** No land use zoning associated with this route.	a 2.6km stretch of regional two-lane road along the R734. **Current land use:** Approximately 50% of the route is through third party agricultural lands. The remaining 50% is split between local single lane roads and regional two-lane roads. **Planning applications:** There are no recent planning applications along the route. Previous applications include applications for one off dwellings and extensions to existing dwellings. **Land ownership:** Corridor includes approximately 50% public roads, the remaining 50% is on agricultural property and private lands that will be required for trenching. **Zoning:** No land use zoning associated with this route.	**Planning applications:** There are no planning applications directly on the route (as of 19.03.2026). Previous applications include applications for one off dwellings and extensions to existing dwellings. **Land ownership:** Corridor includes mostly public roads with very little agricultural property and private lands. **Zoning:** No land use zoning associated with this route.
Land, Soils, and Hydrogeology / Seabed, Marine Sediments and Marine Physical Processes	**Description:** The route leaves the village of Wellingtonbridge from the north with a short off-road section through agricultural land. The remainder of the corridor is on regional roads except for short offroad sections for watercourse crossings. **Water features:** There are 10 potential watercourse crossings associated with this route, and one HDD required to cross the Owenduff River. **Bedrock:** The route starts Booley Bay Formation (Grey to black mudstones with siltstones), followed by Ballyhoge Formation (Dark grey slates with siltstone laminae), Campile Formation (Rhyolitic volcanics, grey & brown slates) and Ballyhack Member (Grey slates with thin siltstones), and back to Campile Formation. **Superficial cover:** The route passes through till derived from Lower Palaeozoic shales, estuarine silts and clays, and alluvium. It also passes through till derived from acidic volcanic rocks. **Bedrock aquifer:** The route passes through two different aquifers. The initial aquifer at Wellingtonbridge is classed as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. The route then crosses another aquifer classed as a Regionally Important Aquifer Fissured bedrock. **Karst features**: No karst features identified on GSI viewer.	**Description:** The route leaves the village of Wellingtonbridge from the northwest along local road L3037 following a short off-road section through agricultural land. 70% of the corridor is on local roads with 30% off-road trenching required through third party lands. There are two HDD crossings required and at least one other major bridge crossing. Approximately 17 off-road joint bays. **Water features:** There are up to 5 potential watercourse crossings associated with this route, including two off-road HDD crossings required to cross the Owenduff River twice. **Bedrock:** The route starts Booley Bay Formation (Grey to black mudstones with siltstones), followed by Ballyhoge Formation (Dark grey slates with siltstone laminae), Arthurstown Member (Red, purple & green slates & siltstones), Ballyhack Member (Grey slates with thin siltstones, Campile Formation (felsic volcanics) and Campile Formation (Rhyolitic volcanics, grey & brown slates). **Superficial cover:** The route passes through till derived from Lower Palaeozoic shales, estuarine silts and clays, and alluvium. It also passes through till derived from acidic volcanic rocks. **Bedrock aquifer:** The route passes through two different aquifers. The initial aquifer is classed as a Poor Aquifer - Bedrock which is Generally Unproductive	**Description:** The route leaves the village of Wellingtonbridge from the northwest along local road L3037 following a short off-road section through agricultural land. 65% of the corridor is on public roads with 35% off-road trenching required through third party lands. There will be one HDD crossing required for the Owenduff River. Approximately 17 off-road joint bays. **Water features:** There are up to 7 potential watercourse crossings associated with this route, including one off-road HDD crossing required for the Owenduff River. Bedrock: The route starts Booley Bay Formation (Grey to black mudstones with siltstones), followed by Ballyhoge Formation (Dark grey slates with siltstone laminae), Arthurstown Member (Red, purple & green slates & siltstones), Ballyhack Member (Grey slates with thin siltstones), Campile Formation (intermediate volcanics) and Campile Formation (Rhyolitic volcanics, grey & brown slates). **Superficial cover**: The route passes through till derived from Lower Palaeozoic shales, estuarine silts and clays, and alluvium. It also passes through till derived from acidic volcanic rocks. **Bedrock aquifer:** The route passes through two different aquifers. The initial aquifer is classed as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. The route then crosses another aquifer classed as a	**Description:** The route leaves the village of Wellingtonbridge from the northwest along local road L3037 following a short off-road section through agricultural land. 50% of the corridor is on public roads with 50% off-road trenching required through third party lands. There will be one HDD crossing required. Approximately 16 off-road joint bays. **Water features:** There are up to 4 potential watercourse crossings associated with this route, including one off-road HDD crossing required for the Owenduff River. **Bedrock:** The route starts Booley Bay Formation (Grey to black mudstones with siltstones), followed by Ballyhoge Formation (Dark grey slates with siltstone laminae), Arthurstown Member (Red, purple & green slates & siltstones), Ballyhack Member (Grey slates with thin siltstones), Campile Formation (felsic volcanics) and Campile Formation (Rhyolitic volcanics, grey & brown slates). **Superficial cover:** The route passes through till derived from Lower Palaeozoic shales, estuarine silts and clays, and alluvium. It also passes through till derived from acidic volcanic rocks. **Bedrock aquifer**: The route passes through two different aquifers. The initial aquifer is classed as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. The route then crosses another aquifer classed as a	**Description:** The route leaves the village of Wellingtonbridge from the northwest along regional road R736 following a short off-road section through agricultural land. 100% of the corridor is on public roads. There will be two HDD crossings required. Approximately 21 off-road joint bays. **Water features:** There are 5 watercourse crossings associated with this route. **Bedrock:** The route starts Booley Bay Formation (Grey to black mudstones with siltstones). Once past Clongeen the geology changes to Campile Formation (Rhyolitic volcanics, grey & brown slates) and Ballyhack Member (Grey slates with thin siltstones). **Superficial cover:** The route passes through till derived from Lower Palaeozoic shales, estuarine silts and clays, and alluvium. **Bedrock aquifer:** The route passes through two different aquifers. Between the landfall zone and Clongeen the aquifer is classed as a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones. From Clongeen to the Subzone the aquifer is classed as a Regionally Important Aquifer - Fissured bedrock. **Karst features:** No karst features identified on GSI viewer. **Groundwater vulnerability:** Groundwater vulnerability is predominantly classified high along the corridor, with some small patches of extreme vulnerability. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is ""Low"" with small patches of ""Moderately Low"" along the entire corridor.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
	Groundwater vulnerability: Groundwater vulnerability is predominantly classified as moderate to high along the corridor, with some small patches of extreme and low vulnerability. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is "Low" with small patches of "Moderately Low" along the entire corridor.	except for Local Zones. The route then crosses another aquifer classed as a Regionally Important Aquifer - Fissured bedrock. **Karst features:** No karst features identified on GSI viewer. **Groundwater vulnerability:** Groundwater vulnerability is predominantly classified as moderate to high along the corridor, with some small patches of extreme vulnerability. **Landslide susceptibility**: GSI Landslide Susceptibility Classification description is "Low" with small patches of "Moderately Low" along the entire corridor.	Regionally Important Aquifer - Fissured bedrock. **Karst features:** No karst features identified on GSI viewer. **Groundwater vulnerability**: Groundwater vulnerability is predominantly classified as moderate to high along the corridor, with some small patches of extreme vulnerability. **Landslide susceptibility**: GSI Landslide Susceptibility Classification description is "Low" with small patches of "Moderately Low" along the entire corridor	Regionally Important Aquifer - Fissured bedrock. **Karst features**: No karst features identified on GSI viewer. **Groundwater vulnerability:** Groundwater vulnerability is predominantly classified as moderate to high along the corridor, with some small patches of extreme vulnerability, ending in low vulnerability. **Landslide susceptibility:** GSI Landslide Susceptibility Classification description is "Low" with small patches of "Moderately Low" along the entire corridor.	
Water Resources	● One HDD underneath the Owenduff River. ● Ten potential watercourse crossings associated with this route. ● Corridor intersects waterbody COROCK_030 (IE_SE_13C010150), with WFD status Good and OWENDUFF (County Wexford)_010 (IE_SE_13O010100), with WFD status Moderate. ● No nutrient sensitive watercourses, no supply protection areas and no drinking water river abstractions recorded across the route.	● Two HDD underneath the Owenduff River. Further 3 potential watercourse crossings associated with this route. ● Corridor begins adjacent to waterbody COROCK_040 (IE_SE_13C010300), with WFD status Moderate. ● Corridor intersects waterbody COROCK_030 (IE_SE_13C010150), with WFD status Good, OWENDUFF (County Wexford)_020 (IE_SE_13O010180), with WFD status Good and TINTERN ABBEY STREAM_010 (IE_SE_13T010900), with WFD status Poor. ● No nutrient sensitive watercourses, no supply protection areas and no drinking water river abstractions recorded across the route.	● One HDD underneath the Owenduff River. Further 6 potential watercourse crossings associated with this route. ● Corridor begins adjacent to waterbody COROCK_040 (IE_SE_13C010300), with WFD status Moderate. ● Corridor intersects waterbody OWENDUFF (County Wexford)_030 (IE_SE_13C010150), with WFD status Good, OWENDUFF (County Wexford)_020 (IE_SE_13O010180), with WFD status Good, and OWENDUFF (County Wexford)_010 (IE_SE_13O010100), with WFD status Moderate. ● No nutrient sensitive watercourses, no supply protection areas and no drinking water river abstractions recorded across the route.	● One HDD underneath the Owenduff River. Further 3 potential watercourse crossings associated with this route. ● Corridor begins adjacent to waterbody COROCK_040 (IE_SE_13C010300), with WFD status Moderate. ● Corridor intersects waterbody OWENDUFF (County Wexford)_030, with WFD status Good, OWENDUFF (County Wexford)_020 (IE_SE_13O010180), with WFD status Good and TINTERN ABBEY STREAM_010 (IE_SE_13T010900), with WFD status Poor. ● No nutrient sensitive watercourses, no supply protection areas and no drinking water river abstractions recorded across the route.	● Two HDD underneath the Owenduff River. Further 3 potential watercourse crossings associated with this route. ● Corridor intersects waterbody COROCK_040 (IE_SE_13C010300), with WFD status Moderate, COROCK_030 (IE_SE_13C010150), with WFD status Good, HEATHPARK STREAM_010 (IE_SE_13H010020), with WFD status Moderate and OWENDUFF (County Wexford)_010 (IE_SE_13O010100), with WFD status Moderate. ● No nutrient sensitive watercourses, no supply protection areas and no drinking water river abstractions recorded across the route.
Climate, including flood risk and Sustainable Development	Route transects one High Probability (1in20) Flooding zone, associated with the OWENDUFF (County Wexford)_020. No risk identified on Groundwater Flooding Data Viewer.	Route transects two High Probability (1in20) Flooding zones, associated with the OWENDUFF (County Wexford)_030. No risk identified on Groundwater Flooding Data Viewer.	Route transects one High Probability (1in20) Flooding zones, associated with the OWENDUFF (County Wexford)_030. No risk identified on Groundwater Flooding Data Viewer.	Route transects one High Probability (1in20) Flooding zones, associated with the OWENDUFF (County Wexford)_030. No risk identified on Groundwater Flooding Data Viewer.	Route passes through Wellingtonbridge over the COROCK_040 and across the OWENDUFF (County Wexford)_010) which both have a 1% (100:1) AEP of flooding. No risk identified on Groundwater Flooding Data Viewer.
Biodiversity	Route follows in road predominantly. Important ecological receptors to be crossed via HDD include: ● Owenduff River (EPA Code 13001) and riparian semi natural woodland and marsh buffer (c.a. 130m wide woodland and river). Likely given extensive width a potential for woodland impacts. ● Kilbraney River (EPA Code 13K04) - narrow riparian crossing ● Aclamon (EPA Code:13A01) - narrow riparian crossing. ● TELLAROUGHT (EPA Code: 13T14) - narrow riparian crossing. The road route includes numerous mature treelines adjacent and potential for invasive species, assumption is that tree clearance would be minimised.	Route follows in road predominantly. Important ecological receptors crossed via HDD / cross country include: ● Owenduff River (EPA Code 13001) and riparian semi natural woodland and marsh buffer (c.a. 60m wide woodland and river). A field immediately west would need a site survey as it may be of ecological value so riparian width may extend to 190m. Likely given extensive width a potential for woodland impacts. ● Owenduff River (EPA Code 13001) and riparian semi natural woodland and marsh buffer (c.a. 130m wide woodland and river). Likely given extensive width a potential for woodland impacts.	Route follows in road predominantly. Important ecological receptors crossed via HDD / cross country include: ● Owenduff River (EPA Code 13001) and riparian semi natural woodland and marsh buffer (c.a. 100m wide woodland and river). ● Boley River crossing ((EPA Code: 13B23) - woodland south of road should be avoided. ● Extensive off road section (1.7km) to avoid impacts to Boley Fen pNHA. c.a. 13 hedgerow/ treeline crossings. ● Kilbraney River crossing (EPA Code: 13K04) - narrow riparian crossing. ● Aclamon (EPA Code:13A01) - narrow riparian crossing.	Route follows in road predominantly. Important ecological receptors crossed via HDD / cross country include: ● Owenduff River (EPA Code 13001) and riparian semi natural woodland and marsh buffer (c.a. 100m wide woodland and river). ● Extensive offroad section (4.5km) including numerous hedgerow field boundaries and two river crossings; Boley River (EPA Code 13B23) and Tintern Abbey (Stream EPA_CODE: 13T01) and adjacent woodland. ● Aclamon (EPA Code:13A01) - narrow riparian crossing. ● TELLAROUGHT (EPA Code: 13T14) - narrow riparian crossing. The road route includes numerous mature treelines adjacent and potential for invasive	Route follows in road predominantly. Important ecological receptors crossed via HDD / cross country include: ● Intersects several small river crossings; Kiltra (EPA: 13K19), Corock (EPA: 13C01), Newbawn (EPA: 13N01), Tinnacarrick (EPA: 13T15) and Heathpark Stream (EPA: 13H01). Kiltra and Corock flow into Bannow Bay SAC/SPA. ● Disturbance to hedgerows and trees during bird breeding season. ● Removal of hedgerows / treelines. Larger trees not replaced. Scrub regrowth - mitigation (with fencing). ● The road route includes mature treelines adjacent and potential for invasive species, assumption is that tree clearance would be minimised.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
		● Offroad extent through fields including hedgerow field boundaries and Owenduff riparian corridor ca. 0.9km. ● Offroad section (ca. 820m) crosses hedgerows and Tintern Abbey (Stream EPA_CODE: 13T01) and adjacent woodland. ● Aclamon (EPA Code:13A01) - narrow riparian crossing. ● TELLAROUGHT (EPA Code: 13T14) - narrow riparian crossing. The road route includes numerous mature treelines adjacent and potential for invasive species, assumption is that tree clearance would be minimised. For health and safety reasons, some tree felling may be required on treelined single lane roads where there is potential to disturb ground stability and resultant root system damage from construction works.	● TELLAROUGHT (EPA Code: 13T14) - narrow riparian crossing. The road route includes numerous mature treelines adjacent and potential for invasive species, but assumption is that tree clearance would be minimised. For health and safety reasons, some tree felling may be required on treelined single lane roads where there is potential to disturb ground stability and resultant root system damage from construction works.	species. assumption is that tree clearance would be minimised. For health and safety reasons, some tree felling may be required on treelined single lane roads where there is potential to disturb ground stability and resultant root system damage from construction works.	
Cultural Heritage, including Underwater Archaeology	There is potential for impact on 3 ZoNs for designated sites (Castle WX040-009----, Ringfort WX040-005----, Ringfort WX040-068---) and 1 undesignated site with extant remains (Ballygarvan bridge at ITM E 679301 ITM N 618902). There is potential for impact on a recorded monument (Castle WX040-009----) which abuts the road. Walkover survey recommended. Monitoring of all ZoNs during construction will be required.	This option would have a potential impact on four recorded monuments by crossing their three ZoNs (Church WX040-037----, Moated Site WX040-033----, Church and Graveyard WX040-029001-/WX040-029002-). The Church and Graveyard are also associated with local intangible heritage. There are also large off-road sections where the risk cannot be properly determined without a field visit and test trenching. Monitoring of all ZoNs during construction will be required.	This option does not directly impact any designated cultural heritage sites and crosses the Zone of Notification of one monument (Church WX040-037----), however there are large off-road sections where the risk cannot be properly determined without a field visit and test trenching. It does not impact directly on any known locations of intangible cultural heritage value. Monitoring of all ZoNs during construction will be required.	This option would have a potential impact on four recorded monuments by crossing their three ZoNs (Church WX040-037----, Moated Site WX040-033----, Church and Graveyard WX040-029001-/WX040-029002-). The Church and Graveyard are also associated with local intangible heritage. There are also large off-road sections where the risk cannot be properly determined without a field visit and test trenching. Monitoring of all ZoNs during construction will be required.	There is potential for impact on 1 ZoNs for designated sites (Castle WX040-009----). There is potential for impact on a recorded monument (Castle WX040-009----) which abuts the road. Monitoring of all ZoNs during construction will be required. Bridge over the river is an NIAH registration. Construction details required for impact assessment. Future surveys include walkover survey.
Traffic and Transport	Will require partial road closures and a high level of traffic management. However, road closures will be transient to reduce the extent of roads being always closed. Cable route would run along both single lane (local roads) and double lane roads (regional roads). Small local roads may require temporary full road closures with diversions in place. Road closures for offroad joint bays are unlikely. This has potential to impact local users including traffic associated with agricultural activities. Local access will be retained through small local road network.	Will require full road closures and a high level of traffic management for most of the in-road sections. Partial road closures may be possible for final 2.6km stretch of two-lane regional road along R734. However, road closures will be transient to reduce the extent of roads being always closed. Road closures for offroad joint bays are unlikely. 30% of the route will require off-road trenching or HDD through third party lands. This has potential to significantly impact local users including traffic associated with agricultural activities. Local access will be retained through small local road network however there will be potential for large diversions where full stretches of local roads are closed.	Will require full road closures for 55% of this route and a high level of traffic management for most of the in-road sections due to complete severance. Partial road closures may be possible for final 1km stretch of two-lane regional road along R735. However, road closures will be transient to reduce the extent of roads being always closed. Road closures for offroad joint bays are unlikely. 35% of the route will require off-road trenching or HDD through third party lands. This has potential to impact local users including traffic associated with agricultural activities. Local access will be retained through small local road network however there will be potential for large diversions where full stretches of local roads are closed.	Will require full road closures for 25% of this route and a high level of traffic management for this portion of the in-road sections due to complete severance. Partial road closures may be possible for final 2.6km stretch of two-lane regional road along R734. However, road closures will be transient to reduce the extent of roads being always closed. Road closures for offroad joint bays are unlikely. 50% of the route will require off-road trenching or HDD through third party lands. This has potential to impact local users including traffic associated with agricultural activities, however, overall will reduce the impacts on traffic network and road users. Local access will be retained through small local road network however there will be potential for large diversions where full stretches of local roads are closed.	Will require partial road closures and a high level of traffic management. Cable route would run along two-lane roads (13.4km alongside R736). This has potential to impact local users including traffic associated with agricultural activities. Local access will be retained through partial road closures.
Seascape, Landscape and Visual	Cable corridors will be substantially along road corridors and occasionally requiring short sections of trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient landscape and visual effects during the construction phase (akin to road	Cable corridors will be substantially along road corridors (70%) and occasionally requiring sections of trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient landscape and visual effects during the construction phase (akin to road	Cable corridors will be substantially along road corridors (65%) and occasionally requiring sections of trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient landscape and visual effects during the construction phase (akin to road	Cable corridors will be along both road corridors (50%) and across agricultural lands (50%) with trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient landscape and visual effects during the construction phase (akin to road	Cable corridors will be substantially along road corridors and occasionally requiring short sections of trenching through open ground or HDD under sensitive features. There will be minor, temporary and transient landscape and visual effects during the construction phase (akin to road works) but with little or no surface expression during the operational phase.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
	works) but with little or no surface expression during the operational phase.	works) but with little or no surface expression during the operational phase.	works) but with little or no surface expression during the operational phase.	works) but with little or no surface expression during the operational phase.	
Aviation and Telecommunications	Wexford Lakeview Airfield, Wexford Flying Club and ILAS Airfield to the northeast of cable corridor. EirGrid will continue to engage with key stakeholders such as other developers, Met Eireann etc as the project develops.				
MCA Ranking (Environmental)					

C.3.4 Social Considerations

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Settlement and Communities, including coastal and fishing communities	Cable route joins the R736 north of Wellingtonbridge and will run adjacent to many residential, commercial and agricultural properties and amenities including restaurants, stores, Clongeen GAA Club and Gusserane O'Rahillys GAA club. It will also run near the Gusserane National School and Newbawn National School. Multiple residents and local business owners may be impacted during the construction phase. After leaving Wellingtonbridge, the route passes within 350m of Clongeen settlement, and passes through the western boundary of Newbawn settlement.	Cable route joins the L3037 northwest of Wellingtonbridge and will run adjacent to many residential and agricultural properties. Full road closure will be required during construction along local roads, creating segregation within communities and interrupting usual traffic flows and interconnectivity between communities. Being 30% off-road, it runs through private agricultural land where it will have less impact on surrounding settlements and communities, reducing social impact throughout the construction phase. There may be a requirement for permanent access tracks for the longer off-road sections, this could cause disturbance on small local roads and influence congestion in small rural areas. After leaving Wellingtonbridge, the route passes within 750m of Clongeen settlement and within 300m of Ballycullane settlement.	Cable route joins the L3037 northwest of Wellingtonbridge and will run adjacent to many residential and agricultural properties. Being ca. 35% off-road, it runs through private agricultural land where it will have less impact on surrounding settlements and communities, reducing social impact throughout the construction phase. There may be a requirement for permanent access tracks for the longer off-road sections, this could cause disturbance on small local roads and influence congestion in small rural areas. Full road closures will be required as 55% of the route is on local single land roads. This may create segregation between neighbouring rural villages and impact on people's wellbeing. After leaving Wellingtonbridge, the route passes within 750m of Clongeen settlement and within 300m of Ballycullane settlement.	Cable route joins the L3037 northwest of Wellingtonbridge and will run adjacent to many residential and agricultural properties. Being 50% off-road, it runs through private agricultural land where it will have less impact on surrounding settlements and communities, reducing social impact throughout the construction phase. There may be a requirement for permanent access tracks for the longer off-road sections, this could cause disturbance on small local roads and influence congestion in small rural areas. Full road closures will be required as 25% of the route is on local single land roads. This may create segregation between neighbouring rural villages and impact on people's wellbeing, however with the majority of the route in agricultural land, less residents will be directly impacted. After leaving Wellingtonbridge, the route passes within 750m of Clongeen settlement and adjacent (within 35m) to Ballycullane settlement.	Cable route joins the R736 and will run adjacent to many residential properties, agricultural properties and amenities including: cafes, stores, bars and restaurants, a petrol station, a recycling centre and Clongeen GAA Club. It will also run in close proximity to the Newbawn National School on the R735. Multiple residents and local business owners may be impacted during the construction phase.
Visitors and Commuters	Regional roads R735 and R736 are integral parts of the local commuter network. Partial closure likely to affect commuting times for residents and visitors alike, full road closure possible impacting a large social zone of influence.	Full road closures along local roads will increase commuting and travelling times for visitors and locals. Diversions have the potential to be significant as locations are remote and isolated, this could cause upset and negatively impact community wellbeing. Nighttime working has potential to reduce impacts	Full road closures along local roads will increase commuting and travelling times for visitors and locals. Diversions have the potential to be significant as locations are remote and isolated, this could cause upset and negatively impact community wellbeing. Nighttime working has potential to reduce impacts	Full road closures along local roads will increase commuting and travelling times for visitors and locals. Diversions have the potential to be significant as locations are remote and isolated, this could cause upset and negatively impact community wellbeing. This route has the highest proportion of off-road trenching which will reduce the amount of time with road closures throughout the construction phase and therefore limit the direct impact on residents and commuters.	Regional road R736 is an integral part of the local commuter network. Partial closure may affect commuting times for residents and visitors alike.
Amenities, Recreation and Tourism	Road closure along the R736 could cause disruption to Newbawn National School found on the R735 just off the crossroads with the R376, however this could be mitigated by scheduling works outside of the school year. Road closures along the R735 in Gusserane will also cause disruption to the Gusserane National School, similar mitigation can be applied. Large number of local amenities have the potential to be impacted by temporary partial or full road closures along the R736 as it enters Wellingtonbridge. Nighttime working has potential to reduce impacts	Road closures are not anticipated to affect many businesses, however there will be significant disruption to local traffic routes potentially impacting residents' ability to access recreation areas. Access to Wellingtonbridge along local road L3037 will be temporarily unavailable which could impact time taken to access local services that are available within the village. Nighttime working has potential to reduce impacts	Road closures are not anticipated to affect many businesses, however there will be significant disruption to local traffic routes potentially impacting residents' ability to access recreation areas. Access to Wellingtonbridge along local road L3037 will be temporarily unavailable which could impact time taken to access local services that are available within the village. Nighttime working has potential to reduce impacts	Road closures are not anticipated to affect many businesses, however there will be significant disruption to local traffic routes potentially impacting residents ability to access recreation areas. Access to Wellingtonbridge along local road L3037 will be temporarily unavailable which could impact time taken to access local services that are available within the village. Nighttime working has potential to reduce impacts	Road closure along the R736 could cause disruption to Newbawn National School on the R735 just off the crossroads with the R376, however this could be mitigated by scheduling works outside of the school year. Large number of local amenities have the potential to be impacted by temporary partial or full road closures along the R736 as it passes through Wellingtonbridge.

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Nuisance and Disturbance	The construction phase can be expected to cause nuisance and disturbance to local residents in the local area and visitors to Wellingtonbridge.	The construction phase can be expected to cause nuisance and disturbance to local residents in the local area and visitors to Wellingtonbridge. With a high proportion of roads requiring full closure this option creates a high disturbance impact in relation to accessibility.	The construction phase can be expected to cause nuisance and disturbance to residents in the local area and visitors to Wellingtonbridge. With a high proportion of roads requiring full closure this option creates a high disturbance impact in relation to accessibility.	The construction phase can be expected to cause nuisance and disturbance to local residents in the local area and visitors to Wellingtonbridge. With 50% of this route being off-road trenching, this route offers the least disturbance to most residents, with temporary impact limited to the landowner.	The construction phase can be expected to cause nuisance and disturbance to residents in and visitors to Wellingtonbridge.
Visual Effects	Cable corridors will be substantially along road corridors and occasionally requiring short sections of trenching through open ground for watercourse crossings. This route will have HDD under the Owenduff River. There will be minor, temporary and transient visual effects during the construction phase (akin to road works) but with little or no surface expression during the operational phase.			Cable corridors will be 50% along road corridors and 50% will be off-road trenching through open ground. This route will have HDD under the Owenduff River. There will be minor, temporary and transient visual effects during the construction phase (akin to road works) but with little or no surface expression during the operational phase.	
MCA Ranking (Social)					

C.3.5 Deliverability Considerations

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Implementation Timelines	In-road utility presence along the majority of this route may increase implementation timelines due to the necessary coordination with third parties and potential off-road trenching requirements. **Off-road**: ● At least 5% of this route will be off-road. ● This route contains approx. 24 joint bays and 11 watercourse crossings including the Owenduff River HDD. ● Sections of the route containing the PE gas distribution main may necessitate off-road trenching at corners due to bending radius requirements and in-road space constraints. Permits and wayleaves for these sections will be required from landowners which may affect the implementation timeline. **Road type:** ● The full length of this route is along two-lane roads which may allow for more space to conduct works; however, this may be negated by the presence of the PE gas distribution main running along the majority of the route. ● Approx. 20% of the route contains both GNI and Uisce Éireann utilities necessitating consultation with both entities. **Seasonal constraints:** ● Newbawn National School located along R736 and Gusserane Nation School located along R735 may affect implementation timelines based on the school year. The schools are not directly located along the proposed route and there appears to be other local road connections for both (proximity to works of each school is 400m and 150m respectively). ● GAA Club located along the route in Gusserane village. Works may need to be scheduled seasonally.	In-road utility presence along this route and the extent of off-road routing may increase implementation timelines due to the necessary coordination with utilities and third-party landowners. **Off-road:** ● At least 30% of this route will be off-road. ● This route contains approx. 17 joint bays and 5 watercourse crossings including the 2 Owenduff River HDDs. ● Off-road trenching is also required to connect from the HDD site north of Wellingtonbridge and along other sections of the route if appropriate cable bending radius is unachievable around some sharp corners. ● Approx. 800m of additional off-road trenching to bypass the road network in general. **Road type:** ● Most of this route will be located within single-lane public roads with some sections of cable trenching required in third party land. ● Approx. 30% of the route contains Uisce Éireann utilities and a 150m stretch of road contains a PE gas distribution main running parallel with the road. Consultation with both entities is required. **Seasonal constraints:** • General seasonal farming constraints (e.g. tractor access to local roads)	In-road utility presence along this route and the extent of off-road routing may increase implementation timelines due to the necessary coordination with utilities and third-party landowners. **Off-road:** ● At least 35% of this route will be off-road. ● This route contains approx. 17 joint bays and 7 watercourse crossings including the 1 Owenduff River HDD crossing. There is also a boggy area near Boley which may require off-road trenching. ● Off-road trenching is also required to connect from the HDD site north of Wellingtonbridge and along other sections of the route if appropriate cable bending radius is unachievable around some sharp corners. **Road type:** ● Most of this route will be located within the single-lane public road and there will be some sections of cable trenching required in third party land ● Approx. 40% of the route contains Uisce Éireann utilities and 1.5km stretch of road contains a PE gas distribution main which runs parallel with the road. Consultation with both entities is required. **Seasonal constraints:** • General seasonal farming constraints (e.g. tractor access to local roads)	The large extent of off-road routing may significantly increase implementation timelines due to the necessary coordination with multiple third-party landowners. **Off-road:** ● At least 50% of this route will be off-road. ● This route contains approx. 16 joint bays and 4 watercourse crossings including the 1 Owenduff River HDD crossing. ● Off-road trenching is also required to connect from the HDD site north of Wellingtonbridge and along other sections of the route if appropriate cable bending radius is unachievable around some sharp corners. ● Approx. 3.6km of additional off-road trenching to bypass the road network in general. **Road type:** ● Most of this route will be located within the single-lane public road and there will be some sections of cable trenching required in third party land. ● Approx. 10% of the route contains Uisce Éireann utilities and a 150m stretch of road contains a PE gas distribution main running parallel with the road. Consultation with both entities is required. **Seasonal constraints:** • General seasonal farming constraints (e.g. tractor access to local roads)	In-road utility presence along most of this route may increase implementation timelines due to the necessary coordination with third parties and potential off-road trenching requirements. **Off-road:** ● Approx 21 offroad joint bays may be required. 5 watercourse crossings are also present along this route ● A total of 13.4km of this route runs along a two-lane road (R736), partial closures with traffic management may be possible here. ● No large stretches of offroad. **Road type:** ● A total of 13.4km of this route runs along a two-lane road (R736), partial closures with traffic management may be possible here. ● Approx. 25% contains a PE gas distribution main running parallel with the road. Consultation with GNI is required. **Seasonal constraints:** • General seasonal farming constraints (e.g. tractor access to local roads)

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
Dependence on other Projects	No known dependencies at the time of writing				
Permits and Wayleaves	• Consultation with GNI and Uisce Éireann will be necessary for most of the route length, in addition to third party landowner engagement for the River Owenduff HDD. • The cable route entirely follows public regional roads apart from the Owenduff River HDD which will require third party landowner engagement. • Permitting will also be required for in-road utilities (GNI and Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.	• Consultation with third party landowners will be necessary for all off-road sections. Consultation with GNI and Uisce Éireann will also be required for sections of this route. This option has less offroad sections than WXD_TC4 along with less sections parallel to the gas main when compared to options WXD_TC1 and WXD_TC3. Option also avoids villages. • Most of the cable route follows public single-lane roads with 30% of the route off-road. These off-road sections will require third party landowner engagement. • Permitting will also be required for in-road utilities (GNI and Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.	• Consultation with third party landowners will be necessary for all off-road sections. Consultation with GNI and Uisce Éireann will also be required for sections of this route. • 35% of the route is off-road and will require third party landowner engagement. • Permitting will also be required for in-road utilities (GNI and Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.	• Consultation with third party landowners will be necessary for all off-road sections. Consultation with GNI and Uisce Éireann will also be required for sections of this route. • 50% of the route is off-road and will require third party landowner engagement. • Permitting will also be required for in-road utilities (GNI and Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.	• Consultation with GNI and Uisce Éireann will be necessary for the majority of the route length, in addition to third party landowner engagement for HDDs. • The cable will be located within public road where possible, however there is a third party land requirement for infrastructure crossings, waterway crossings and offroad joint bays. • Additional permitting may also be required for in-road utilities (e.g. Uisce Éireann). This may pose risks to delays in project execution, and thus to the project programme.
Project Plan Flexibility	This route is within two-lane roads; however an abundance of in-road services present may limit flexibility. **Existing infrastructure:** • Although the full length of the route follows two-lane regional roads, approx. 90% of this route contains existing in-road infrastructure, specifically GNI and Uisce Éireann services. • Up to 11 potential watercourse crossings, including the Owenduff River HDD. **Road type / offroad:** • Most of the route is in-road, thus reducing the capacity for mitigation of obstacles encountered in comparison to off-road routes.	30% of this route is off-road, however 45% of the in-road route length contains in-road utilities. This option also requires 2 HDDs. **Existing infrastructure:** • Most of the in-road sections of this route follow single-lane local roads of which 50% contain Uisce Éireann services. • There is a 150m stretch of two-lane regional road (R734) which contains a PE gas distribution main. • 5 watercourse crossings including 2 Owenduff River HDDs. **Road type / offroad:** • This route is largely in-road with two off-road sections to facilitate HDDs of two river crossings, and one off-road section to connect L4038 to R734.	35% of this route is off-road and 60% of the remaining in-road route length contains utilities. This option requires 1 HDD. **Existing infrastructure:** • Most of the in-road sections of this route follow single-lane local roads of which approx. 60% contain Uisce Éireann services. • There is a 1.5km stretch of two-lane regional road (R734) which contains a PE gas distribution main. • 7 watercourse crossings including the Owenduff River HDD. **Road type / offroad:** • The offroad section of this route bypassing the bog near Boley would have greater mitigation options for obstacles encountered in comparison to the route sections along narrow roads.	50% of this route is off-road and only 20% of the remaining in-road route length contains utilities. This option requires 1 HDD. **Existing infrastructure:** • Of the half of this route which will be located within existing roads, 20% contain Uisce Éireann services. • There is a 150m stretch of two-lane regional road (R734) which contains a PE gas distribution main. • 4 watercourse crossings including the Owenduff River HDD. **Road type / offroad:** • Half of this route is off-road and would therefore have greater mitigation options for obstacles encountered in comparison to the other route options.	This route is within two-lane roads; however an abundance of in-road services present along with two HDDs may limit flexibility. **Existing infrastructure:** • A total of 13.4km of this route runs along a two lane road (R736), partial closures with traffic management may be possible here. • Up to 5 instances of offroad trenching due to watercourse structures. • Some instances of offroad trenching due to running parallel to gas transmission line. **Road type / offroad:** • The majority of the route is in-road, thus reducing the capacity for mitigation of obstacles encountered in comparison to off-road routes.
Design Complexity, Uncertainty, Risk	Most of this route runs parallel with a PE gas distribution main which contributes to increased complexity, uncertainty and elevates risk. The route also encounters some tight bends which may require off-road trenching, and 1 HDD is required. **Urban areas:** • This route passes through the small urban areas of Gusserane and Newbawn along regional roads (R735 & R736). **Utilities:** • 65% of the route runs parallel with a PE gas distribution main. This generates a high level of design complexity, risk and uncertainty regarding a potential need to cross this infrastructure and/or off-road trench at corners due to bending radius requirements and in-road space constraints. • Uisce Éireann utilities present within the road along approx. 45% of the total route. **Watercourse crossings:** • 11 potential watercourse crossings including 1 HDD required to cross the Owenduff River. Identified	This route encounters minimal tight bends which may require off-road trenching, and 2 separate HDDs which increases complexity. **Urban areas:** • This route does not pass through any urban areas. **Utilities:** • Approx. 50% of the in-road route length contains utilities within the road. • Approx. 2% of the route in-road route section runs parallel with a PE gas distribution main. • Approx. 45% of the route in-road route section contains Uisce Éireann utilities. **Watercourse crossings:** • 5 potential watercourse crossings including 2 HDDs required to cross the Owenduff River. Identified structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. **Extent of route bends:**	This route encounters multiple tight bends which may require off-road trenching, however only 1 HDD is required. **Urban areas:** • This route passes through the small urban areas of Gusserane along regional roads (R735). **Utilities:** • Approx. 80% of the in-road route length contains utilities within the road. • Approx. 20% of the route in-road route section runs parallel with a PE gas distribution main. • Approx. 60% of the route in-road route section contains Uisce Éireann utilities. **Watercourse crossings:** • 7 potential watercourse crossings including 1 HDD required to cross the Owenduff River. Identified structures and depth of cover have been assessed on a desktop and windscreen survey basis	This route contains minimal tight bends pending off-road path taken, and only 1 HDD is required. Off -road routing avoids potential areas of utility congestion as this option has the smallest percentage of in-road utilities. **Urban areas:** • This route does not pass through any urban areas. **Utilities:** • Approx. 20% of the in-road route length contains utilities within the road. • Approx. 2% of the route in-road route section runs parallel with a PE gas distribution main. • Approx. 20% of the route in-road route section contains Uisce Éireann utilities. **Watercourse crossings:** • 4 potential watercourse crossings including 1 HDD required to cross the Owenduff River. Identified structures and depth of cover have been assessed on a	A small portion of this route runs parallel with a PE gas distribution main which contributes to increased complexity, uncertainty and elevates risk. The route may require off-road trenching at 2 HDDs is required. **Urban areas:** • This route does not pass through any urban areas. **Utilities:** • MV/LV OHL present along the route from the outset. • Water mains present along the route from the outset • Route runs parallel to a 400mm medium pressure polyethylene gas line for 3km **Watercourse crossings:** • 5 potential watercourse crossings including 2 HDDs required to cross the Owenduff River. Identified

Location	WXD_TC1	WXD_TC2	WXD_TC3	WXD_TC4	WXD_TC5
	structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. **Extent of route bends:** • This route encounters some tight bends, therefore it has average comparative complexity regarding adherence to a minimum duct bend radius of 20m.	• This route encounters minimal tight bends, therefore it has average comparative complexity regarding adherence to a minimum duct bend radius of 20m.	and awaiting confirmation through onsite surveys. **Extent of route bends:** • This route encounters multiple tight bends, therefore it may have greater comparative complexity regarding adherence to a minimum duct bend radius of 20m.	desktop and windscreen survey basis and awaiting confirmation through onsite surveys. **Extent of route bends:** • This route has a minimal number of tight bends, therefore it has lower comparative complexity regarding adherence to a minimum duct bend radius of 20m.	structures and depth of cover have been assessed on a desktop and windscreen survey basis and awaiting confirmation through onsite surveys. **Extent of route bends:** • This route contains the least amount of bends of any route in Wexford. One may require offroad routing to adhere to minimum bending radius
MCA Ranking (Deliverability)					

D. Identification of Offshore Substation Zones

CLIENT: EIRGRID

DOCUMENT TITLE:

OFFSHORE SUBSTATION (OSS) ZONE ASSESSMENT REPORT

DOCUMENT NUMBER : OCDP-EIR-P03-RP-PM-0001

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Rev No	Date	Status	Issued By	Checked By	Approved By
2	04/06/2026	Issued for Design	GS	KW	TT
1	15/10/2025	Re-Issued for Review and Comment	GS	MN	TT
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Rev	Purpose	List of Updated/Modified Sections
0	Issue for Review and Comment	-
1	Re-Issued for Review and Comment	Eirgrid CRS addressed.
2	Issued for Design	Eirgrid CRS addressed and considered closed

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1.0 EXECUTIVE SUMMARY

On October 10th, 2024, the Oireachtas, the Irish National Parliament approved the South Coast Designated Maritime Area Plan (SC-DMAP)[1], Ireland's first forward spatial plan for Offshore Renewable Energy (ORE). The SC-DMAP identifies four (4) proposed Maritime Areas, where the future deployment of fixed offshore wind may occur (see Figure 1-1). These areas 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').

This report relates to the Tonn Nua (Area A) DMAP only.

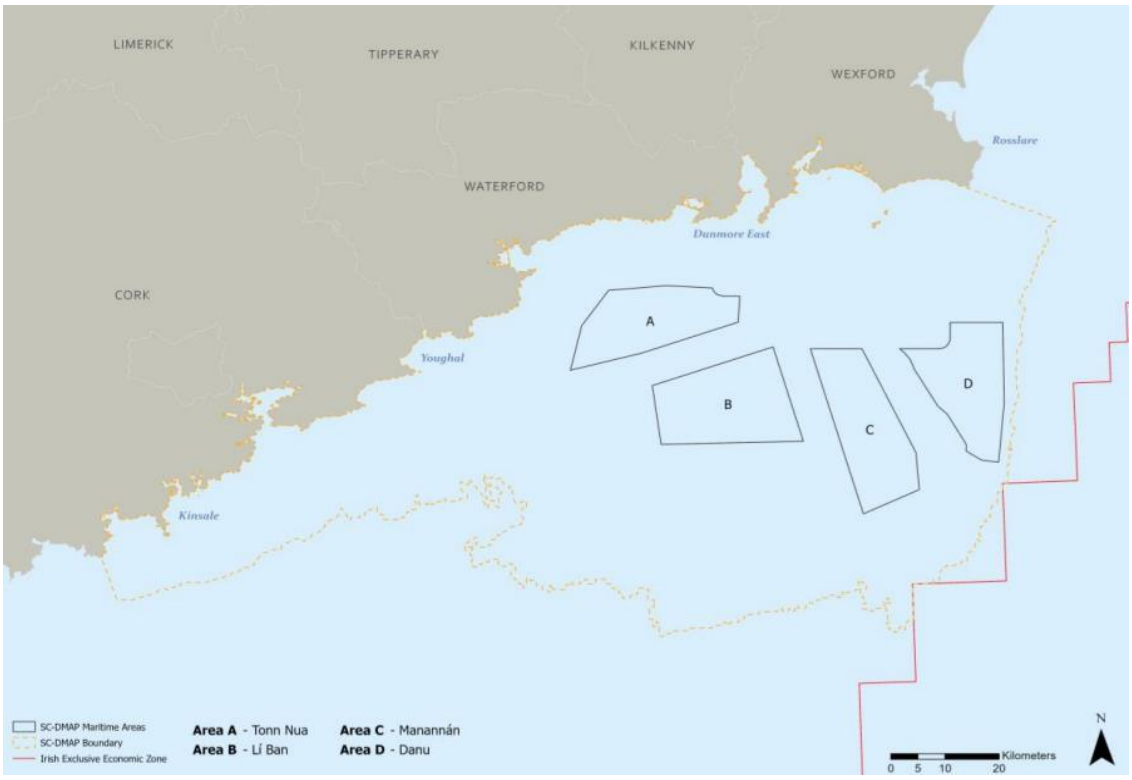

Figure 1-1 : South Coast Designated Maritime Area (SC-DMAP)

This report presents a recommendation for Offshore Substation (OSS) zones within Tonn Nua for the Cork and Waterford / Wexford connections, based on a recently acquired geophysical 2024 survey dataset from The Department of the Environment, Climate and Communications (DECC) detailing site conditions. For the Waterford / Wexford zone the current recommended OSS zones are based on high-level analysis considering technical, economic, environmental, socio-economic and deliverability. These recommendations shall be further updated and revised upon receiving site-

[1] The South Coast Designated Maritime Area Plan for Offshore Renewable Energy

specific information of the ground-truthing offshore geotechnical surveys, which are planned to start in 2026.

The location for the OSS-1 zone within Tonn Nua for the Cork area was selected primarily due to the technical constraints relating to transmission cable over 80 km in length, while also considering the environmental, economic, socio-economic and deliverability considerations.

Four (4) zones were identified within the Tonn Nua site. The outcome of the multi-criteria assessment (MCA) identified two (2) emerging best-performing zones: OSS-1 for the Cork area and OSS-3 for the Waterford / Wexford area. The remaining alternative zones, OSS-2 and OSS-4 will not be further studied at this time.

Due to the inherent limitations of existing site-specific geotechnical data, the two (2) recommended OSS zones (OSS-1 and OSS-3) are provisional and will be revisited as more factual data becomes available, following consultations with the successful Tonn Nua Offshore Wind Farm Developer.

The costs of the generation assets have not been considered as they do not lie within the responsibility of EirGrid.

2.0 INTRODUCTION

Prior to the approval of the SC-DMAP, studies were conducted to identify potential OSS locations within an area of interest off the south coast of Ireland (see Figure 2-1).

Following the approval of the SC-DMAP, a new analysis was undertaken to determine suitable OSS zone locations within the Tonn Nua site. The most significant impact was the siting of the OSS for the Cork regional connection, which also affected the Waterford / Wexford region.

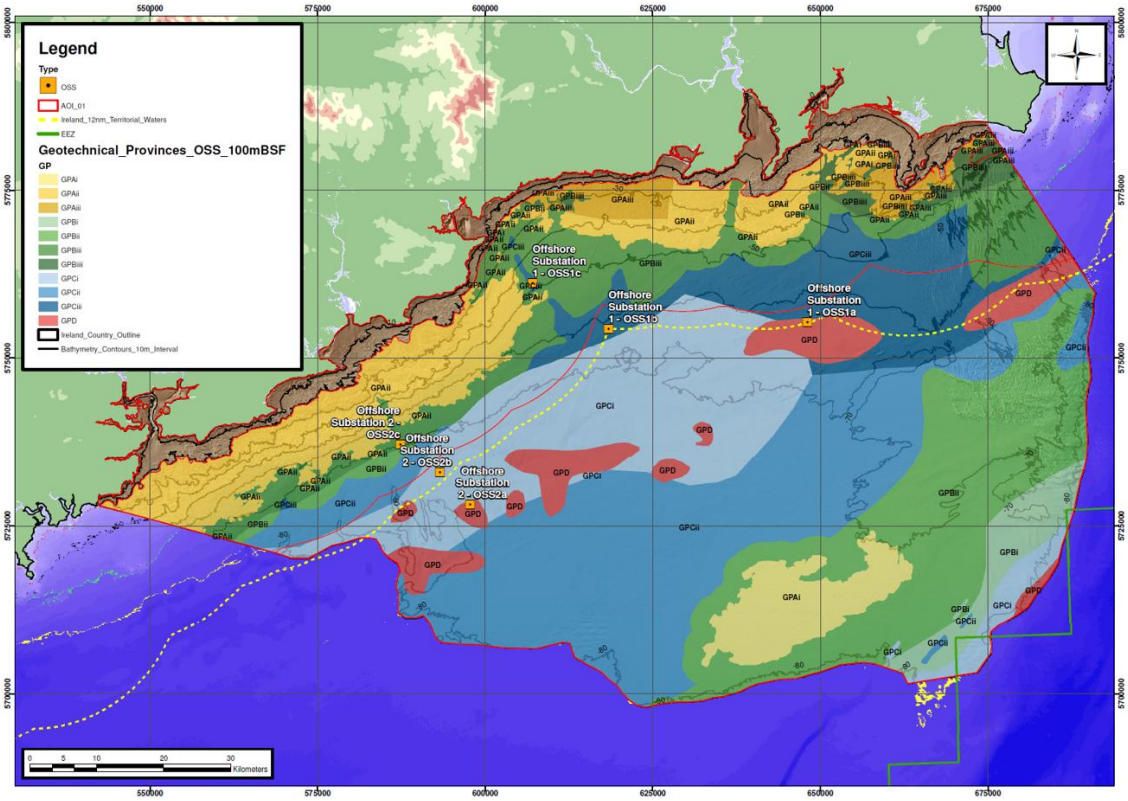

Figure 2-1 : Area of Interest Pre-SC-DMAP

In December 2024, DORIS Engineering UK Limited (DORIS UK) (and its specialist sub-contractor Geo-4D) was commissioned by EirGrid to review the newly acquired and available geophysical survey dataset (including MBES, SBP and 2D-UHR) provided by DECC in Q4 of 2024 within the Tonn Nua boundary, a zone inside the SC-DMAP area. The ultimate objective is to develop a baseline working document providing a timely update of site conditions using available public and site-specific data, albeit without the ground truthing information of the offshore geotechnical survey, which is planned for 2026.

The latest information supplied by the Department of the Environment, Climate and Communications (DECC) in Q4 2024 consists of:

- Geophysical datasets provided by Gavin & Doherty Geosolutions (GDG), published in 2012 and 2017; and
- Geophysical datasets provided by the Marine Institute (MI) of the Tonn Nua site, conducted and reported in 2024.

The findings, reported in the Preliminary Ground Model Updated 2025 Technical Note, (OCDP-EIR-P03-TN-MD-0004, Rev0), also enable the refinement of the two (2) OSS zones as part of the Grid Connection Information (GCI) pack.

Furthermore, Intertek, a specialist sub-contractor to DORIS, has provided the environmental and socio-economic constraints analysis in support of the OSS zones' identification and which is annexed to this report in Appendix F.

2.1 Document Purpose

The purpose of this technical note is to provide a recommendation on the OSS zones within Tonn Nua relevant to Cork and Waterford / Wexford connections. While the GCI pack was issued by EirGrid in April 2025, this report builds upon and refines that earlier assessment.

EirGrid, which provides prospective grid users with the essential information provided solely for the Prospective ORESS2 Auction Bidder's information purposes. This GCI pack helps them understand the technical requirements, processes, and costs associated with grid connection.

2.2 Acronyms

Acronyms	Definition
AA	Appropriate Assessment
AIS	Automatic Identification System
AOI	Area of Interest
BIM	Bord Iascaigh Mhara
BSF	Below sea-floor
CAPEX	Capital Expenditure
CSHAS	Celtic Sea Herring Acoustic Survey
CIL	Commissioners of Irish Lights
DECC	Department of the Environment, Climate and Communications
DMAP	Designated Maritime Area Plan

Acronyms	Definition
EIA	Environmental Impact Assessment
EMODNet	European Marine Observation Data Network
EPS	European Protected Species
CCS	Carbon Capture and Storage
GCI	Grid Connection Information
GDG	Gavin & Doherty Geosolutions
GES	Good Environmental Status
HVAC	High-Voltage Alternating Current
IBTS	Irish Bottom Trawl Survey
IWDG	Irish Whale and Dolphin Group
LAT	Lowest Astronomical Tide
MAP Act	Maritime Area Planning Act
MBES	Multi-beam echo-sounder
MCA	Multi-criteria Analysis
MMO	Marine Management Organisation
MU	Management Units
MUL	Marine Usage License
NMPF	National Marine Planning Framework
ORE	Offshore Renewable Energy
OREI	Offshore Renewable Energy Installations
ORESS	Offshore Renewable Electricity Support Scheme
OSPAR	Oslo-Paris Convention
OSS	Offshore Substation
OWF	Offshore Windfarm
RNLI	Royal National Lifeboat Institution
ROM	Rough Order of Magnitude
SAC	Special Area(s) of Conservation
SBP	Sub-bottom Profile
SC-DMAP	South Coast Designated Maritime Area Plan
SFPA	Sea Fisheries Protection Authority

Acronyms	Definition
SPA	Special Protection Areas
STECF	Scientific, Technical, and Economic Committee for Fisheries
UHR	Ultra-High Resolution
VMS	Vessel Monitoring System
WFD	Water Framework Directive

3.0 IDENTIFIED OSS ZONES

The four (4) preliminary OSS zones (Figure 3-1) were first chosen using the available conceptual ground model data. The selection criteria were **a)** water depth <60 m LAT; **b)** minimising overall export transmission cable length (onshore and offshore); and **c)** high-level view of potential wind farm layouts surrounding each OSS.

In addition, technical considerations for OSS location screening (a nominal square zone of 2 km^2 in size at this stage for each location) focused on suitable ground conditions (i.e., depth to bedrock and types of overburden soil strata), seabed features, and with the assumption that jacket-piled foundations would be the most likely solution for water depths exceeding 50 m LAT. The recommendations for OSS locations based upon the ground conditions and foundation suitability are presented in the Preliminary Ground Model Updated 2025 Technical Note, (OCDP-EIR-P03-TN-MD-0004, Rev0).

In time the identified zones have been also assessed and validated against environmental criteria at the MCA stage and found not to be presenting unmanageable risk to marine life communities.

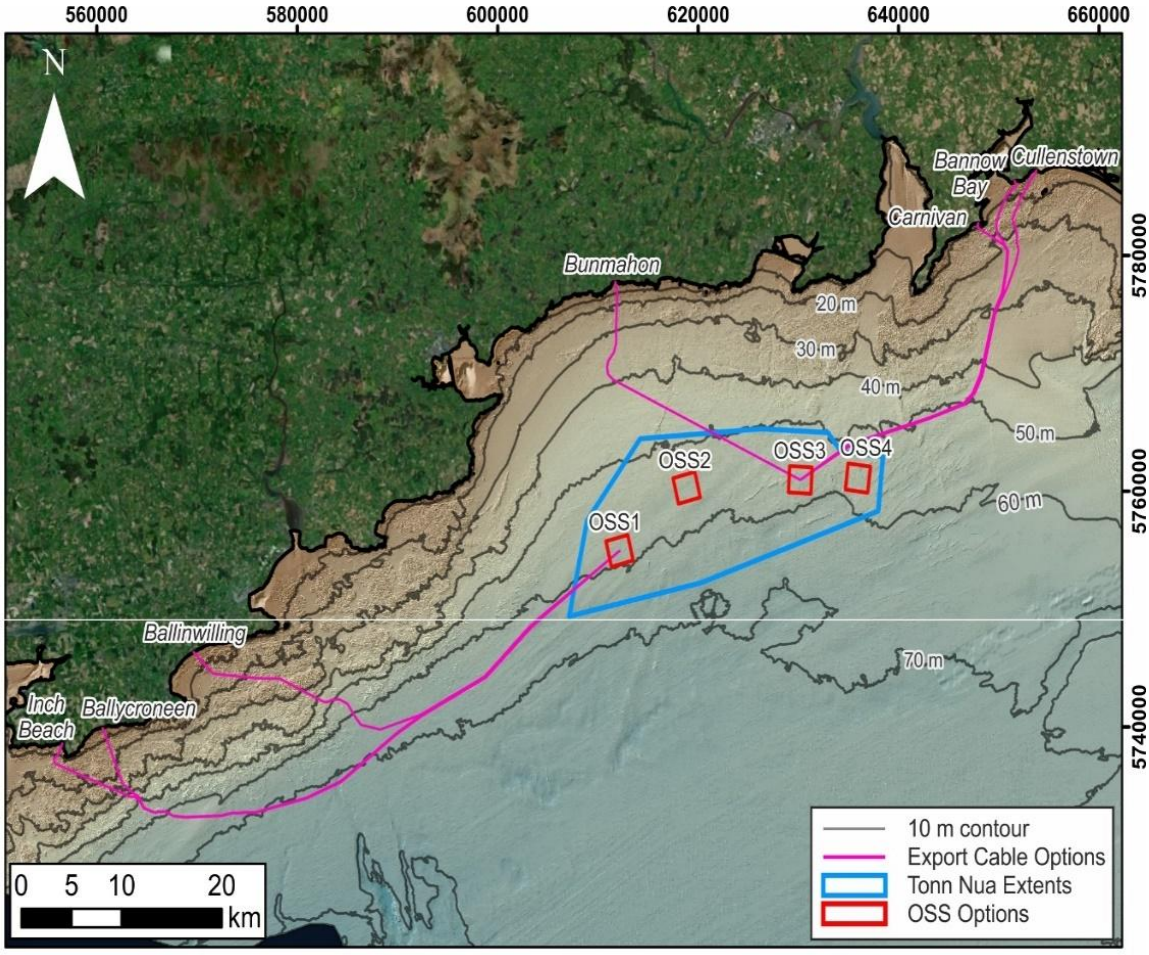

Figure 3-1 : Tonn Nua Development Area with options of OSS zones and ECRs (Export Cable Routes)

The location for OSS-1 within Tonn Nua for the Cork area was selected due to technical

constraints and considerations associated with high-voltage alternating current (HVAC) transmission cable over 80 km in length, while considering the environmental, economic, socio-economic and deliverability factors.

The MCA and comparative evaluations focused on the identifying suitable OSS zones for Cork and Waterford / Wexford connections.

Figure 3-2 presents updated findings (as of March 2025) on the depth to seismic bedrock across the identified OSS zones. The revised data indicates that OSS-3 is predominantly exposed to shallow outcrop of bedrock outcrops (less than 5 m BSF). OSS-2 and OSS-4 show similar technical characteristics to OSS-1 in terms of depth to bedrock.

Each OSS zone is represented as a 5 km^2 area, within which lateral and vertical geological variabilities are to be expected across this area. However, in the absence of ground truthing (e.g. boreholes or drilling), there remains uncertainty regarding bedrock hardness and the potential construction challenges this may pose for foundation installation.

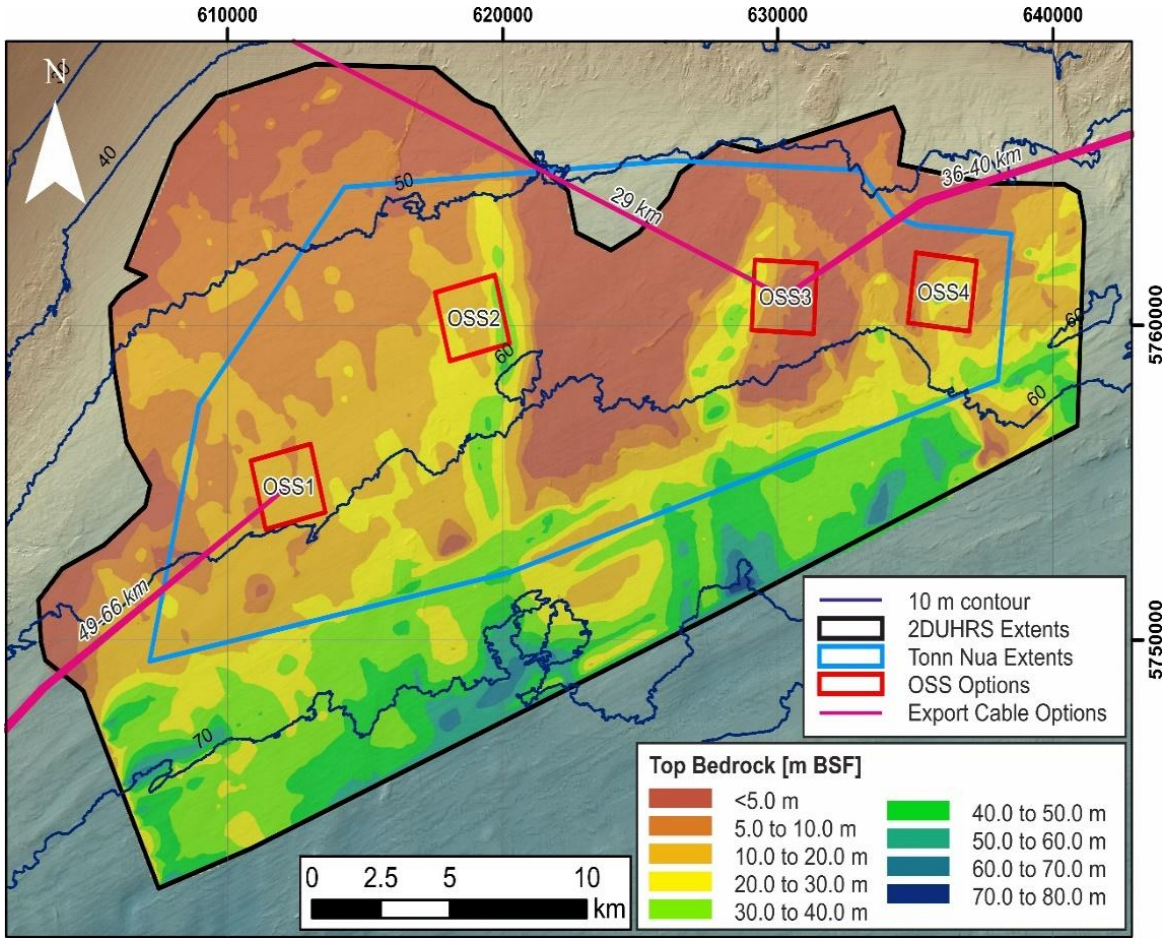

Figure 3-2 : Depths to top of seismic bedrock units, after OCDP-EIR-P03-TN-MD-0004

4.0 MCA ANALYSIS

A high-level MCA comparable analysis has been undertaken considering technical, economic, environmental, socio-economic and deliverability performance criteria for the three (3) OSS zones (OSS-2, OSS-3, and OSS-4) within Tonn Nua.

The zonal location of OSS-1 within Tonn Nua for the Cork area was chosen based on a MCA, primarily to technical constraints associated with transmission cable lengths over 80 km. The assessment also considered technical, environmental, economic, socio-economic and deliverability factors. The following sections present the findings of thus standalone analysis, including a combined comparison of the Cork and Waterford / Wexford OSS locations, with supporting information provided in the accompanying tables.

4.1 Technical Performance

The OSS locations were assessed against key technical criteria at each location including water depth, seabed conditions, cable length, and suitability for foundation construction.

- **Water depth and seabed conditions:** Water depths are broadly comparable across the sites, ranging from 52 m to 61 m. Bedrock at all sites is of pre-Cretaceous age, comprising mudstone, sandstone, and limestone of variable strength and weathering. Seabed morphology is generally flat and featureless with gradients <2.5°, although OSS-3 and OSS-4 display limited areas of steeper slopes (<5°) associated with sub-cropping bedrock.
- **Overburden and depth to bedrock:** Overburden thickness varies considerably. OSS-1 is characterised by approximately 6 m of sand, OSS-2 by 10 - 15 m of sand, OSS-3 by around 5 m of sand with more variable deposits to the west, and OSS-4 by thicker glaciogenic sediments of up to 40 m. Depth to bedrock ranges from shallow at OSS-1 (8 - 17 m) to deeper at OSS-2 (13 - 40 m), with OSS-3 and OSS-4 showing variable depths (3 - 32 m and 3 - 41 m respectively).
- **Cable length:** Export cable lengths vary significantly between options, from 64.5 km at OSS-1 to 30.9 km at OSS-4. OSS-4 therefore offers the shortest transmission distance to shore.
- **Constructability Suitability:** All options would require expected piled foundations, with OSS-2 and OSS-4 additionally suitable for suction anchors due to overburden conditions.

4.2 Economic Performance

The economic assessment by DORIS for assessing OSS zones is contained to assess aspects of the transmission system to be developed and operated by EirGrid.

No assessments have been made with respect to the generation assets, and they have not been factored in.

The differences in rough order of magnitude (ROM) costs were determined for the Waterford / Wexford OSSs, whereas cable lengths and additional ROM Capital Expenditure (CAPEX) estimates were determined for each new OSS location based on the landfall for all three routes. One (1) landfall out of the three (3) emerging best performing landfalls was chosen for a base case comparative calculation. Noting that OSS-3 was the original location based on desktop data and used as the base case for OSS-2 and OSS-4.

Difference in cable supply and installation ROM costs are shown below:

- OSS-2 additional 11 km of cable required (€33m),
- OSS-4 reduction of 6 km of cable (€18m).

No economic analysis was undertaken for the foundations supply and installation.

4.3 Deliverability Performance

Based on comparative difficulty and challenges relating to installation / construction of OSS foundations.

This has been addressed by taking into consideration at a high-level potential constraint for offshore wind farm layouts, particularly with respect to wake effects, if the area between and around the OSS zones is restricted, which would impact attractiveness for offshore wind developers in terms of energy yield.

Cable length will always have an impact on deliverability risk, from a supply, installation, operation and maintenance perspective.

4.4 Socio-Economic Performance

This section outlines the socio-economic baseline within the OSS locations, based on published datasets, studies, and stakeholder input. The receptors considered are recreation and tourism, commercial fisheries, landscape / seascape, marine cultural heritage, shipping/navigation, and other infrastructure.

4.4.1 Recreation and Tourism

Blue flag beaches are present along Ireland's south coast (BeachAwards, 2025), but offshore OSS sites will not affect them. Recreational activities such as sailing and kayaking are concentrated nearshore (e.g., Waterford Estuary, Bannow Bay, Dungarvan Harbour). AIS data shows very low sailing density at OSS sites; no impacts are expected.

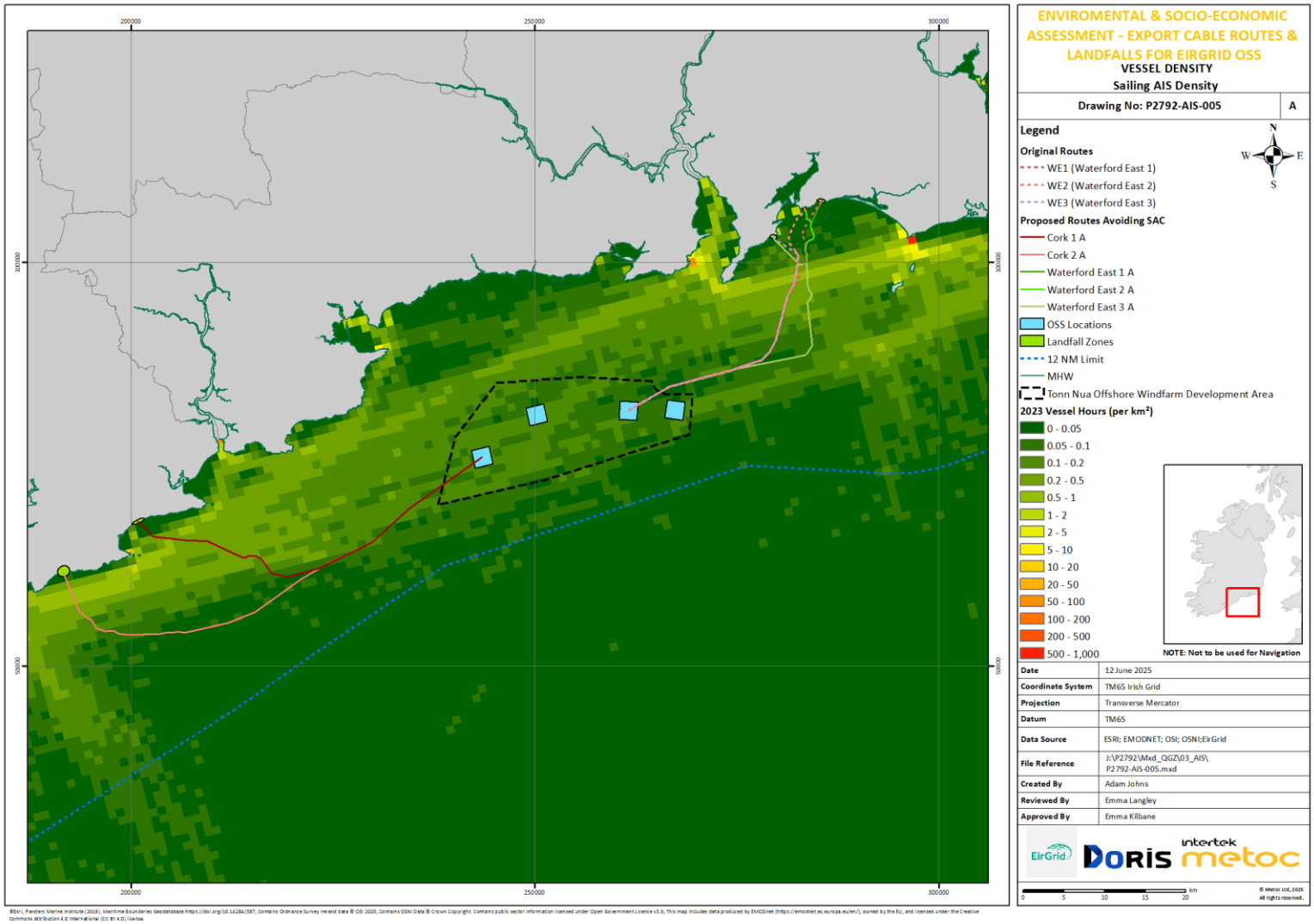

Figure 4-1 : AIS shipping Vessel Density (Drawing Reference: P2792-AIS-005)

4.4.2 Commercial Fisheries

Irish waters support major EU fisheries, particularly mackerel, *Nephrops*, and hake, with annual landings exceeding 1.2 million tonnes (Marine Institute 2022). Dunmore East is the largest nearby port (~20 km from OSS-4, 6,566 tonnes landed in 2023, worth €17.8m (SFPA, 2025)). The fleet is dominated by small-scale vessels <12 m. Fishing density in OSS areas is low–moderate, peaking at one (1) vessel hour/km² at OSS-1.

Several types of fishing activity occur in the vicinity of the OSS sites including beam trawls, bottom otter trawls, dredges, gill nets, long lines, pelagic trawls, pots, and seines. It is noted that the data sources can differ and as such the recorded presence of dredging and potting fisheries is not consistent. To provide a thorough assessment both data sources are considered.

No significant differential in the effort levels of beam trawls, gill nets, long lines, and pelagic trawls is identified across the four OSS stations. Though it is noted that OSS-4 is situated near an area of high pelagic trawl activity. The highest levels of dredging effort are also recorded at OSS-4. Potting activity is recorded across the OSS sites but more exclusively in the vicinity of OSS-3 and the highest effort levels associated with seines and bottom otter trawling is recorded at the OSS-1 site.

4.4.2.1 Landscape and Seascape

The OSS sites are located within the Celtic Sea Bays and Beaches region (SCA12). The coastline of this region comprises the seascape character type SCT7 ‘Broad estuarine bays and complex low plateau and cliff coastline’ (Marine Institute, 2020). As the OSS options are all located within the SC-DMAP and are a similar distance offshore, no distinguishing factors for this topic are identified for the different OSS options.

4.4.2.2 Marine Cultural Heritage

There are numerous wrecks located off the southern coast of Ireland. Whilst the OSS sites do not overlap with any known wrecks, as presented in Appendix F there are numerous wrecks in the vicinity of the OSS sites. Most notably is an unknown wreck located approximately 580 m from OSS-1. This wreck location will be verified during the marine geophysical survey and wrecks will be avoided when finalising the design.

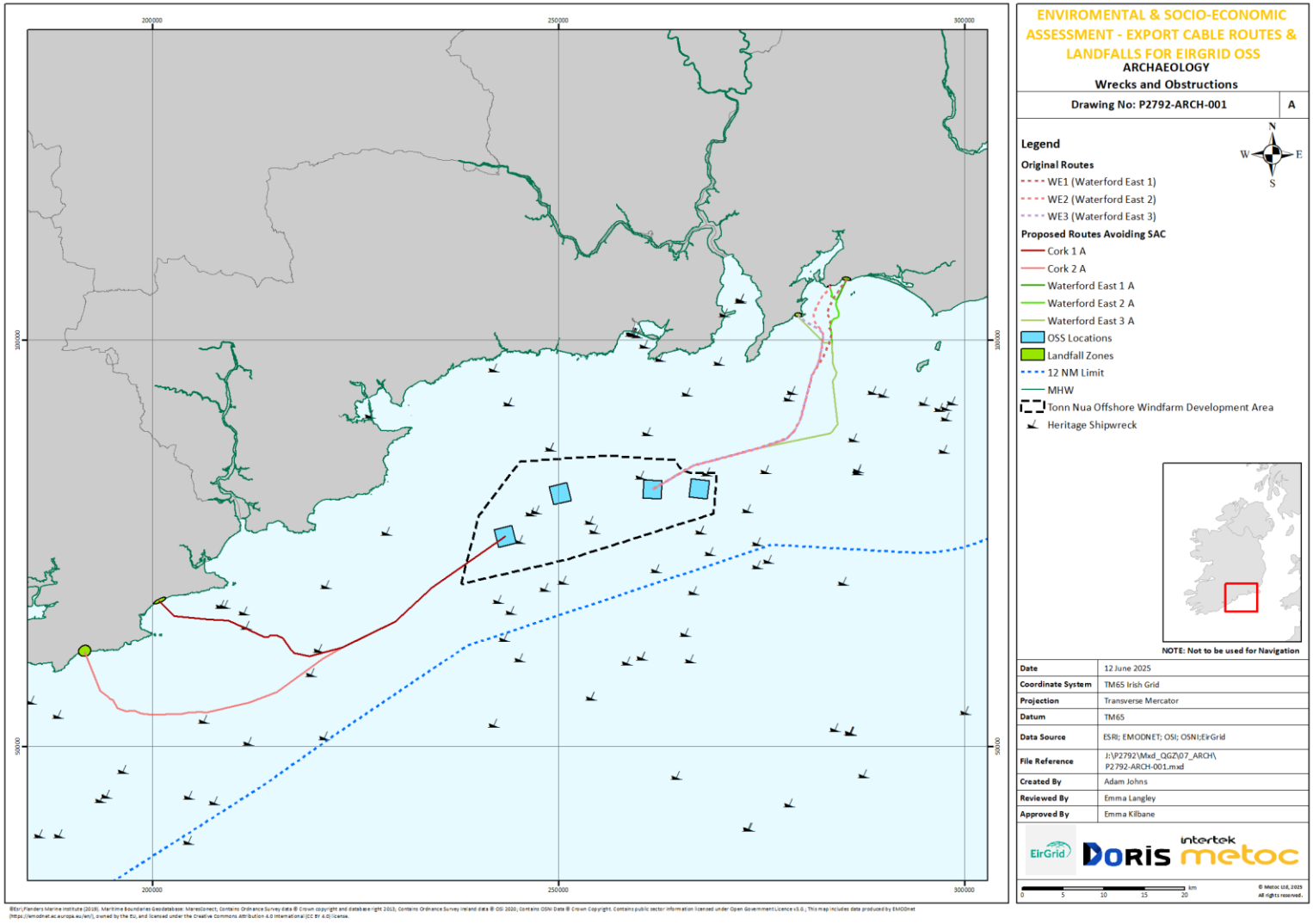

Figure 4-2 : Archaeology Known Wrecks (Drawing Reference: P2792-ARCH-001)

4.4.3 Shipping and Navigation

4.4.3.1 Navigational features

The following points summarise the main navigational features identified in proximity to the OSS sites:

- Nearest ports: Waterford (39 km from OSS-4), Rosslare ferry port (54 km from OSS-4), and fishing ports at Helvick, Duncannon, and Dunmore East.
- Four (4) RNLI stations (Dunmore East, Helvick, Fethard, Tramore).
- Nearby buoys include CIL navigational (16.7 km from OSS-1) and Conningbeg buoy (26.3 km east of OSS-4).
- AIS data shows vessel density of 0.2–2 hours/km², with OSS-1 and OSS-4 in higher-density areas. Cargo routes centre on Waterford Estuary.
- Admiralty charts do not indicate any anchorage points overlapping the OSS sites.

4.4.3.2 Marine traffic analysis

2023 European Marine Observation Data Network (EMODNet) Vessel density data (all ship types) ranges from 0.2–2 vessel hours per km^2 within the vicinity of the OSS sites, with OSS-1 and OSS-4 located in higher shipping density areas (Appendix F Drawing Reference: P2792-AIS-001).

4.4.3.3 Other Infrastructure

There are no cables or pipelines, or any oil and gas activity, or aggregate extraction sites, or military areas within the vicinity of any of the OSS sites. One disposal site, Eastern Celtic Sea, is located approximately 14.2 km from OSS-4.

There are currently no installed offshore wind farms in the vicinity of the OSS locations. The Tonn Nua DMAP site is designated for fixed bottom turbines, and the Offshore Renewable Electricity Support Scheme (ORESS) 2.1 auction is to take place in late 2025. These windfarms will be collocated within Tonn Nua, and the purpose of the OSS infrastructure will be to aid the development of these windfarms and therefore will not be conflicting with the OSS sites.

4.5 Environmental Performance

The Section will feed into the OSS sighting and route development report to help identify the optimum route from an environmental perspective, with review of publicly available data.

4.5.1 Relevant Legislation

In addition to EU legislation, the project is subject to Irish national legislation, including:

- Maritime Area Planning Act 2021 (MAP Act) – This Act establishes a new regulatory framework for Ireland's maritime area and replaces significant parts of the Foreshore Act 1933. The MAP Act governs the planning, licensing, and consent process for developments in Ireland's maritime area, including offshore energy projects, and introduces the role of the Maritime Area Regulatory Authority (MARA).

- Planning and Development Act 2000 (as amended to the Planning and Development Act 2024) – Governs the onshore planning process and has been significantly reformed by the 2024 Act. The amendments introduce measures to align terrestrial planning with Irelands' marine planning regime, including integration with the National Marine Planning Framework (NMPF).

- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) – Transposes the EU Habitats and Birds Directives into national law and governs the assessment and protection of Natura 2000 sites.

- Wildlife Acts 1976 to 2018 – Provides for the protection of wildlife (flora and fauna) and their habitats within the State.

- Foreshore Act 1933 (as amended) – While largely superseded by the MAP Act for new offshore developments, the Foreshore Act may still apply in limited circumstances, particularly where transitional or legacy consents are involved.

4.5.2 Limitations

The methodology described uses information from external sources and Intertek cannot guarantee the completeness or accuracy of the external sourced information relied upon. Nonetheless, Intertek has used publicly available sources to verify relied upon information where possible and ensure that the information used is the most up-to-date available.

The preferred OSS locations will undergo a multidisciplinary survey which will identify site specific constraints, which will be avoided through micro-siting, where applicable. Where identified constraints cannot be avoided, these will be discussed with the regulator and their marine advisors.

4.5.3 Constraint Identification and Classification

4.5.3.1 Constraint identification

Compiled data will be classified according to whether it will be a socio-economic or environmental constraint. Examples of these constraints are provided below.

- **Socio-Economic constraints**: e.g. shipping and navigation, aggregate dredging areas (active, licensed and proposed); disposal sites; fishing activity; shipping activity; vessel navigation channels; anchoring areas (including non-designated); ports and harbours; wrecks; marine archaeology; military exercise area; existing marine infrastructure (e.g. cables; pipelines; offshore wind farms; rigs; platforms other installations etc.); areas identified for offshore renewable energy installations (OREIs); flood defence structures; Carbon Capture and Storage (CCS) areas; mining areas; and offshore energy test areas.

- **Environmental constraints**: e.g., national, and locally designated marine and intertidal conservation sites. These include SAC; SPA; Ramsar sites; World Heritage Sites; Natural Heritage Areas; Nature Reserves; protected sandbanks; Annex I Reef; Annex I Protected Submarine Structure (e.g., pockmarks); fishing spawning and nursery areas; OSPAR benthic habitats; and protected geological features.

4.5.3.2 Constraint categories

Constraints that are identified in the available data are categorised according to their potential for impact on the development of the OSS. Constraints are categorised in accordance with Risk Ranking outlined in the Step 3 Emerging Best Performing Options. Appendix B highlights the risk ranking.

4.5.4 Environmental Baseline

A comprehensive assessment of the potential environmental effects of a project relies on a thorough understanding of the existing environmental conditions. This section outlines the current baseline of environmental receptors that may be subject to influence from the proposed operation.

The environmental baseline has been established using publicly available data sources, which are referenced accordingly within the text. The following receptors have been considered:

- Marine Designated Areas,
- Seabed communities and sensitive features,
- Fish and shellfish,

- Local and migratory bird populations,
- Marine mammals.

4.5.4.1 Marine Designated Areas

No marine designated areas overlap the OSS locations, as presented in Figure 4-3. The closest sites are Hook Head SAC (habitats: large shallow inlets and bays, reefs, vegetated sea cliffs; species: bottlenose dolphin, harbour porpoise) and Seas off Wexford SPA (notable seabird populations). Distances range from approximately 25 km (OSS-1) to 6 km (OSS-4) for the SAC and from 24 km (OSS-1) to 2.7 km (OSS-4) for the SPA. While OSS-4 is closest, the relevant species are mobile and transitory, so no differentiation between OSS sites is expected. Further information on marine designated areas is provided within the Marine Usage License (MUL) Application (MUL240036).

4.5.4.2 Seabed communities and sensitive features

As presented in Appendix F, benthic habitats identified include A5.27 'Deep circalittoral sand' (Endangered), A5.15 'Deep circalittoral coarse sediment' (Vulnerable), and A4.27 'Faunal communities on deep moderate energy circalittoral rock'. These support diverse assemblages of polychaetes, bivalves, amphipods, echinoderms, sponges, and bryozoans.

Whilst the information is unavailable for A4.27 'Faunal communities on deep moderate energy circalittoral rock', the A5.15 'Deep circalittoral coarse sediment' and A5.27 'Deep circalittoral sand' habitats are listed in the European Red List of Habitats as Vulnerable and Endangered, respectively (EC, 2016). No Annex I habitats or reef habitats are predicted to overlap the OSS locations, as seen in Figure 4-4. Further information can be found in Appendix D.

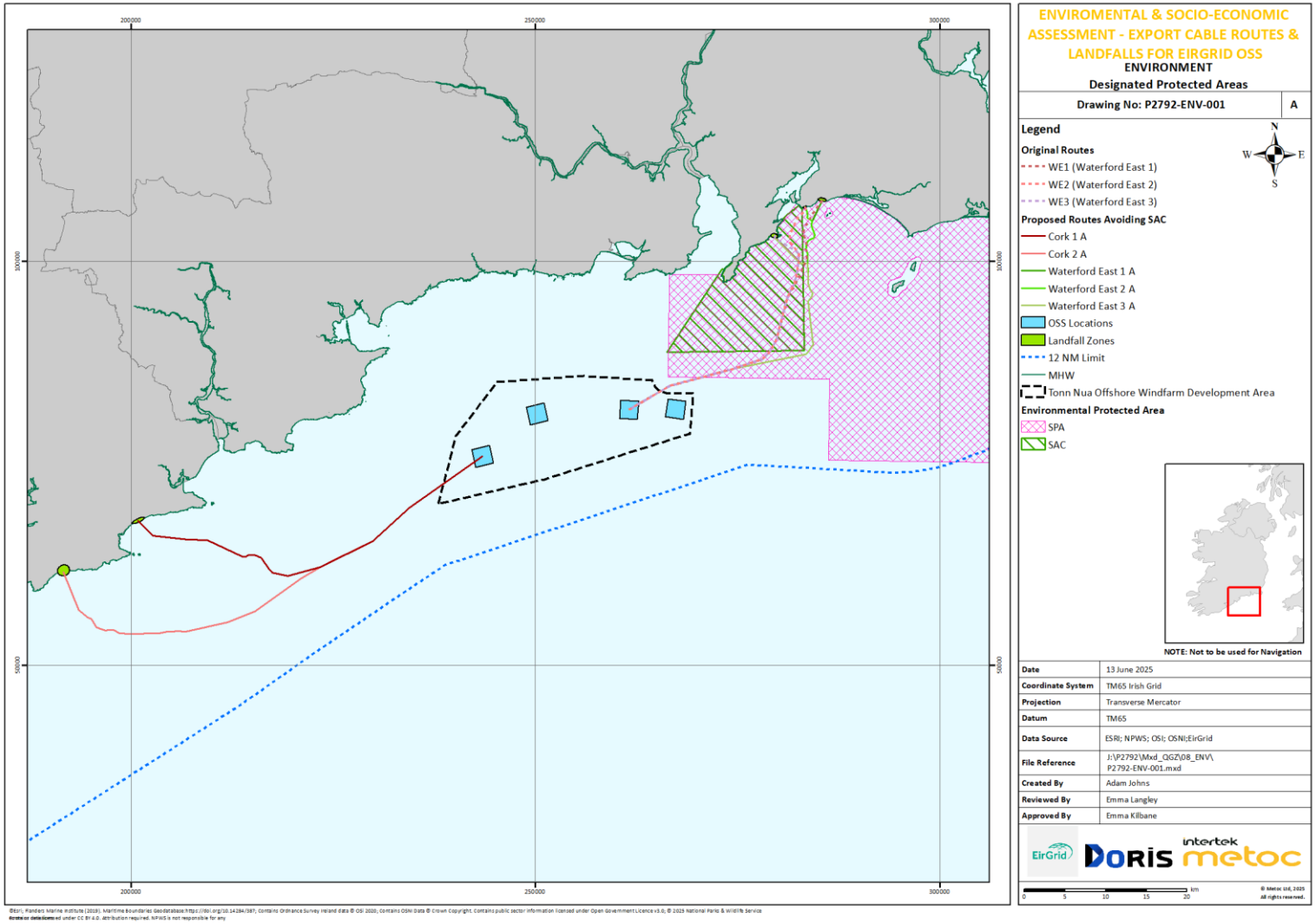

Figure 4-3 : Marine Designated Areas (Drawing Reference: P2792-ENV-001)

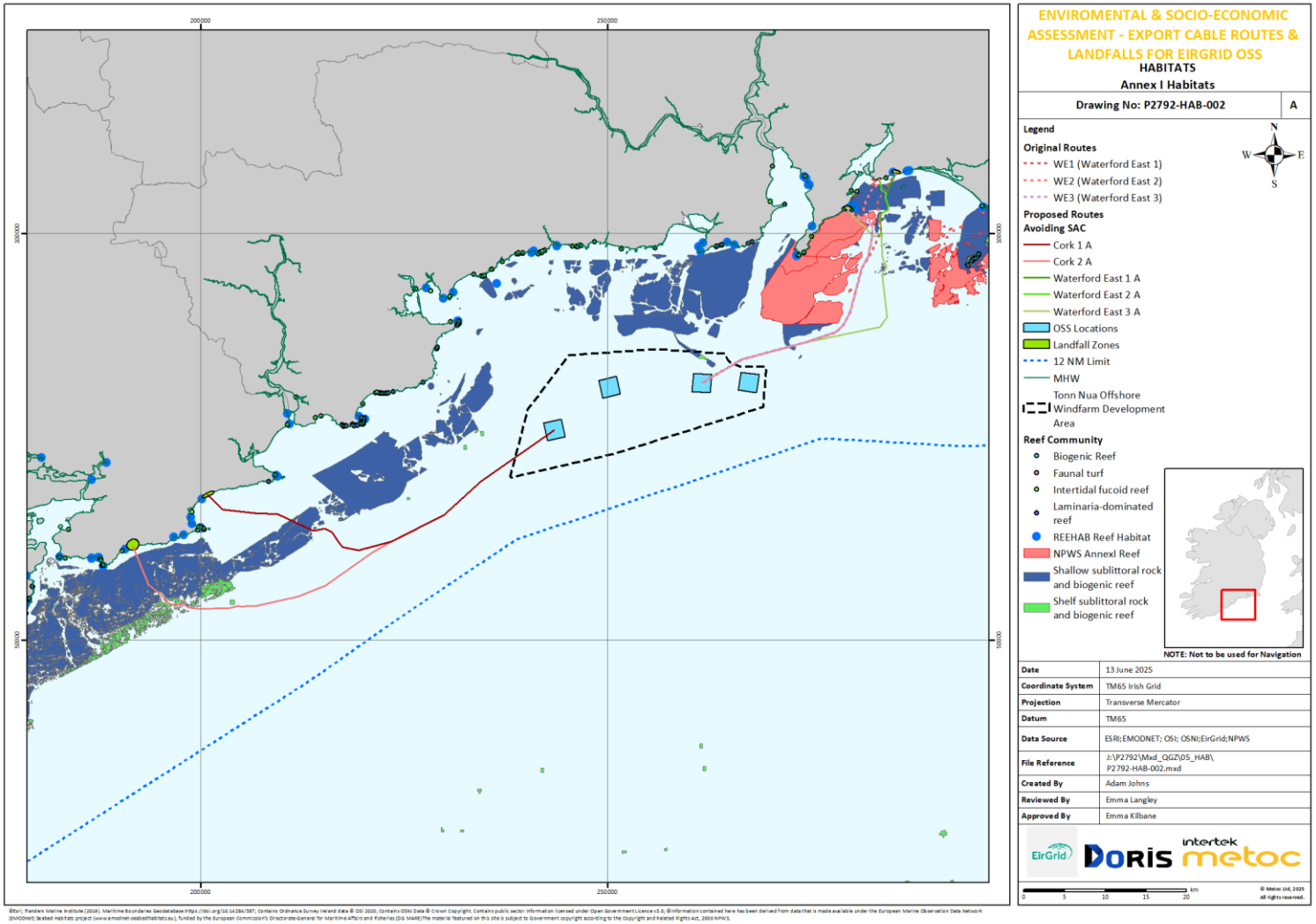

Figure 4-4 : Annex I Habitats (Drawing Reference: P2792-HAB-002)

4.5.4.3 Fish and shellfish

All OSS sites overlap spawning / nursery grounds for seven commercial fish species (e.g. cod, mackerel, whiting, blue whiting, hake, ling, anglerfish). A key sensitivity is the Tramore herring spawning ground, located 12.7 km (OSS-1) to 2.9 km (OSS-4) away, with peak spawning in October. Shellfish species (e.g. Nephrops, lobster, crab, scallop, razor clam, whelk) are common in the Irish Sea, but no designated shellfish waters or aquaculture areas overlap OSS locations. Appendix F provides a summary of the spawning and nursery periods for these fish species.

The distance between each OSS and this spawning ground is detailed in Appendix E.

Table 4-1 : Distance of each OSS to the Tramore spawning ground

OSS	Distance (km)
OSS-1	12.72
OSS-2	5.01
OSS-3	4.38
OSS-4	2.86

4.5.4.4 Local and migratory bird populations

Aerial surveys conducted by Rogan et al. (2018) during summer and winter seasons in 2015 and 2017 recorded twenty-four (24) seabird species utilising the Irish coastline, including auks, gannet, fulmar, and kittiwake in high abundance. Seasonal variation was observed (shearwaters/terns in summer; scoters/divers in winter). While no SPA overlaps the OSS, the Seas off Wexford SPA lies 2.68 km from OSS-4.

As detailed in Section 3.2 of Appendix F it is not possible to determine whether the protected bird species within this site are more likely to be associated with any specific OSS location, due to the proximity of all OSS sites.

4.5.4.5 Marine Megafauna

Cetaceans (e.g. common dolphin, bottlenose dolphin, harbour porpoise, fin whale) and pinnipeds (grey and harbour seal) occur in the wider area. Hook Head SAC is the closest designated site (5.7 km from OSS-4), but no SAC overlaps the OSS. Seal haul-outs are >22 km away, beyond typical foraging ranges. Elasmobranchs such as spurdog, thornback ray, tope, and basking shark are present in the region but with no distinction between OSS sites. All cetaceans are EPS under the Habitats Directive, requiring strict protection.

4.6 Combined MCA for the Cork and Waterford / Wexford OSS location

Table 4-3 is a high-level combined summary for the Wexford cable corridors, and details can be found in Appendix C.

Cork OSS is shown only as a standalone zone and is not in comparison with Waterford / Wexford zones as described in Section 4.0.

Table 4-2 : MCA Legend

Ranking	Description
	Most significant / difficult / risk High: To be reserved for high probability that the risk would result in an overall proposed development that is not feasible / consentable / deliverable.
	Moderate High: Identified risk which may be challenging to mitigate to the satisfaction of the consenting authorities and prescribed bodies. Should only be considered where no other options are available.
	Moderate: Identified but manageable risk requiring bespoke measures to mitigate risk.
	Low Moderate: Identified risk, but manageable with appropriate and standard mitigation.
	Least significant / difficult / risk Low: Limited risk, assuming accepted best practice is followed and / or an opportunity.

Table 4-3 : High Level MCA Summary

HIGH LEVEL MCA				
REGION	CORK	WATERFORD / WEXFORD		
OSS	OSS-1	OSS-2	OSS-3	OSS-4
LANDFALL	Ballycroneen	Carnivan	Carnivan	Carnivan
Technical				
Economic				
Deliverability				
Environmental				
Socio-Economic				

5.0 SUMMARY AND RECOMMENDATIONS

Four (4) zones were identified within the Tonn Nua site. Based on the current MCA, two (2) zones have emerged as the best-performing options: OSS-1 for the Cork area and OSS-3 for the Waterford / Wexford area. The remaining alternatives, OSS-2 and OSS-4 will not be taken forward at this time,

While geotechnical information to date suggests OSS-2 may be more favourable than OSS-3 due to a lower risk of foundation drilling, the comparative MCA recommends OSS-3 for the Waterford / Wexford area. This recommendation is primary driven by the shorter export cable associated with OSS-3, which is expected to deliver economic benefits that outweigh the potential cost and risk of foundation installation.

Furthermore, OSS-3 provides greater spatial separation from OSS-1, offering a better energy yield proposition for the Tonn Nua site compared to the closer proximity between OSS-1 and OSS-2. There is no change to OSS-1 from the original location identified.

These recommendations are based on the high-level assessment and do not include any detailed cost analysis of foundations.

Due to the limitations in existing site-specific geotechnical data, both OSS-1 and OSS-3 remain provisional and will be reassessed as more factual data become available over the coming period and following consultations with the successful Tonn Nua Offshore Wind Farm Developer.

6.0 DATA SOURCES AND REFERENCES

6.1 Specific Technical Data Sources and References

Source #1: Celtic Interconnector Offshore Constraints Report (400584-PL-TN-004 Rev3)[2].

Source #2A: South Coast Designated Maritime Area Plan for Offshore Renewable Energy 3rd May 2024[1].

Source #2B: The South Coast Designated Maritime Area-Plan for Offshore Renewable Energy (SC-DMAP)[2].

Source #3: Step 3 Emerging Best Performing Options - Powering Up Offshore South Coast (November 2024)[3].

Source #4: 2025 Updated Preliminary Ground Model Technical Note, (OCDP-EIR-P03-TN-MD-0004, Rev00, issued 05/03/2025).

The information used in the update of Source #4 – Update Preliminary Ground Model are:

- Tonn Nua geophysical survey data (Marine Institute, 2024), provided to DORIS by EirGrid in December 2024
- Regional 2D UHR seismic data (GDG, 2012 and 2017), provided to DORIS by EirGrid in between December 2024 and February 2025.
- GIS database and preliminary geological model prepared by DORIS – data source used for this model are described in the Geological Desk Study 514301-IRE-DOR-ST-GT-0001

[2] Celtic Interconnector Offshore Constraints Report
[3] Step 3 Emerging Best Performing Options Report

6.2 Specific Environmental and Socio-Economic Data Sources and References

6.2.1 Data Sources

See page 10, Table 2-1 in Appendix F.

6.2.2 References

See page 53 in Appendix F.

APPENDIX A : MCA RISK RANKING TECHNICAL, ECONOMIC AND DELIVERABILITY

Sub-Criteria (Colour)	Technical	Economic Delta Costs (%M)	Deliverability Delta Route Lengths (%km)
	Most significant / difficult / risk High: To be reserved for high probability that the risk would result in an overall proposed development that is not feasible / consentable / deliverable.	>60%	>45%
	Moderate High: Identified risk which may be challenging to mitigate to the satisfaction of the consenting authorities and prescribed bodies. Should only be considered where no other options are available.	<40<60	<30<45%
	Moderate: Identified but manageable risk requiring bespoke measures to mitigate risk.	>20<40	>15<30%
	Low Moderate: Identified risk, but manageable with appropriate and standard mitigation.	>0<20	>0<15%
	Least significant / difficult / risk Low: Limited risk, assuming accepted best practice is followed and / or an opportunity.	0%	0%

APPENDIX B : MCA RANKING ENVIRONMENTAL AND SOCIO-ECONOMIC

Ranking	Risk Level	Classification	Examples of Constraints
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.	**Constraints to be Avoided** These are subjects or areas where installation of cables or platforms is not feasible due to physical immovability or significant financial and legal consequences.	Routing through an Annex I biogenic Reef habitat within a designated site. Route through protected historic wreck. Conflict with other marine infrastructure such as currently installed cables.
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.	**Significant Impacts Requiring Complex or Unproven Mitigation** These areas present challenges that may require extensive consultation, regulatory exemptions, or the development of complex or untested mitigation measures. Such impacts could lead to project delays or legal challenges. Note: For marine protected areas classified as moderate-high risk, it is assumed initially that no rock protection will be required within the protected site (aside from known crossings). If rock protection becomes necessary in locations where burial is not possible, the project must demonstrate, that no feasible alternative routes or installation methods are available; and that effective mitigation measures can be implemented to prevent adverse effects on the site's conservation interests.	Crossing military zones- Proximity to active aggregate dredging areas- Conflicts with OREI exclusion zones- Adjacent to strategically sensitive infrastructure. Cable intersecting an SAC or marine SPA with no viable alternative, avoiding designated features where possible.
Dark Green	**Moderate**: Identified but manageable risk requiring bespoke mitigation measures.	**Areas Requiring Negotiation or Further Assessment** These areas would be located outside protected sites but may necessitate additional information gathering, surveys, or consultations, and could impact project timelines, costs, or risks during the development and construction phases. The significance of these areas arises from their potential legal, financial, or physical	Routing through non-designated fouling areas- Passing through spawning / nursery grounds with timing constraints- Proximity to sensitive benthic habitats (e.g., Annex I habitats)

Ranking	Risk Level	Classification	Examples of Constraints
		constraints on cable routing and platform placement.	
Light Green	**Low Moderate**: Identified risk, but manageable with appropriate and standard mitigation measures	**Lower Significance Areas** These areas pose minimal legal, financial, or physical constraints on cable routing or platform siting. While additional surveys, data collection, or consultations may be beneficial, impacts are expected to be addressed during detailed micro-routing after marine surveys. Routing through these areas is permissible if no practical alternatives exist, as they do not present fundamental barriers to cable installation.	Cable near third-party assets (pipelines, telecoms)- Minor disposal sites with baseline data- Adjacent to non-designated conservation areas. Intersecting marine mammal migration routes.
Yellow	**Low**: An opportunity or a limited risk, assuming that accepted best practice is followed.	There are **no feasible or practical constraints** that would prevent cable installation.	Following pre-disturbed corridors- Adjacent to industrial landfall zones- Within areas designated for future infrastructure or low-value intertidal

APPENDIX C : CORK AND WATERFORD / WEXFORD MCA DETAILS

OSS	OSS-1	OSS-2	OSS-3	OSS-4
Landfall	Landfall (B) - Ballycroneen	Landfall (E) - Carnivan	Landfall (E) - Carnivan	Landfall (E) - Carnivan
Technical Criteria				
Water depth (m)	58-60	53-58	53-58	52-61
Bedrock type	Pre-Cretaceous in age, potentially comprising mudstone, sandstone and limestone with variable strength and weathering profiles.	No differentiator - pre-cretaceous in age, potentially comprising mudstone, sandstone and limestone with variable strength and weathering profiles.		
Overburden composition	Approx. 6 m sand over potentially variable glaciogenic sediments.	10-15 m sand over more potentially variable glaciogenic sediments.	Approx. 5 m sand, with potentially variable glaciogenic sediments in west.	
Depth to bedrock (m)	8-17	13-40	3-32	3-41
Seabed Morphology	Flat and featureless with slopes <2.5°.	Flat and featureless with slopes <2.5°.	Largely flat and featureless with some slopes <5° associated with sub cropping bedrock.	Largely flat and featureless with some slopes <5° associated with sub cropping bedrock.
Cable length (km)			36.63	30.88
OWF Suitability for Construction	Drilled piles.	Drilled piles or suction anchors.	Drilled piles.	Drilled piles or suction anchors.
Combined Technical	Moderate due to combination of cable length, depth to bedrock and potential drilled piles.	Moderate due to combination of cable length, depth to bedrock and potential drilled piles / suction anchors.	Moderate due to combination of cable length, depth to bedrock and potential drilled piles.	Moderate due to<40m variable glaciogenic sediments, depth to bedrock and potential drilled piles / suction anchors.
Economic Criteria				
Route length impact % difference	178% over baseline.	130% over baseline.	116% over baseline.	Baseline for comparison.
Substructures	Drilled piles.	Drilled piles or suction anchors.	Drilled piles.	Drilled piles or suction anchors.
Combined Economic	High due to long route length.	Moderate-high due to long route length.	Moderate due to combination of cable length and potential drilled piles.	Low-moderate due to combination of shortest route length and potential drilled piles / suction anchor foundations.
Deliverability Criteria				
Impact of OWF wake effects based on closeness to OSS-1	Least significant / difficult / risk Low.	Low-moderate some impact.	Least significant / difficult / risk Low.	Least significant / difficult / risk Low.

Attractiveness for OWF developer based on location	Least significant / difficult / risk Low.	Low-moderate impact - restrictive to WTG layouts.	Least significant / difficult / risk Low.	Moderate - high impact - restrictive to WTG layouts as close to border of Tonn Nua.
Cable length (km)	64.47	47.64	36.63	30.88
Combined Delivery	Moderate risk with minimum impact on WTG layouts and long cable length.	Moderate risk with minimum impact on WTG layouts and long cable length.	Low-moderate risk with minimum impact on WTG layouts and shorter cable length than OSS 2.	Moderate-High risk with minimum impact on WTG layouts and shortest cable length overall.
Socio-Economic Criteria				
Recreation and Tourism	OSS located offshore, well beyond main recreational use zones (e.g. beaches, kayaking, sailing). No impact expected.	Same as OSS-1; remote offshore location, no interaction with coastal recreation.	Same as OSS-1 / OSS-2; no proximity to key recreational sites.	Same as others; offshore location limits recreational interactions.
Commercial Fisheries	Located in area supporting commercial fisheries (mackerel, *Nephrops*, hake) and seine netting and bottom otter trawling activity. Landing ports relatively nearby. Managed via consultation and spatial planning.	Same as OSS-1; similar overlap with active fisheries though no notable specific fishery types in high effort areas.	Same as OSS-1 / OSS-2; same fisheries activity levels in vicinity though notably in a potting fishery.	Closest to fishing ports (e.g. Dunmore East 20 km) but same fisheries present though within an area of higher dredging effort; managed via timing, consultation and route planning.
Landscape and Seascape	Offshore location (>20 km from coast), outside visual envelope of key receptors; no significant seascape effect.	Same as OSS-1.	Same as OSS-1 / OSS-2.	Slightly closer but still offshore; negligible visual impact given distance.
Marine Cultural Heritage	No known wrecks directly intersect OSS site; closest wreck 580m from OSS-1. Avoidance possible through micro-routing.	No known wrecks within or near site; negligible risk.	Same as OSS-2; no wrecks directly affected.	Same as OSS-3; no wrecks directly affected.
Shipping and Navigation	Located within low vessel density area (0.2–2 vessel hours / km²). Proximity to fishing ports noted but limited interference with major shipping lanes. Nearest navigational buoy located approximately 16.7 km. Noted high effort levels of seines and bottom otter trawl fishing vessels. Managed via navigational risk assessment.	Same as OSS-1; limited vessel density; located outside key shipping routes. No notable specific fishery types in high effort areas.	Same as OSS-1 / OSS-2; no major commercial shipping present. Located within an area utilised by potting fishery vessels.	Slightly higher vessel density due to proximity to Waterford Estuary entrance, but still low overall shipping density. Highest possibility to impact cargo vessels with resultant effects of increased journey time. Conningbeg metocean buoy, is located approximately 26.3 km east. High effort levels of dredging fishery vessels noted.
Other Infrastructure	No overlapping existing cables, pipelines, or military zones. No active oil & gas or aggregate areas nearby.	Same as OSS-1.	Same as OSS-1 / OSS-2.	Eastern Celtic Sea disposal site located 14.2 km away; otherwise, no infrastructure overlap.

Combined Socio-Economic	Low-moderate: Minimal socio-economic constraints identified. All manageable through consultation, micro-routing, and standard planning measures. No differentiators.	Low-moderate: Same as OSS-1. No differentiators.	Low-moderate: Same as OSS-1 / OSS-2. No differentiators.	Low-moderate: Same as OSS-3; slightly closer to shipping but not materially higher risk. No differentiators.
Environmental Criteria				
Marine Designated Areas	No overlap with designated sites but OSS-1 within vicinity of some protected sites (Hook Head SAC 24.85 km and Seas off Wexford SPA 23.68 km). Potential for indirect effects; however, these would be manageable with appropriate mitigation.	Similar to OSS-1, indirect effects possible but manageable (OSS-2 located 16.47 km from Hook Head SAC and 15.66 km from Seas off Wexford SPA).	Closer proximity but still no direct overlap; mitigation likely sufficient. (OSS-3 located 6.99 km from Hook Head SAC and 4.69 km from Seas off Wexford SPA.).	No direct overlap but highest potential for indirect effects; mitigation and monitoring needed. Closest proximity (5.74 km to Hook Head SAC, 2.68 km to Seas off Wexford SPA).
Seabed communities and sensitive features	EUNIS A5.27 and A5.15 habitats (Vulnerable and Endangered per EU Red List). No Annex I habitats present. Impacts manageable with mitigation.	Same habitat types as OSS-1; management through site-specific mitigation feasible.	Same habitats as OSS-1 and OSS-2 plus A4.27 faunal communities; more diverse but no unique sensitivity identified; mitigation required.	Same as OSS-3 with A4.27 present; similar need for mitigation of benthic impacts.
Fish and shellfish	Overlaps spawning / nursery grounds for multiple species (e.g. cod, hake, whiting). Seasonal restrictions can reduce impact; risk manageable.	Same as OSS-1; no differentiation in species presence; managed by seasonal timing.	Same as OSS-1 / OSS-2; nursery / spawning overlap; timing mitigation sufficient.	Same as other OSS locations, though located in closest proximity to the Tramore herring spawning ground (2.86 km); no unique additional constraints.
Local and migratory bird populations	Within range of seabird foraging zones; no direct overlap with SPAs. Effects manageable with standard measures.	Same as OSS-1; similar distance from SPA; no unique sensitivity.	Closer to SPA but still outside boundaries; no significant differentiation; mitigation feasible.	Closest to SPA but no overlap; potential indirect effects but managed through standard mitigation.
Marine Mammals	No SAC overlap; occasional presence of marine mammals (cetaceans, seals) possible. Standard exclusion zones and mitigations will be employed.	Same as OSS-1; similar risk profile; management feasible.	Same as OSS-1 / OSS-2; general presence of marine mammals possible; mitigation adequate.	Slightly closer to SAC; same species present as other locations; mitigation sufficient. Closest in proximity to seal haul out sites (22.5 km) however, disturbance is not likely at haul out sites as seals are disturbed at 900m and their presence is unlikely in the vicinity of the OSS sites.

Combined Environmental	Low-moderate: Environmental risks identified but considered manageable across all receptors with bespoke mitigation and standard measures. No differentiators.		Low-moderate: Same as OSS-1; no differentiators.	Low-moderate: Same as OSS-1 / OSS-2; slightly more diverse benthic habitat but no differentiators.	Low-moderate: Same as OSS-3; closer proximity to designated areas but not materially higher risk with mitigation applied. No differentiators.

APPENDIX D : HABITATS PRESENT WITHIN THE OPERATIONAL AREA

Overlapping OSS station	EUNIS Code	EUNIS name	Typical Fauna
OSS-1, OSS-2, OSS-3, OSS-4	A5.27	Deep circalittoral sand	Offshore circalittoral environments composed of fine sands or loose, non-cohesive muddy sands. Although data on these habitats is limited, they are considered to exhibit greater stability compared to similar habitats in shallower waters and are typically associated with a varied assemblage of polychaetes, amphipods, bivalves, and echinoderms.
OSS-1, OSS-2, OSS-3, OSS-4	A5.15	Deep circalittoral coarse sediment	This habitat tends to support a comparatively diverse biological community relative to its shallower counterparts and is typically dominated by resilient infaunal species such as polychaetes and bivalves. The faunal composition is closely associated with that found in offshore mixed sediment environments.
OSS-3, OSS-4	A4.27	Faunal communities on deep moderate energy circalittoral rock	This habitat type is associated with deeper circalittoral rock areas subject to moderate hydrodynamic energy. It typically supports a diverse and encrusting faunal assemblage, including sponges, bryozoans, ascidians, and various species of echinoderms and cnidarians.

APPENDIX E : SUMMARY OF SPAWNING AND NURSERY PERIODS FOR COMMERCIALLY IMPORTANT FISH SPECIES

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cod (*Gadus morhua*)	S	S*	S*	S								
European hake (*Merluccius merluccius*)	S	S*	S*	S	S	S						
Ling (*Molva molva*)		S	S	S	S							
Mackerel (*Scomber scombrus*)			S	S	S	S	S	S				
Anglerfish (*Lophius piscatorius*)	SN	SN	SN	SN	SN	SN						
Blue whiting (*Micromesistius poutassou*)				S*	S*	S						
Whiting (*Merlangius merlangus*)		SN	SN	SN	SN	SN						
Haddock (*Melanogrammus aeglefinus*)	S	S										
Nephrops (*Nephrops norvegicus*)		S*	S*	S*	S							
Herring (*Clupea harengus*)	S	S	S	S*	*S*	S	S	S	S	S	S	S
Sprat (*Sprattus sprattus*)	S	S	S	S								

*S = Spawning, N = Nursery, SN = Spawning and Nursery, Blank = No Data, *peak spawning, - =unavailable.*
Source: Coull et al. 1998

APPENDIX F : INTERTEK REPORT – ENVIRONMENTAL AND SOCIO-ECONOMIC CONSTRAINTS ANALYSIS

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Environmental and Socio-Economic Constraints Analysis

Tonn Nua Offshore Substations

P2792_R6884_Rev0 | 8 July 2025

Intertek Metoc
Exchange House, Station Road, Liphook, Hampshire GU30 7DW, United Kingdom

DOCUMENT RELEASE FORM

DORIS UK

P2792_R6884_Rev0

Environmental and Socio-Economic Constraints Analysis

Tonn Nua Offshore Substations

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GLOSSARY

BIM
An Bord Iascaigh Mhara

CCS
Carbon Capture Storage

CEFAS
Centre for Environment, Fisheries and Aquaculture Science

CIL
Commissioners of Irish Lights

DECC
Department of Energy and Climate Change

EIA
Environmental Impact Assessment

EIAR
Environmental Impact Assessment Report

EMODnet
European Marine Observation Data Network

EPA
Environmental Protection Agency

EPS
European Protected Species

ESRI
Environmental Systems Research Institute

EU
European Union

GT
Giga tonne

IBTS
Irish Bottom Trawl Survey

IWDG
Irish Whale and Dolphin Group

kW
Kilowatt

MUL
Marine Usage Licence

MU
Management Unit

NBDC
National Biodiversity Data Centre

NHA
Natural Heritage Area

NPWS
National Parks and Wildlife Service

OREI
Offshore Renewable Energy Installations

OSPAR
Oslo and Paris Conventions

OSS
Offshore Substations

QI
Qualifying Interest

RNLI
Royal National Lifeboat Institution

SAC
Special Area of Conservation

SCI
Site of Community Importance

SPA
Special Protection Area

STECF
Scientific, Technical, and Economic Committee for Fisheries

1. INTRODUCTION

As part of the Powering Up Offshore South Coast initiative, EirGrid plans to develop two Offshore Substations (OSS) and associated export cables. This new infrastructure will enable the integration of power generated by offshore wind farms into Ireland's national electricity transmission system.

The project will specifically support the connection of fixed-bottom Phase 2 offshore wind farms developed by third-party operators off Ireland's south coast. These developers will be selected through the ORESS Tonn Nua auction, scheduled for 2025.

The Chapter will feed into the platform siting and route development report to help identify the optimum route and platform location from an environmental and socio-economic perspective, with review of publicly available data. The work will feed into a Multi-Criteria Analysis (MCA) with consideration of potential environmentally sensitive features. Constraints will be identified in accordance with current industry guidance, and a ranking will be provided for each route and platform location, helping to identify a preferable route/ platform location and provide a robust initial assessment of options developed.

1.1.1 Project Area

The two OSS are planned to be developed within the South Coast Designated Maritime Area Plan (SC-DMAP) Area A - Tonn Nua. Four substation options are currently being considered within the SC-DMAP and different export cable routes from these stations are being considered (Figure 1-1; Drawing Reference: P2792-LOC-001). This section considers the OSS development and section X-X considers the cable routes and landfall.

Table 1-1 details the location of the four substation options.

Table 1-1 OSS Co-ordinates

OSS	Co-ordinates (EPSG:29902, TM65 Irish Grid)	
	X	Y
OSS1	243485	75722
OSS2	250302	80973
OSS3	261633	81587
OSS4	267436	81649

1.1.2 Relevant Legislation

1.1.2.1 EIA Directive

The EIA Directive 2011/92/EU as revised by Directive 2014/52/EU applies to project types listed in Annex I or Annex II (see Articles 2 and 4 of the EIA Directive 2011/92/EU as revised by Directive 2014/52/EU). Proposed projects not listed in Annex I or Annex II of the EIA Directive and/or the corresponding project types listed in Schedule 5, Parts 1 and 2 of the Planning and Development Regulations 2001, as amended, are not subject to the EIA Directive or to the requirement for EIA Screening or EIA.

1.1.2.2 Habitats Directive

The Habitats Directive (Council Directive 92/43/EEC) seeks to promote the maintenance of biodiversity by requiring Member States to introduce measures to maintain or restore natural habitats and wild species listed under the Directive. Annex II species (including bottlenose dolphin and harbour

porpoise) and designated habitats (e.g. reefs and vegetated sea cliffs within Hook Head SAC) identified within the project area are subject to strict protection measures. The project must therefore consider potential impacts to these species and habitats through the Appropriate Assessment (AA) process under Article 6 of the Directive.

1.1.2.3 Birds Directive

The Birds Directive (Directive 2009/147/EC) provides protection for all wild bird species naturally occurring in the EU, particularly those listed in Annex I of the Directive. Special Protection Areas (SPAs), such as the Seas off Wexford SPA, have been designated for the protection of internationally important seabird populations that may interact with the cable route options.

1.1.2.4 Marine Strategy Framework Directive

The Marine Strategy Framework Directive (Directive 2008/56/EC) establishes a framework for the protection of the marine environment across Europe, aiming to achieve Good Environmental Status (GES) of EU marine waters. The assessment process must ensure that the project does not compromise the achievement or maintenance of GES for the relevant descriptors.

1.1.2.5 Water Framework Directive

The Water Framework Directive (Directive 2000/60/EC) aims to prevent further deterioration and protect the ecological and chemical status of surface waters, transitional waters, coastal waters, and groundwater. The potential effects of the project activities on coastal water quality must therefore be assessed in accordance with WFD objectives.

1.1.2.6 OSPAR Convention

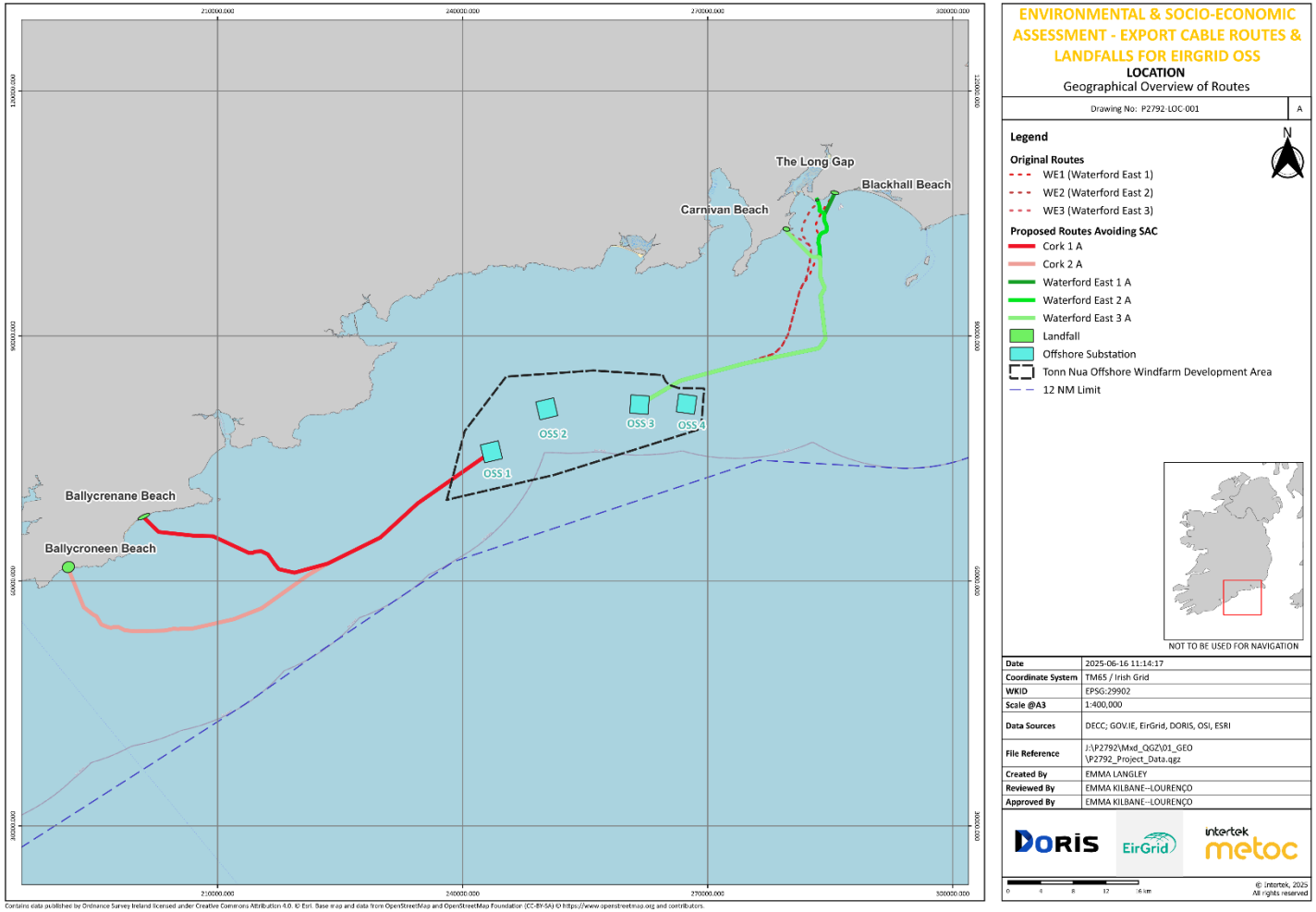
The OSPAR Convention (1992) requires contracting parties, including Ireland, to take measures to prevent and eliminate pollution and to protect the marine environment of the North-East Atlantic. Sensitive features such as elasmobranchs, which are listed under OSPAR's List of Threatened and/or Declining Species and Habitats, must be appropriately considered in the assessment.

1.1.2.7 National Legislation

In addition to EU legislation, the project is subject to Irish national legislation, including:

- Maritime Area Planning Act 2021 (MAP Act) – This Act establishes a new regulatory framework for Ireland's maritime area and replaces significant parts of the Foreshore Act 1933. The MAP Act governs the planning, licensing, and consent process for developments in Ireland's maritime area, including offshore energy projects, and introduces the role of the Maritime Area Regulatory Authority (MARA).
- Planning and Development Act 2000 (as amended) – Governs the onshore planning process and may apply to onshore components of the development, such as landfalls and substations.
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) – Transposes the EU Habitats and Birds Directives into national law and governs the assessment and protection of Natura 2000 sites.
- Wildlife Acts 1976 to 2018 – Provides for the protection of wildlife (flora and fauna) and their habitats within the State.
- Foreshore Act 1933 (as amended) – While largely superseded by the MAP Act for new offshore developments, the Foreshore Act may still apply in limited circumstances, particularly where transitional or legacy consents are involved.

Figure 1-1 Project Area Location Overview



2. APPROACH AND METHODOLOGY

A multi-stage methodology was applied to identify and evaluate potential environmental and socio-economic constraints associated with the proposed offshore substations, cable routes, and landfalls. The stages involved; data collation, spatial analysis (supported by Geographic Information System (GIS) mapping using ArcMAP 10.7.1 and QGIS version 3.34.7-Prizren), constraint identification, and classification. This approach allows for the systematic comparison of route and landfall options and informs the subsequent Multi-Criteria Analysis (MCA).

2.1 Data Information and Gathering

To inform the assessment, key publicly available datasets and reports were identified. Datasets were imported into a Geographical Information System to display the key information in relation to the OSS and mapping to visualise datasets. Table 2-1 highlights all datasets and sources that were utilised for the report.

Table 2-1 Data Sources used to Inform Assessment

Data Source	Accessed Date	Data Contents
Biodiversity Maps (NBDC)	09/06/2025	Historic data on various protected species / Point data from the National Invasive Species Database
Data.gov.ie	09/06/2025	Multiple datasets - National boundaries,
EIA Portal	09/06/2025	EIAR planning website
EPA Maps	09/06/2025	Bathing waters and Shellfish waters data
EMODnet	09/06/2025	Bathymetry and geophysical data, Annex I habitat data, Human Activities data, Shipping densities, benthic habitats
National Monuments Service	09/06/2025	Wrecks data

Data Source	Accessed Date	Data Contents
Marine Atlas	09/06/2025	Multiple datasets - fishing activities/densities, benthic and reef habitat data, spawning and nursery grounds
NPWS Protected Areas	09/06/2025	Boundary data for SAC, SPA, NHA and pNHA sites
National Parks and Wildlife Service: QI/SCI features	09/06/2025	Shapefiles of QI/SCI features associated with European sites
Surveying Open Data Portal	09/06/2025	Environmental data and infrastructure data
NPWS 2024 Reef Inventory	12/06/2025	Reef data
Reef habitat Data	12/06/2025	Reef data
Centre for Environment, Fisheries and Aquaculture Science (CEFAS)	12/06/2025	Fish Spawning and Nursery areas.
Department of Energy & Climate Change (DECC)	12/06/2025	Offshore infrastructure datasets and location data.
ESRI	12/06/2025	Basemap overlay for all map visualisations

2.1.1.2 Limitations

The methodology described uses information from external sources and Intertek cannot guarantee the completeness or accuracy of the external sourced information relied upon. Nonetheless, Intertek has used publicly available sources to verify relied upon information where possible and ensure that the information used is the most up-to-date available.

The preferred OSS locations will undergo a multidisciplinary survey which will identify site specific constraints, which will be avoided through micro-siting, where applicable. Where identified constraints cannot be avoided, these will be discussed with the regulator and their marine advisors.

2.2 Constraint Identification and Classification

2.2.1 Constraint Identification

Compiled data will be classified according to whether it will be a socio-economic or environmental constraint. Examples of these constraints are provided below.

- **Socio-Economic constraints**: e.g. shipping and navigation, aggregate dredging areas (active, licensed and proposed); disposal sites; fishing activity; shipping activity; vessel navigation channels; anchoring areas (including non-designated); ports and harbours; wrecks; marine archaeology; military exercise area ; existing marine infrastructure (e.g. cables; pipelines; offshore wind farms; rigs; platforms other installations etc.); areas identified for offshore renewable energy installations (OREIs; flood defence structures; Carbon Capture and Storage (CCS) areas; mining areas; and offshore energy test areas.
- **Environmental constraints:** e.g., national, and locally designated marine and intertidal conservation sites. These include Special Areas of Conservation (SAC); Special Protection Areas (SPA); Ramsar sites; World Heritage Sites; Natural Heritage Areas; Nature Reserves; protected sandbanks; Annex I Reef; Annex I Protected Submarine Structure (e.g., pockmarks); fishing spawning and nursery areas; OSPAR benthic habitats; and protected geological features.

2.2.2 Constraint Categories

Constraints that are identified in the available data are categorised according to their potential for impact on the development of the OSS. Constraints are categorised in accordance with Risk Ranking outlined in the Step 3 Powering Up Offshore South Coast (Doc Reference: 229101330 | 229101330-307 | D). Table 2-2 highlights the risk ranking.

Table 2-2 Risk Ranking

Ranking	Risk Level	Classification	Examples of Constraints
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.	**Constraints to be Avoided** These are subjects or areas where installation of cables or platforms is not feasible due to physical immovability or significant financial and legal consequences.	Siting within an Annex I biogenic Reef habitat within a designated site. Overlapping protected historic wreck. Conflict with other marine infrastructure such as currently installed cables.
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.	**Significant Impacts Requiring Complex or Unproven Mitigation** These areas present challenges that may require extensive consultation, regulatory exemptions, or the development of complex or untested mitigation measures. Such impacts could lead to project delays or legal challenges. Note: For marine protected areas classified as moderate-high risk, it is assumed initially that no rock protection will be required within the protected site (aside from known required locations). If rock protection becomes necessary, the project must demonstrate that no feasible alternative methods are available; and that effective mitigation measures can be implemented to prevent adverse effects on the site's conservation interests.	Siting within military zones- Proximity to active aggregate dredging areas- Conflicts with OREI exclusion zones- Adjacent to strategically sensitive infrastructure. Siting within an SAC or marine SPA with no viable alternative, avoiding designated features where possible.
Dark Green	**Moderate**: Identified but manageable risk requiring bespoke mitigation measures.	**Areas Requiring Negotiation or Further Assessment** These areas would be located outside protected sites but may necessitate additional information gathering, surveys, or consultations, and could impact project timelines, costs, or risks during the development and construction phases. The significance of these areas arises from their potential legal, financial, or physical constraints on cable routing and platform placement.	Siting within non-designated fouling areas and spawning/nursery grounds with timing constraints- Proximity to sensitive benthic habitats (e.g., Annex I).

Ranking	Risk Level	Classification	Examples of Constraints
Light Green	**Low Moderate**: Identified risk, but manageable with appropriate and standard mitigation measures	**Lower Significance Areas** These areas pose minimal legal, financial, or physical constraints on cable routing or platform siting. While additional surveys, data collection, or consultations may be beneficial, impacts are expected to be addressed during detailed micro-siting after marine surveys. Siting in these areas is permissible if no practical alternatives exist, as they do not present fundamental barriers to installation.	Located near third-party assets (pipelines, telecoms)- Minor disposal sites with baseline data- Adjacent to non-designated conservation areas. Intersecting marine mammal migration routes.
Yellow	**Low**: An opportunity or a limited risk, assuming that accepted best practice is followed.	There are **no feasible or practical constraints** that would prevent installation.	Overlapping pre-disturbed areas - Adjacent to developed/developing infrastructure zones - Within areas designated for future infrastructure.

3. ENVIRONMENTAL BASELINE

3.1 Introduction

A comprehensive assessment of the potential environmental effects of a project relies on a thorough understanding of the existing environmental conditions. This section outlines the current baseline of environmental receptors that may be subject to influence from the proposed operation.

The environmental baseline has been established using publicly available data sources, which are referenced accordingly within the text. The following receptors have been considered:

- Marine Designated Areas
- Seabed communities and sensitive features
- Fish and shellfish
- Local and migratory bird populations
- Marine mammals

3.2 Marine Designated Areas

As presented in Figure 3-1 (Drawing Reference: P2792-ENV-001) there are no marine designated areas overlapping the OSS locations. The closest designated areas to the OSS locations are the Hook Head SAC and Seas off Wexford SPA. The Hook Head SAC is designated for three types of habitat (large shallow inlets and bays, reefs and vegetated sea cliffs of the Atlantic and Baltic coasts) and two mobile species, common bottlenose dolphin (*Tursiops truncatus*) and harbour porpoise (*Phocoena phocoena*). The Seas off Wexford SPA is designated for a variety of seabird species and includes significant national populations of guillemot and Manx shearwater. The species listed under the designation include:

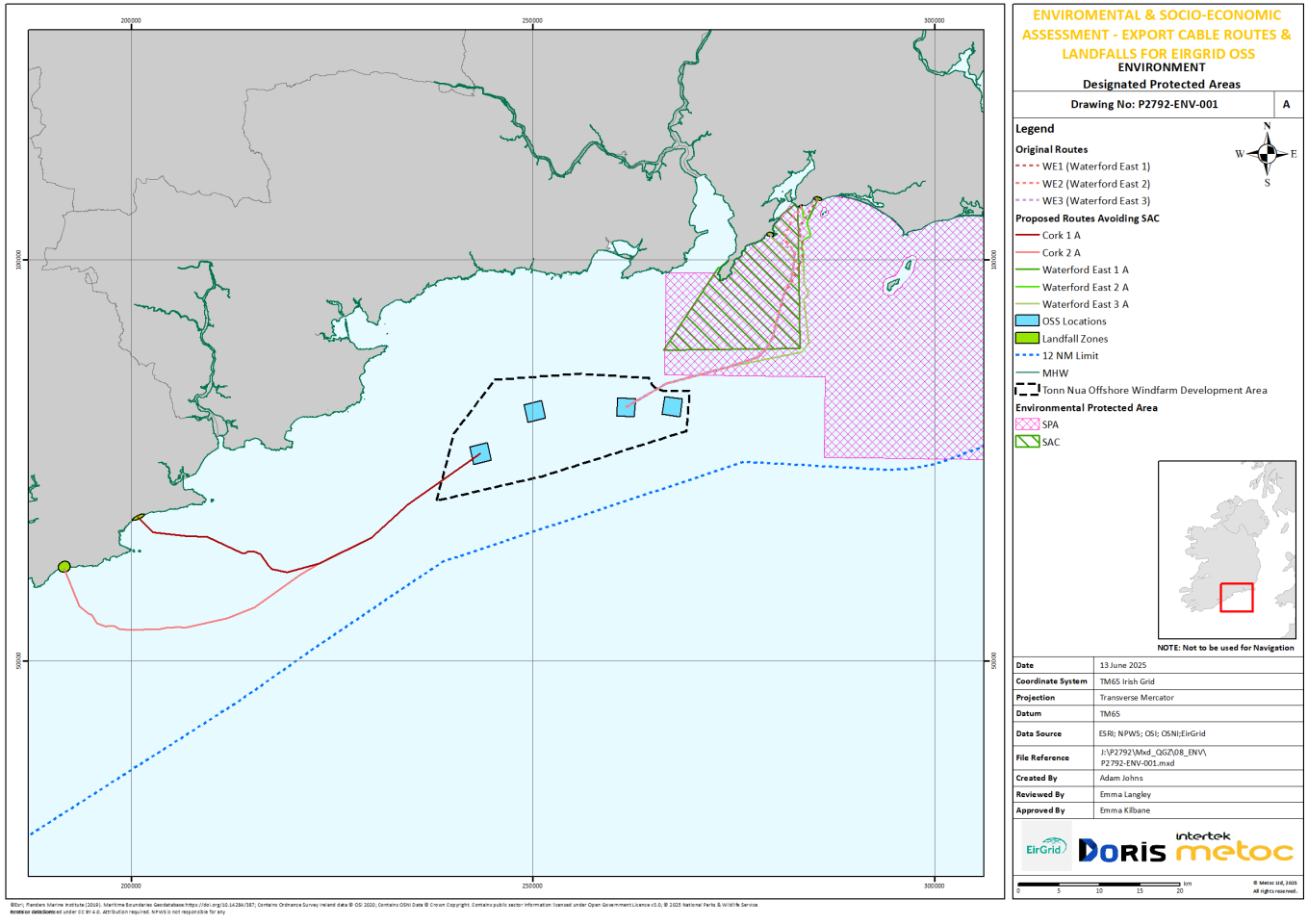
- Red-throated Diver (*Gavia stellata*),
- Fulmar (*Fulmarus glacialis*),
- Manx Shearwater (*Puffinus puffinus*),
- Gannet (*Morus bassanus*),
- Cormorant (*Phalacrocorax carbo*),
- Shag (*Phalacrocorax aristotelis*),
- Common Scoter (*Melanitta nigra*),
- Mediterranean Gull (*Larus melanocephalus*),
- Black-headed Gull (*Chroicocephalus ridibundus*),
- Lesser Black-backed Gull (*Larus fuscus*),
- Herring Gull (*Larus argentatus*),
- Kittiwake (*Rissa tridactyla*),
- Roseate Tern (*Sterna dougallii*),
- Common Tern (*Sterna hirundo*),
- Arctic Tern (*Sterna paradisaea*),
- Guillemot (*Uria aalge*),
- Razorbill (*Alca torda*),
- Puffin (*Fratercula arctica*),
- Sandwich Tern (*Thalasseus sandvicensis*), and
- Little Tern (*Sternula albifrons*).

OSS1, OSS2, OSS3, and OSS4 are located approximately 24.85km, 16.4 km, 6.99km, and 5.74km, respectively, from the Hook Head SAC. From the Seas off Wexford SPA, OSS1, OSS2, OSS3 and OSS4 are located 23.68km, 15.66km, 4.69km and 2.68km, respectively.

Whilst it is noted that OSS4 is located in closer proximity to the Hook Head SAC and Seas off Wexford SPA in comparison to the other OSS locations, the primary sensitive features designated within these

sites which may be affected are mobile and transitory and as such due to the proximity of the OSS locations, no differentiator for these species can be obtained between the four OSS locations. Further information on marine designated areas is provided within the Marine Usage Licence (MUL) Application (MUL240036).

Figure 3-1 Marine Designated Areas (Drawing Reference: P2792-ENV-001)



3.3 Seabed Communities and Sensitive Features

Benthic ecology comprises the habitats and species (flora and fauna) present in, on or closely associated with the seabed. An assessment of the key sensitive benthic habitats and species present in the MULA has been undertaken through a review of data presented in the EUSeaMap Broad-Scale Predictive Habitat Map (EMODnet, 2025). While this data provides an indication into the types of benthic habitat that may be found within the area, it is acknowledged that the information presented within this source is predictive rather than definitive.

As illustrated in Table 3-1 and Figure 3-2 (Drawing Reference: P2792-HAB-001), the benthic habitats across the OSS locations comprise of A5.27 'Deep circalittoral sand', A5.15 'Deep circalittoral coarse sediment' and A4.27 'Faunal communities on deep moderate energy circalittoral rock'. Whilst the information is unavailable for A4.27 'Faunal communities on deep moderate energy circalittoral rock', the A5.15 'Deep circalittoral coarse sediment' and A5.27 'Deep circalittoral sand' habitats are listed in the European Red List of Habitats as Vulnerable and Endangered, respectively (EC, 2016).

Table 3-1 Habitats Present within the Operational Area

Overlapping OSS station	EUNIS Code	EUNIS name	Typical Fauna
OSS1, OSS2, OSS3, OSS4	A5.27	Deep circalittoral sand	Offshore circalittoral environments composed of fine sands or loose, non-cohesive muddy sands. Although data on these habitats is limited, they are considered to exhibit greater stability compared to similar habitats in shallower waters and are typically associated with a varied assemblage of polychaetes, amphipods, bivalves, and echinoderms.
OSS1, OSS2, OSS3, OSS4	A5.15	Deep circalittoral coarse sediment	This habitat tends to support a comparatively diverse biological community relative to its shallower counterparts and is typically dominated by resilient infaunal species such as polychaetes and bivalves. The faunal composition is closely associated with that found in offshore mixed sediment environments.
OSS3, OSS4	A4.27	Faunal communities on deep moderate energy circalittoral rock	This habitat type is associated with deeper circalittoral rock areas subject to moderate hydrodynamic energy. It typically supports a diverse and encrusting faunal assemblage, including sponges, bryozoans, ascidians, and various species of echinoderms and cnidarians.

Source: EMODnet (2025)

Sensitive benthic communities, which include species and habitats listed under Annex I of the EU Habitats Directive, are of particular conservation concern. These features include reef-forming species such as *Sabellaria spinulosa*, as well as Annex I-designated reefs and other priority habitats. As presented in Figure 3-3 (Drawing Reference: P2792-HAB-002), no Annex I habitats or reef habitats are expected to overlap the OSS locations.

Figure 3-2 EUNIS Habitat Classifications (Drawing Reference: P2792-HAB-001)

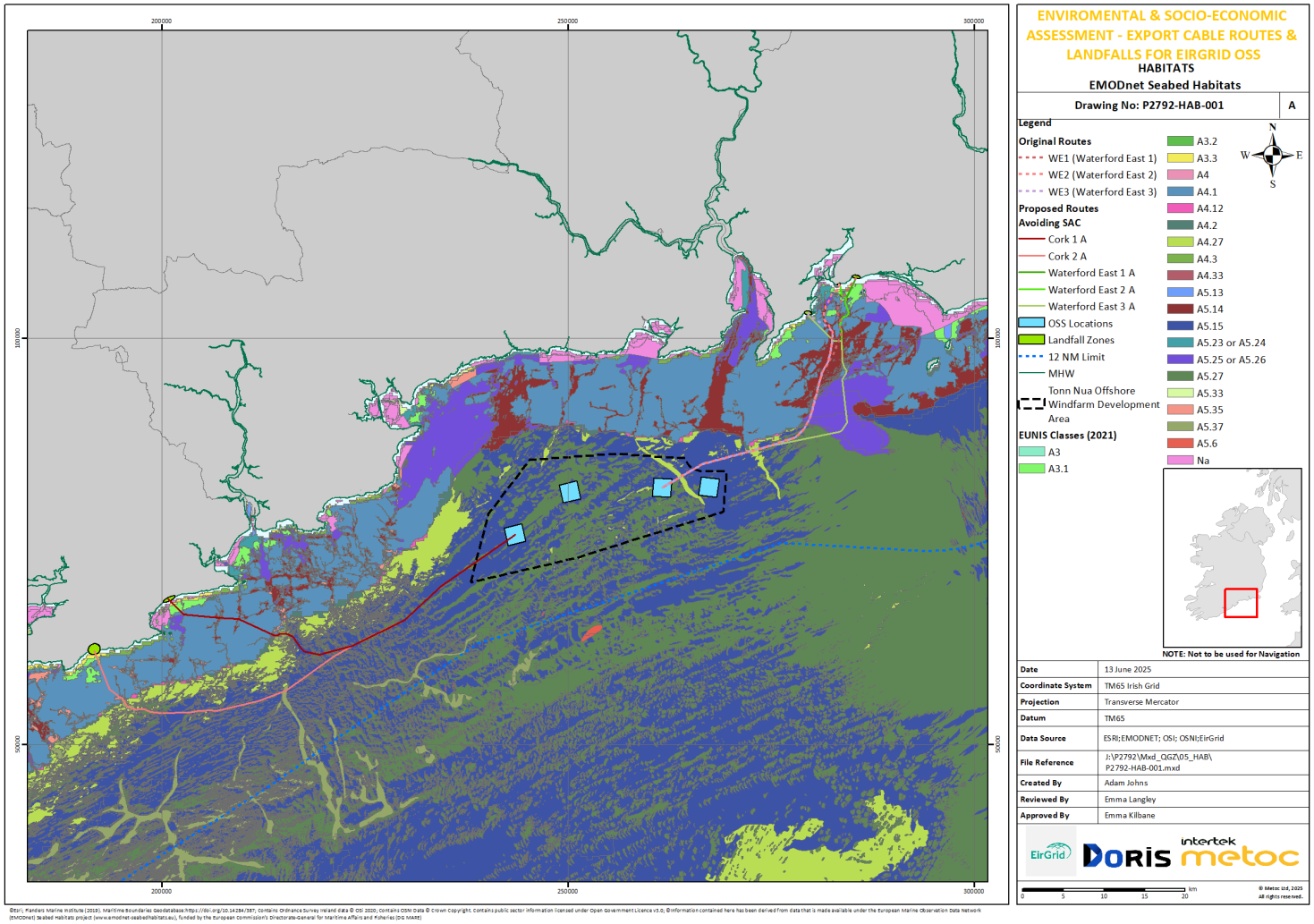
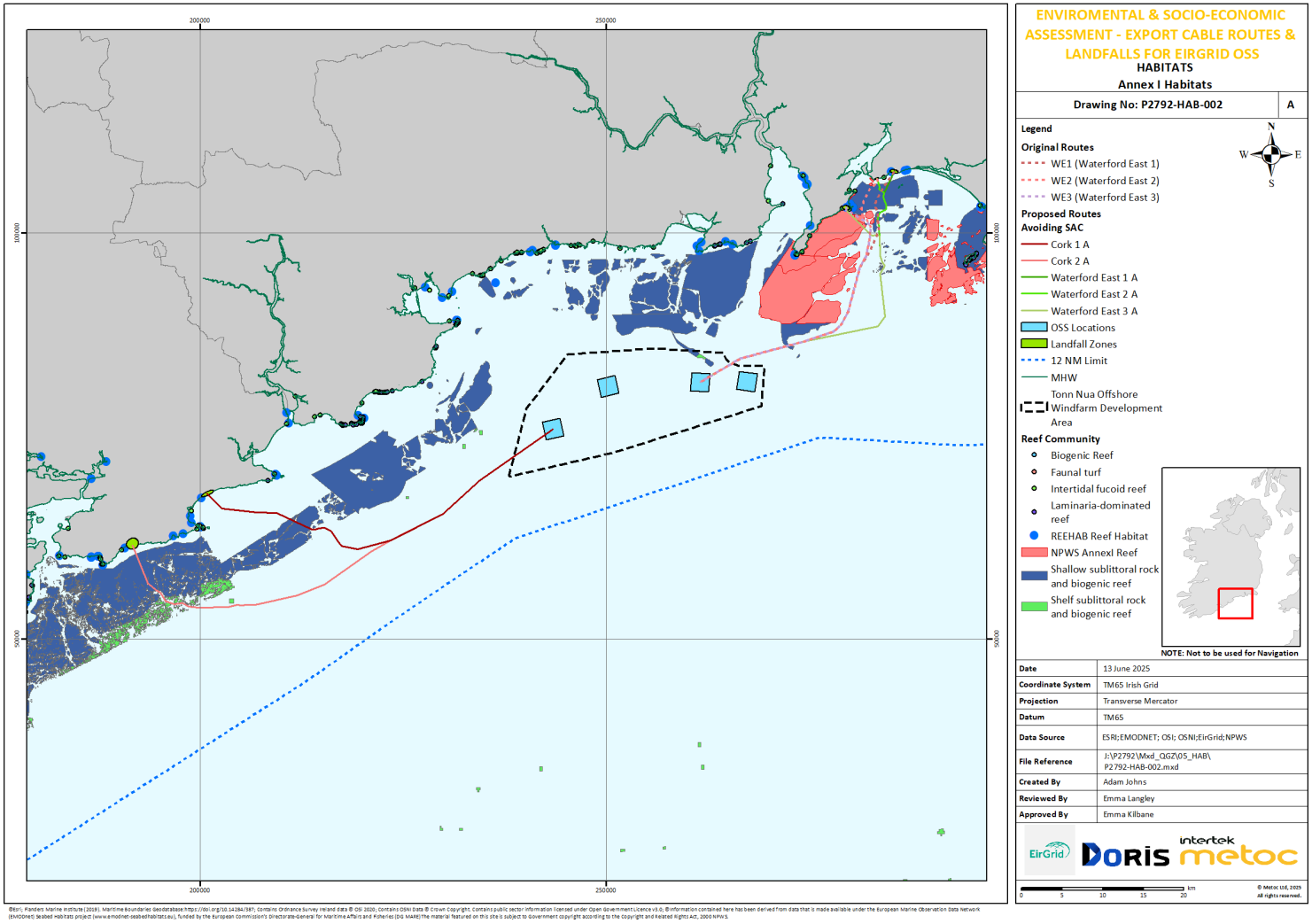


Figure 3-3 Annex I Habitats (Drawing Reference: P2792-HAB-002)



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3.4 Fish and Shellfish

The Irish sea is known to support a variety of demersal fish species, including sandeels, blennies, gobies, wrasses, and a wide range of flatfish. As well as this, pelagic species such as herring, mackerel, sprat, European anchovy, European sardine and garfish also inhabit the area (DCCAE, 2015). These species utilise the area for important life history periods such as spawning and nursing.

Locations where commercially significant fish species are known to deposit eggs for fertilisation are known as spawning areas, grounds and beds. Alternatively, marine nursery areas are defined as habitats that support the survival of juvenile commercially important fish species. These environments play a vital role in both species reproduction and the study of their geographical distribution.

There is no differentiation between the OSS locations and all OSS sites overlap the spawning and nursery ground for seven fish species (Figure 3-4, Drawing Reference: P2792-FISH-005 and Figure 3-5, Drawing Reference: P2792-FISH-006). This includes the spawning ground for cod (*Gadus morhua*), and nursery ground for cod, European hake (*Merluccius merluccius*), ling (*Molva molva*), mackerel (*Scomber scombrus*), anglerfish (*Lophius piscatorius*), blue whiting (*Micromesistius poutassou*), and whiting (*Merlangius merlangus*). Table 3-2 provides a summary of the spawning and nursery periods for these fish species.

Table 3-2 Summary of Spawning and Nursery Periods for Commercially Important Fish Species

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cod (*Gadus morhua*)	S	S*	S*	S								
European hake (*Merluccius merluccius*)	-	-	-	-	-	-	-	-	-	-	-	-
Ling (*Molva molva*)	-	-	-	-	-	-	-	-	-	-	-	-
Mackerel (*Scomber scombrus*)					S	S	S	S				
Anglerfish (*Lophius piscatorius*)	N	N	N	N	N	N	N	N				
Blue whiting (*Micromesistius poutassou*)				S*	S*	S						
Whiting (*Merlangius merlangus*)		SN	SN	SN	SN	SN	N	N				
Haddock (*Melanogrammus aeglefinus*)		S*	S*	S*	S							
Nephrops (*Nephrops norvegicus*)	S	S	S	S*	S*	S*	S	S	S	S	S	S
Herring (*Clupea harengus*)	-	-	-	-	-	-	-	-	-	-	-	-
Sprat (*Sprattus sprattus*)					S*	S*	S	S				

S = Spawning, N = Nursery, SN = Spawning and Nursery, Blank = No Data, *peak spawning, - =unavailable.

Source: Coull *et al*. 1998

Of particular importance, herring (*Clupea harengus*) spawning activity has been recorded along a majority of the southern Irish coastline. Specifically, the Tramore herring spawning ground is located in closest proximity to the OSS sites. Spawning activity in this location is believed to occur in October (O'Sullivan *et al.,* 2013).

The distance between each OSS and this spawning ground is detailed in Table 3-3.

Table 3-3 Distance of Each OSS to the Tramore Spawning Ground

OSS	Distance (km)
OSS1	12.72
OSS2	5.01
OSS3	4.38
OSS4	2.86

Figure 3-4 Fish Spawning and Nursery Areas (Sheet 1 of 2) (Drawing Reference: P2792-FISH-005)

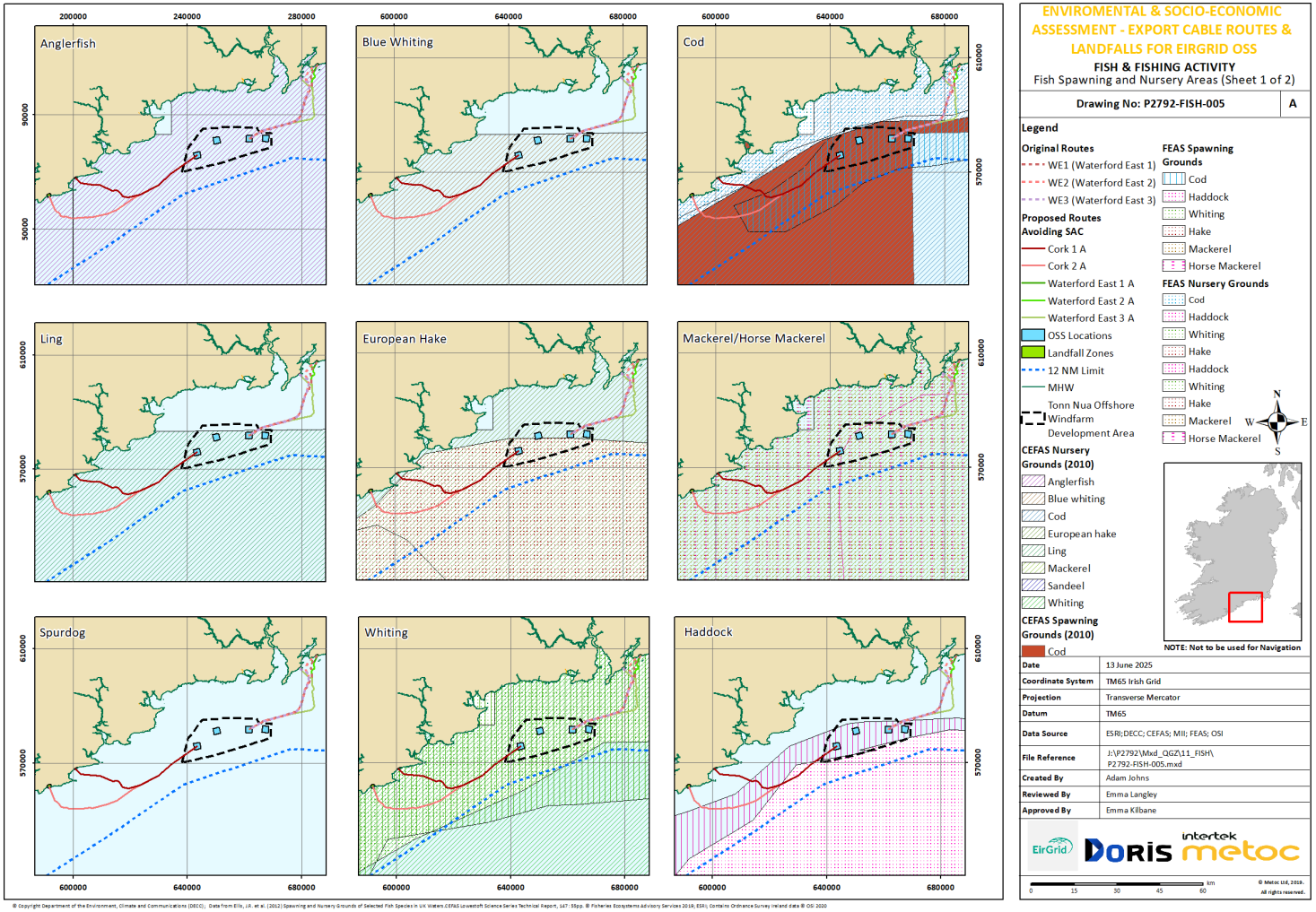

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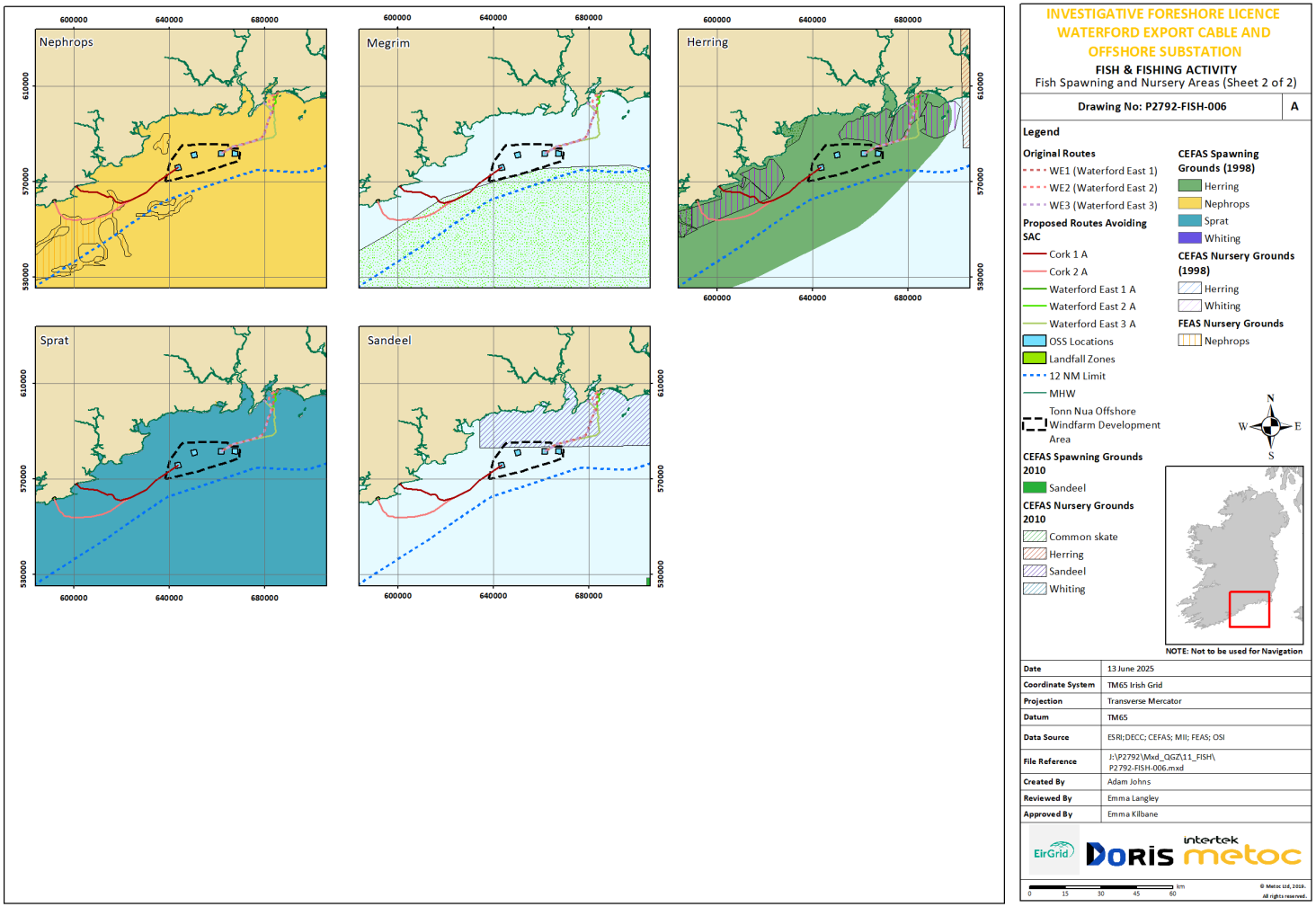
Figure 3-5 Fish Spawning and Nursery Areas (Sheet 2 of 2) (Drawing Reference: P2792-FISH-006)



3.4.1 Shellfish

The Norway lobster, also known as the Dublin Bay Prawn (*Nephrops norvegicus*), is frequently found along the Irish coastline, inhabiting distinct sandy and muddy areas where this habitat allows them to create burrows (Doyle *et al.,* 2014). Brown crabs are widespread across the north and west Irish continental shelf, as well as in the rocky region of the Irish and Celtic seas. Fisheries data from the Marine Management Organisation and the Scientific, Technical, and Economic Committee for Fisheries (STECF) indicate that the Irish Sea plays a significant role in supporting populations of lobster, *Nephrops*, shrimp, crabs, scallops, razor clams, and whelks (STECF, 2018; Elliott and Holden, 2018).

There are no aquaculture or designated shellfish water sites overlapping the OSS locations. As such these receptors have not been considered further.

3.5 Local and Migratory Bird Populations

The west coast of Ireland serves as an important area for nationally and internationally significant bird species, with the coastal cliffs, estuaries and offshore islands in the region providing essential breeding and foraging grounds for a diverse range of seabirds.

Aerial surveys completed by Rogan *et al.* (2018) across summer and winter in 2015 and 2017 identified a total of 24 seabird species utilising the Irish coastline. Some species were sighted infrequently, including great skua (*Stercorarius skua*), black guillemot (*Cepphus grille*) and scoter (*Melanitta* spp.), whilst Auk species (comprising razorbill, *Alca torda*, common guillemot, *Uria aalge*, guillemots, and Atlantic puffin, *Fratercula arctica*), northern fulmar (*Fulmarus glacialis*), northern gannet (*Morus bassanus*), and black-legged kittiwake (*Rissa tridactyla*) were frequently sights and observed in high abundance across all surveys. Seasonal variation in the species sighted was also observed with Shearwaters, terns, and petrel species most commonly observed during summer surveys, and scoters, divers, and gull species common in winter.

Important bird populations are protected within designated Special Protection Areas (SPAs). There are no SPAs overlapping the OSS locations. The closest site is the Seas off Wexford SPA located 2.68km northeast of OSS4. As detailed in Section 3.2, it is not possible to differentiate whether the species protected within this site are more likely to be present within any one OSS location due to the proximity of all OSS sites.

3.6 Marine Megafauna

Marine megafauna present offshore of the western Irish coastline are likely to consist of cetaceans (whales, dolphins, and porpoises), pinnipeds (seals) and elasmobranchs (sharks, skates, rays, basking shark). All cetaceans are European Protected Species (EPS) and are protected under Annex IV of the EC Habitats Directive (Directive 92/43/EEC). It is an offence under the Habitats Regulations to deliberately capture, kill, injure, or disturb animals classed as EPS. Harbour porpoise, bottlenose dolphin, grey seal and common/harbour seal are listed under Annex II of the Habitats Directive, which lists species of community interest and whose protection required the designation of SAC's. There are no SACs overlapping the OSS locations. The closest site is the Hook Head SAC located 5.74km northeast of OSS4. As detailed in Section 3.2, it is not possible to differentiate whether the species protected within this site are more likely to be present within any one OSS location due to the proximity of all OSS sites.

3.6.1 Cetaceans

Of the 25 species of cetacean recorded in Irish waters, approximately seven of these have been recorded off the south coast of Ireland and may be present in the area at least on a seasonal basis. These species are listed in Table 3-4. The most commonly sighted species are short-beaked common dolphin (*Delphinus delphis*), common bottlenose dolphin (*Tursiops truncates*), harbour porpoise

(*Phocoena phocoena*), and fin whale (*Balaenoptera physalus*), with other species rare, or occasional visitors. It is unlikely that deep water species such as the sperm whale (*Physeter macrocephalus*) and long-fined pilot whale (*Globicephala melas)* will be present (Reid *et al.* 2003).

The Irish Whale and Dolphin Group (IWDG) website (IWDG, 2025) was used to determine the number of marine mammal sightings within Waterford using the interactive mapper. There are relatively low observations reported, with a total of 164 sighting records submitted to the IWDG between the period 10th June 2024 and 10th June 2025 (Table 3-4). The most frequently observed species in the Waterford area is common dolphin, with a total observed during this period being 1,509 individuals.

Most cetaceans are wide-ranging, and individuals encountered within the Celtic Sea form part of much larger biological populations whose range extend into adjacent jurisdictions. As a result, management units (MUs) have been outlined for seven of the common regularly occurring species. These provide an indication of the spatial scales at which impacts of anthropogenic activities should be taken into consideration.

Table 3-4 Sightings for Commonly Occurring Cetaceans within the Waterford Area

Species	Frequency of sightings*	IWDG sightings (approx.) (June 2024 – June 2025)**	Estimation of density within MU (animals/km^2) ***	Applicable MU****	Abundance of animals in MU****
Basking shark	Sightings are frequent during spring and early summer, with peak activity typically occurring between Aprila and July	97	N/A	N/A	N/A
Bottlenose dolphin	Common year round but most frequent in summer.	59	0.033 – 0.087	Offshore Channel and South West England	10,947
Common dolphin	Peak period is spring and summer and winter peak on the south coast associated with prey items.	1,509	0.038 – 0.115	Celtic & Greater North Seas	102,656
Fin whale	Unclear, contradictory evidence with sightings during summer months, and acoustic monitoring data suggest a peak in November – December.	70	No data available	N/A	No data available
Harbour porpoise	Common from June through the autumn/winte r. Peak period in August.	27	0.094 – 0.157	Celtic and Irish Seas	62,517
Humpback whale	Occasional sightings in	4	No data available	N/A	No data available

Species	Frequency of sightings*	IWDG sightings (approx.) (June 2024 – June 2025)**	Estimation of density within MU (animals/km^2) ***	Applicable MU****	Abundance of animals in MU****
	Irish Sea waters.				
Minke whale	Peak period July and August	3	0.009 – 0.018	Celtic & Greater North Seas	20,118

Sources: * Marine Institute (2020), Reid et al. (2003) ** IWDG (2021); *** Calculated by dividing animal abundance in MU**** by MU area; and **** JNCC 2022.

3.6.2 Pinnipeds

Two species of seal are known to inhabit Irish waters, the harbour (or common) seal (*Phoca vitulina*) and the grey seal (*Halichoerus grypus*). Grey seal typically breeds on remote uninhabited islands or coasts and in small numbers in caves between September and December, with moulting occurring approximately 3-5 months after the breeding season. Harbour seal often haul out onto tidally exposed sandbanks to rest, moult and suckle their young. Pupping tends to occur between June and July, followed by moulting for 4-5 weeks following this.

The estimated at sea distribution of grey and harbour seal has been mapped in a study by Russel *et al*. (2017) and is shown in Figures 3-6 and 3-7. As the figures illustrate, the estimated mean at sea grey seal and harbour seal usage within the area of the OSS sites ranges between 0<5 individuals per 5km^2. There are no designated seal haul out sites for either species overlapping the OSS locations. The closest haul out site, known to be utilised by grey seals, is located 22.5km from the OSS locations at the closest point (OSS4). Given that hauled out seals have a typical disturbance range of 900m and are known to predominantly forage within 5-10 km of their haul out sites (Brassuer and Reijnders, 1994), their presence is unlikely in the vicinity of the OSS sites. As such, pinnipeds are not assessed further.

Figure 3-6 Grey Seal At-sea Usage: Mean

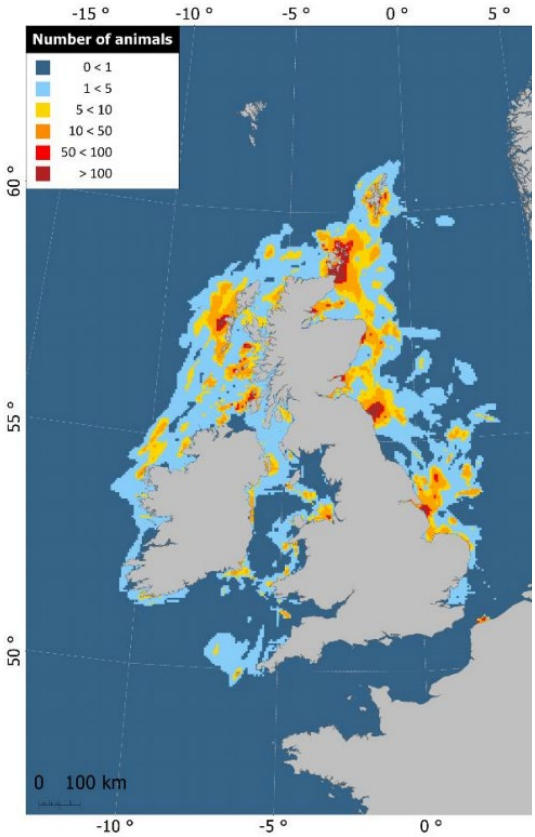
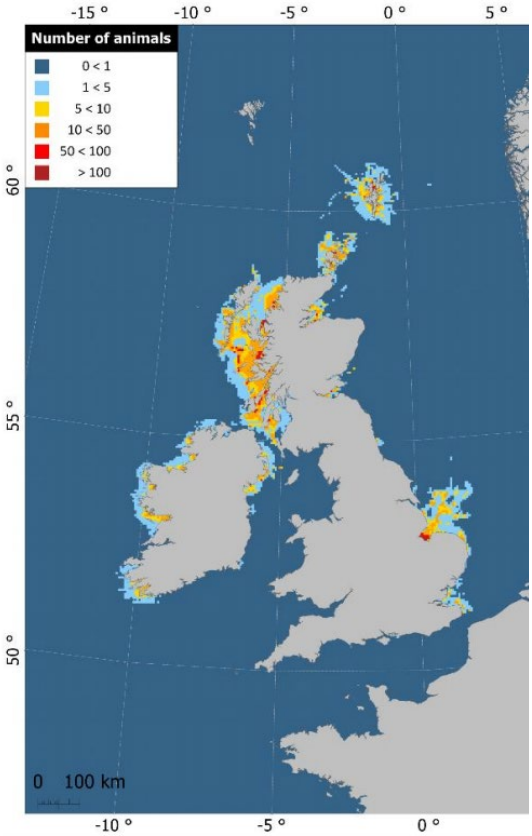


Figure 3-7 Harbour Seal At-sea Usage: Mean



Source: Russel *et al.* 2017

3.6.3 Elasmobranchs

Due to the slow growth rates, late maturity and low fecundity of elasmobranchs, they are considered one of the most vulnerable marine fish to anthropogenic impacts. All sharks and rays are on the Oslo and Paris Conventions (OSPAR) List of Threatened and/or Declining Species and Habitats (Agreement 2008-06) (OSPAR, 2008).

Reports from the Irish Bottom Trawl Survey (IBTS) indicate that in Irish waters the spotted dogfish (*Scyliorhinus canicular*), cuckoo ray, (*Leucoraja naevus*), spurdog (*Squalus acanthias*), angel shark (*Squatina squatina*), tope (*Galeorhinus galeus*), smooth hound (*Mustelus mustelus*), thornback ray (*Raja clavate*), spotted ray (*Raja montagui*) and nurse hound (*Scyliorhinus stellaris*) have all been observed (ICES, 2018). A report by Clarke *et al.* (2016) indicates that basking shark are observed regularly along the Irish south coast with no differential in the density of the species across the four OSS sites.

4. SOCIO-ECONOMIC BASELINE

4.1 Introduction

This section presents the current socio-economic baseline, and provides a clear understanding of the existing human and economic activities within the OSS locations. The baseline has been developed using a range of publicly available datasets, studies, and stakeholder information, all of which are cited appropriately within the text.

The following socio-economic receptors have been considered:

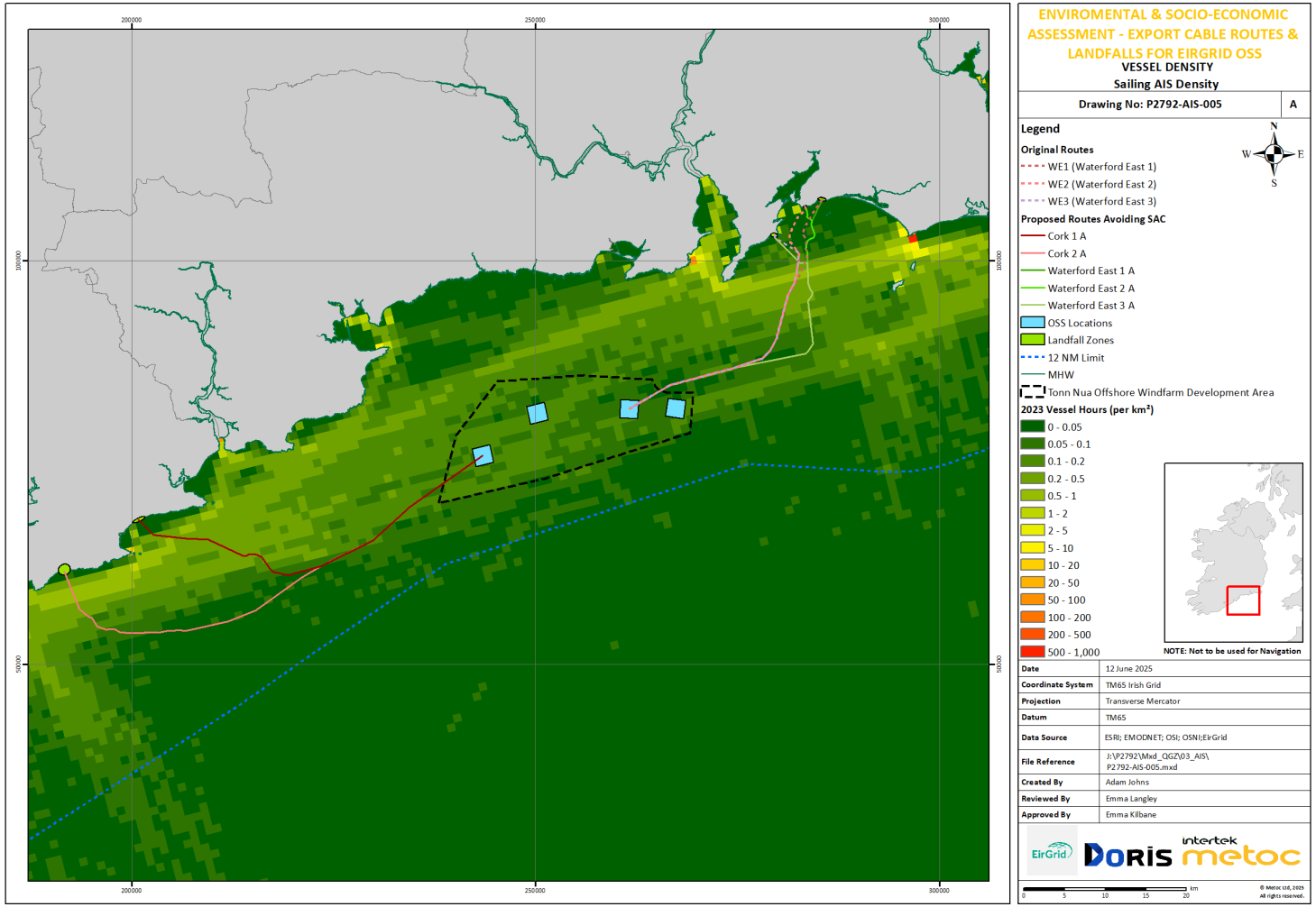
- Recreation and Tourism
- Commercial Fisheries
- Landscape and Seascape
- Marine Cultural Heritage
- Shipping and Navigation
- Other Infrastructure

4.2 Recreation and Tourism

There are numerous blue flag beaches located along the southern Coast of Ireland (BeachAwards, 2025). Due to the offshore location of the OSS sites, no impacts to blue flag beaches are anticipated and as such they are not discussed any further.

Common recreational activities in the offshore environment include kayaking and sailing. These activities are predominantly concentrated around coastal areas, particularly in the entrance to the Waterford Estuary and around Bannow Bay. As presented in Figure 4-1 (Drawing Reference: P2792-AID-005), sailing density is up to 0.2 vessel hours per km^2 at all OSS sites. The Dungarvan Sailing Club and Ardmore Adventures also operate sailing and sea-kayaking tours out of Dungarvan Harbour. Due to the offshore location of the OSS sites, no impacts to recreational activities are anticipated.

Figure 4-1 AIS shipping Vessel Density (Drawing Reference: P2792-AIS-005)



4.3 Commercial Fisheries

The seas off the Irish coastline support some of the most commercially important fisheries in EU waters, particularly for species such as mackerel, *Nephrops*, and hake. Annually landings from Irish waters (ICES Sub-areas VI and VII) are in excess of 1.2 million tonnes, reflecting the region's vital role in sustaining both national and EU fishing fleets (Marine Institute 2022).

Of the active fisheries in Ireland, the most important are demersal and shellfish fisheries. Demersal fisheries target species including: cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), ling (*Molva molva*), monkfish species (*Lophius*), plaice (*Pleuronectes platessa*), ray and skate (*Elasmobranchii*) and sole (*Solea solea*); whilst shellfish fisheries target species such as lobster (*Nephropidae*); crayfish (*Palinuridae*); spider (*Macrocheira kaempferi*), brown (*Cancer pagurus*), green (*Carcinus maenasI*) and velvet (*Necora puber*) crabs; scallops (*Pectinidae*); surf clams (*Spisula solidissima*) and razor clams (*Siliqua patula*); periwinkles (*Littorina littorea*); and whelks (*Buccinidae*) (DCCAE 2015). The largest fishing port to the OSS sites is Dunmore East (approximately 20km from OSS4). In 2023, this port reported a total annual landing of 6,566 tonnes, with a worth of €17,835,878 (SFPA, 2025).

An Bord Iascaigh Mhara (BIM) publishes the Annual Fisheries Report, with the most recent edition providing an overview of Ireland's fishing sector between 2020 and 2022 (Perry, Jackson and Rihan, 2022). Within this period, the Irish fleet consisted of approximately 1,391 vessels, representing 60,328 gross tonnes (GT) and 183,958 kilowatts (kW) in engine power – an 8% reduction since 2019. A majority of the vessels within this fleet were small scale coastal vessels under 12m in length and predominantly operating in inshore waters (Perry, Jackson and Rihan, 2022).

As presented in Figure 4-2 (Drawing Reference: P2792-AIS-004), fishing vessel density in the OSS locations is low to moderate, peaking at 1 vessel hour per km^2 in the southern section of the OSS1 site.

Various types of fishing activity occur in the vicinity of the OSS sites including beam trawls, bottom otter trawls, dredges, gill nets, long lines, pelagic trawls, pots and seines. Figures 4-3 to 4-7 (Drawing Reference: P2792-FISH-001 to P2792-FISH-004, and P2792-FISH-008) present the effort of each activity occurring in the vicinity the OSS sites. It is noted that the data sources in Figures 4-4, 4-6 and 4-7 differ and as such the recorded presence of dredging and potting fisheries is not consistent. To provide a thorough assessment both data sources are considered.

No significant differential in the effort levels of beam trawls, gill nets, long lines, and pelagic trawls is identified across the four OSS stations. Though it is noted that OSS4 is situated near an area of high pelagic trawl activity. The highest levels of dredging effort are also recorded at OSS4. Potting activity is recorded across the OSS sites but more exclusively in the vicinity of OSS3 and the highest effort levels associated with seines and bottom otter trawling is recorded at the OSS1 site.

Figure 4-2 VMS Fishing Vessel Density (Drawing Reference: P2792-AIS-004)

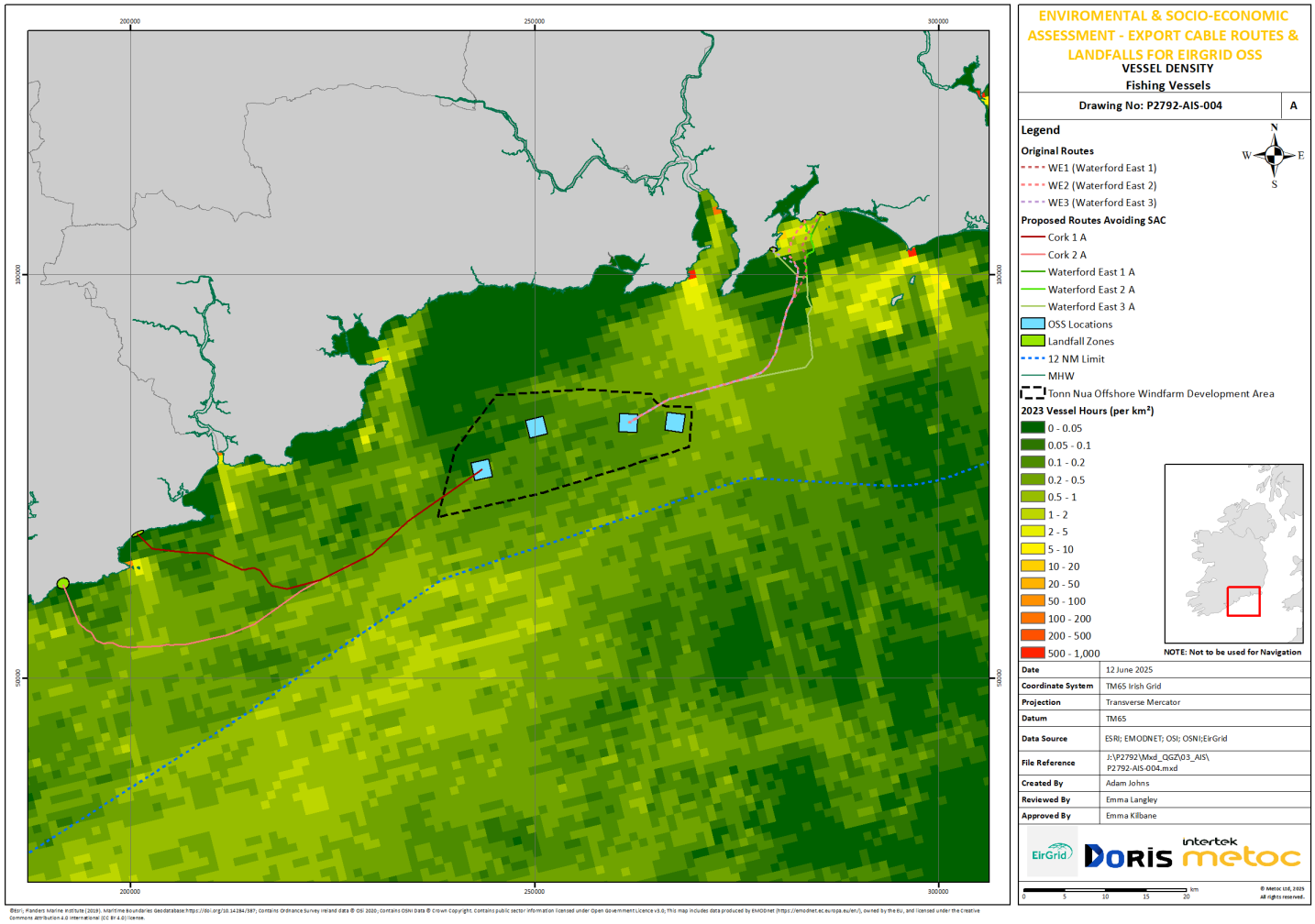


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Figure 4-3 Fishing Effort by Gear Type Sheet 1 of 4 (Drawing Reference: P2792-FISH-001)

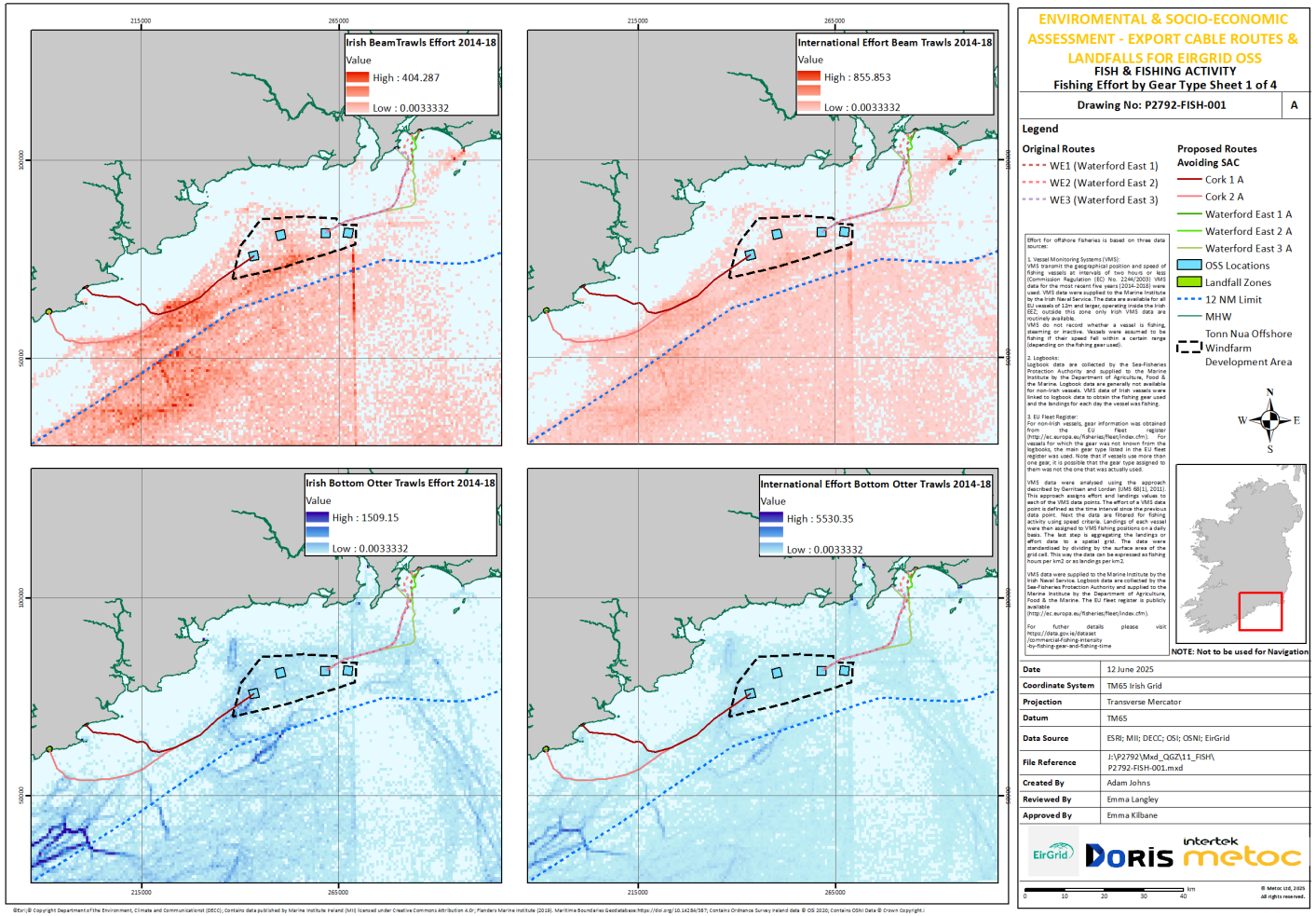

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Figure 4-4 Fishing Effort by Gear Type Sheet 2 of 4 (Drawing Reference: P2792-FISH-002)

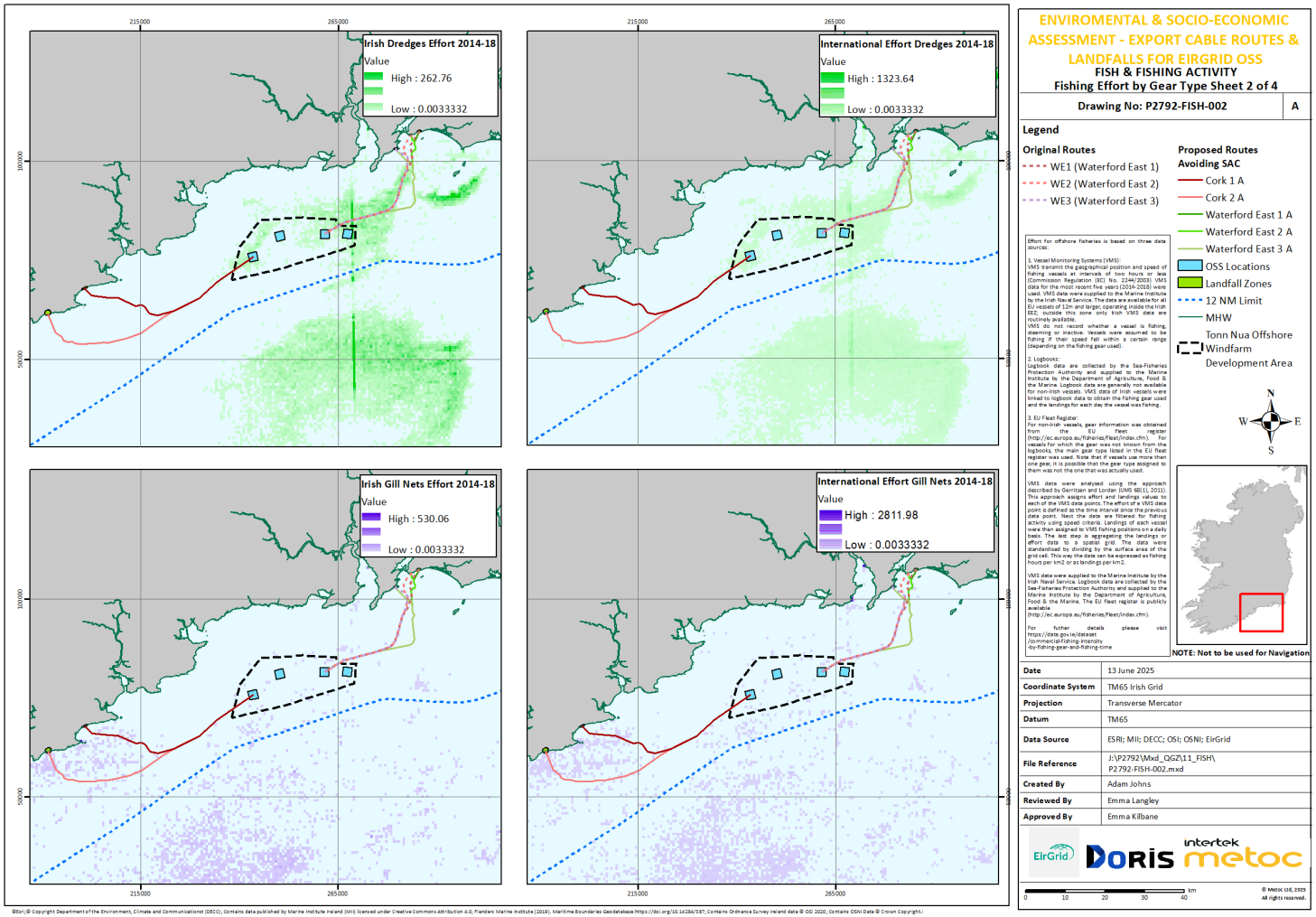

Figure 4-5 Fishing Effort by Gear Type Sheet 3 of 4 (Drawing Reference: P2792-FISH-003)

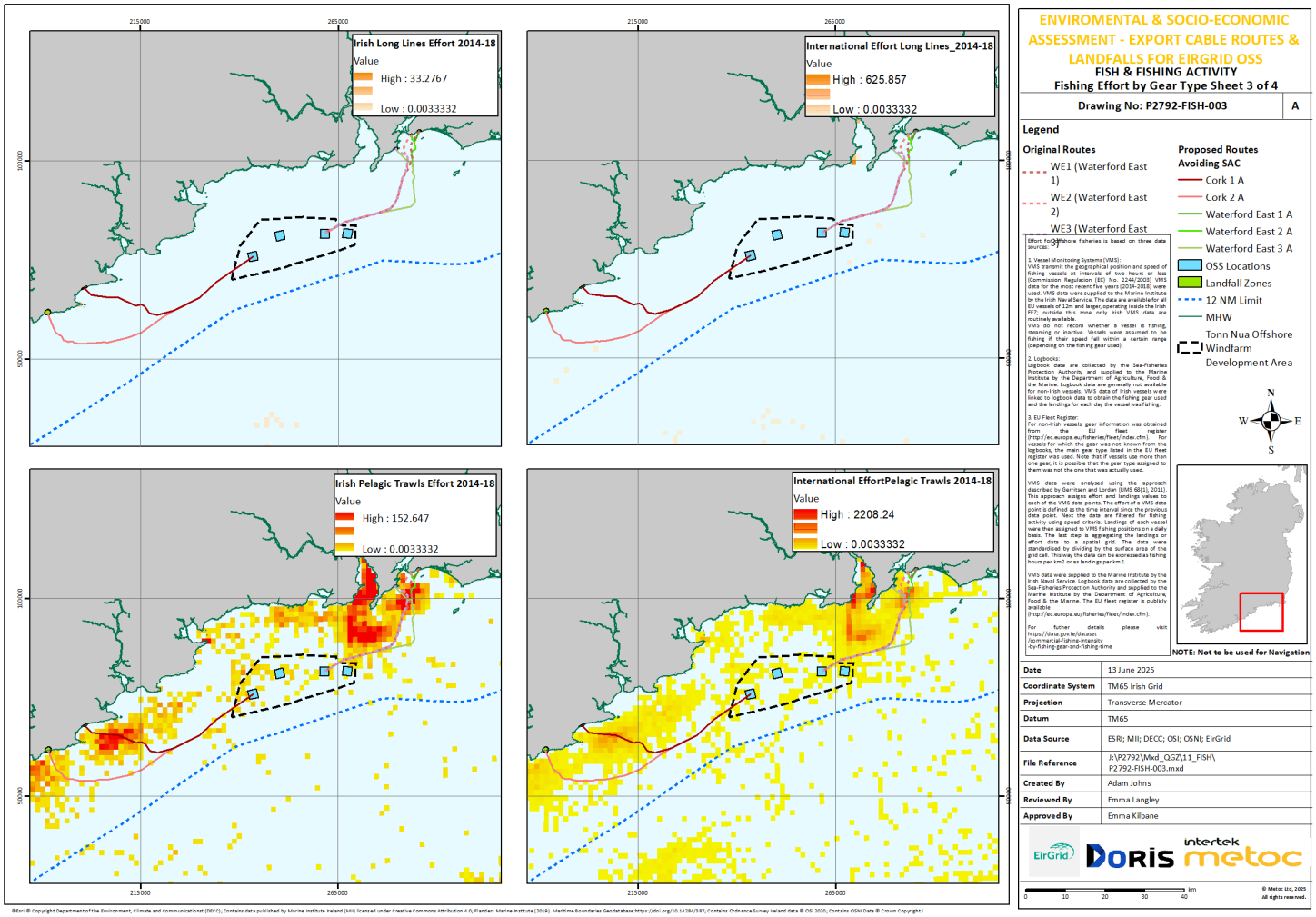

Figure 4-6 Fishing Effort by Gear Type Sheet 4 of 4 (Drawing Reference: P2792-FISH-004)

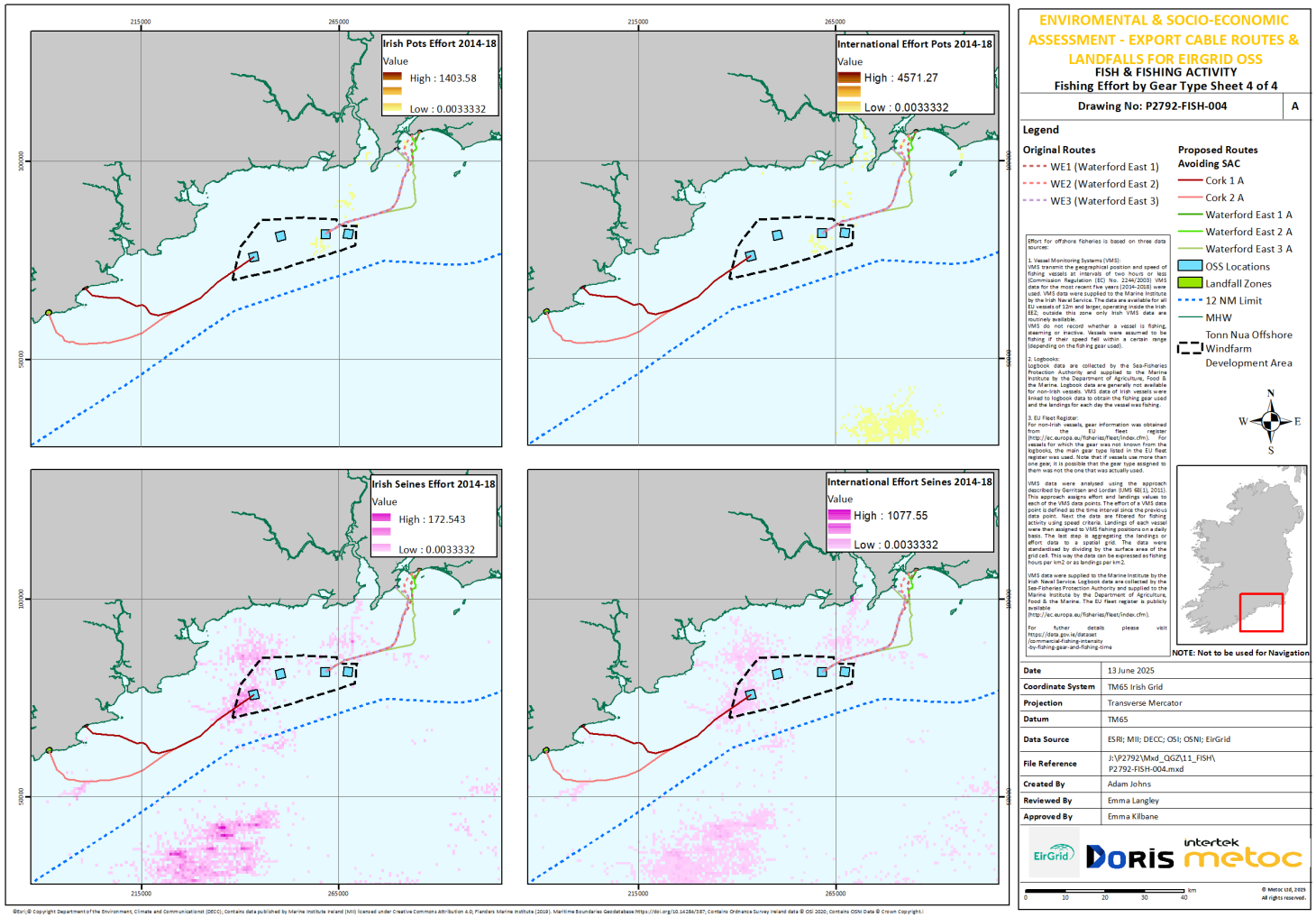

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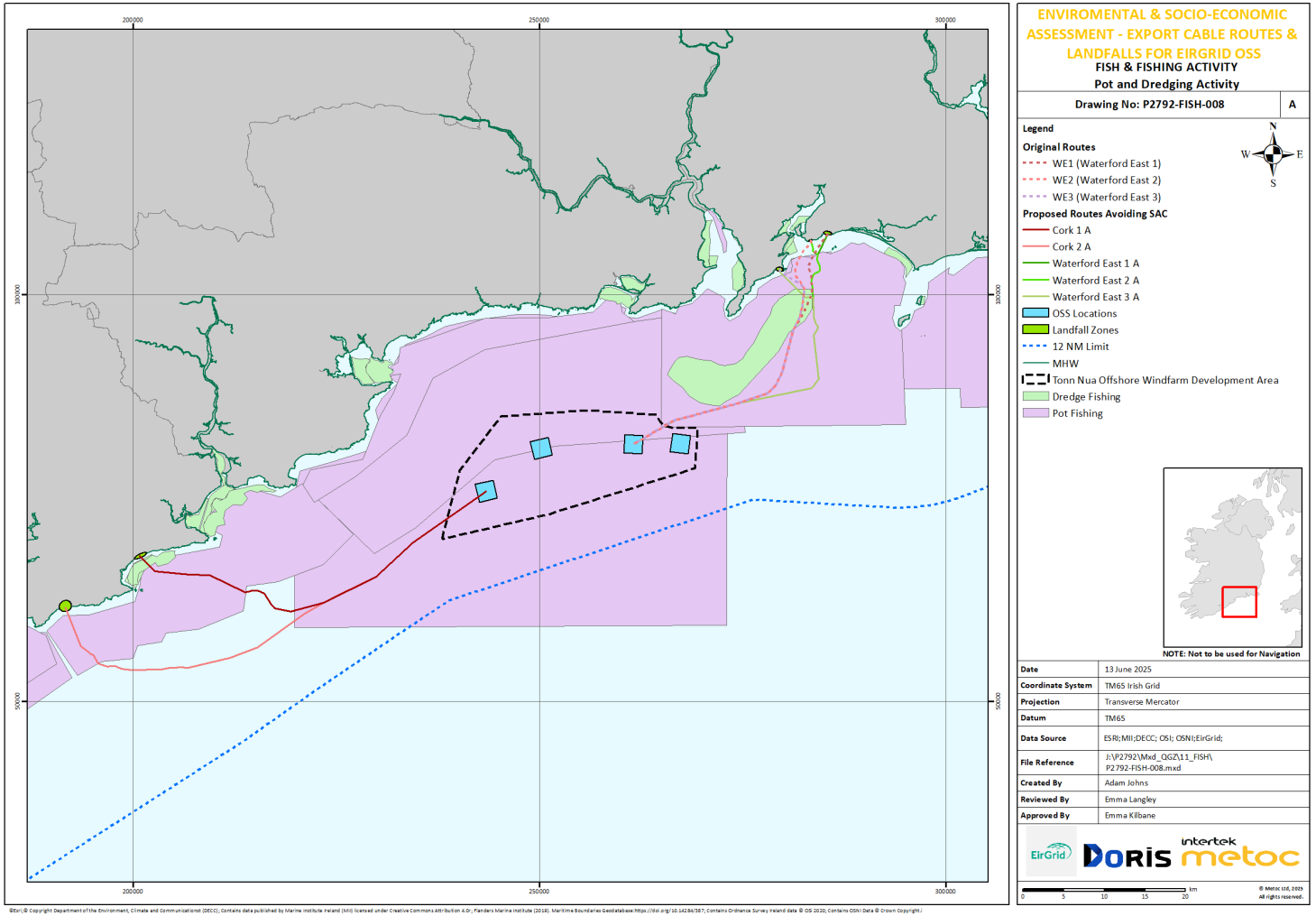
Figure 4-7 Potting and Dredging Activity (Drawing Reference: P2792-FISH-008)



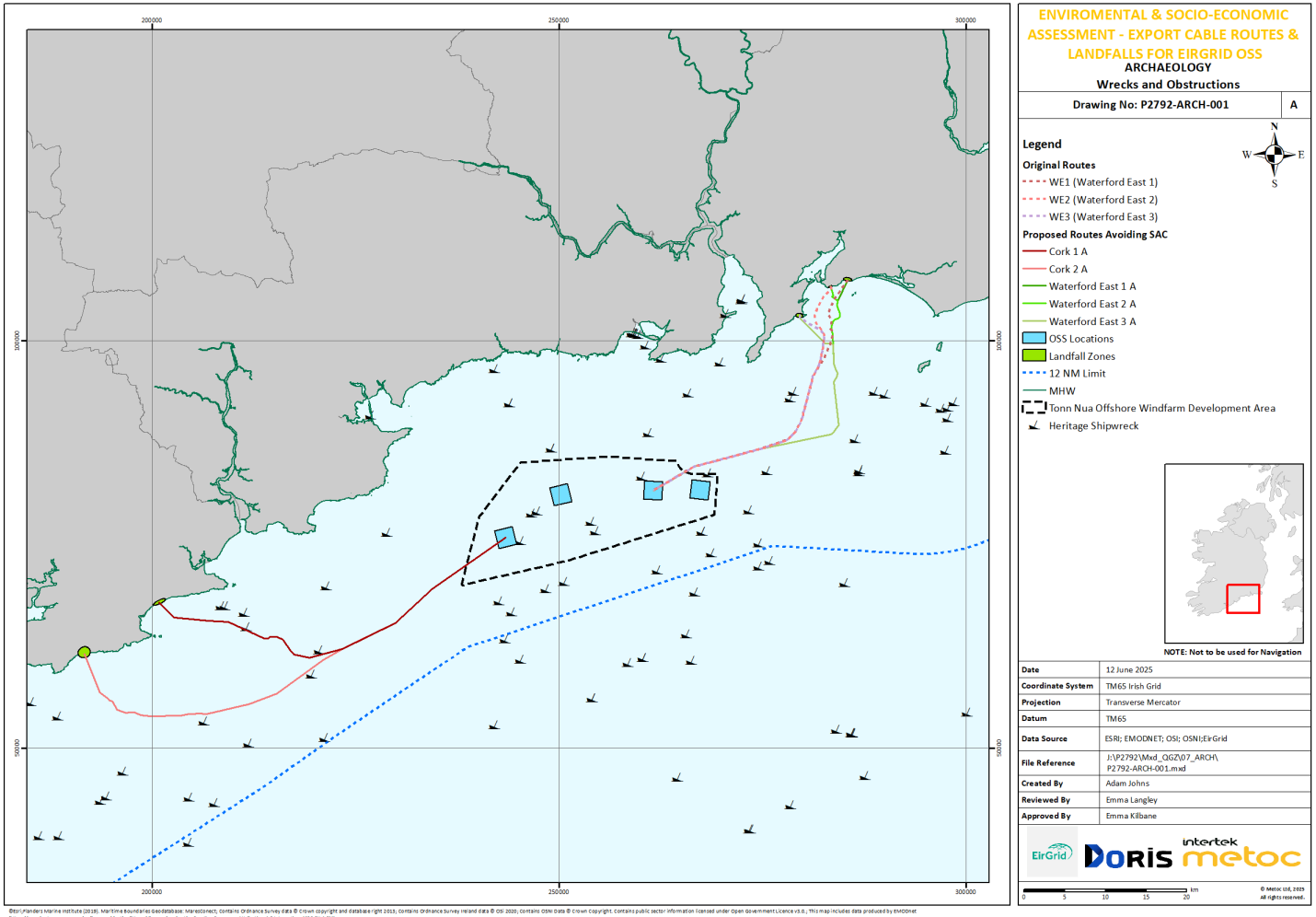
4.4 Landscape and Seascape

The OSS sites are located within the Celtic Sea Bays and Beaches region (SCA12). The coastline of this region comprises the seascape character type SCT7 'Broad estuarine bays and complex low plateau and cliff coastline' (Marine Institute, 2020). As the OSS options are all located within the SC- DMAP and are a similar distance offshore, no distinguishing factors for this topic are identified for the different OSS options.

4.5 Marine Cultural Heritage

There are numerous wrecks located off the southern coast of Ireland. Whilst the OSS sites do not overlap with any known wrecks, as presented in Figure 4-8 (Drawing Reference: P2792-ARCH-001) there are numerous wrecks in the vicinity of the OSS sites. Most notably is an unknown wreck located approximately 580m from OSS1. This wreck location will be verified during the marine geophysical survey and wrecks will avoided when finalising the design.

Figure 4-8 Archaeology Known Wrecks (Drawing Reference: P2792-ARCH-001)



4.6 Shipping and Navigation

4.6.1 Navigational Features

The following points summarise the main navigational features identified in proximity to the OSS sites:

- The nearest commercial port to the OSS sites is the Port of Waterford, located approximately 39km from OSS4, the closest OSS.
- The closest large ferry port is Rosslare, Co. Wexford which is located approximately 54km east of OSS4. This port offers international routes to Wales, France, Belgium and Spain. Ireland's Marine Atlas (http://atlas.marine.ie/) does not display any national ferry routes operating in the area.
- There are a number of fishing ports located close to the OSS sites, the closest of which is Helvick, Co. Waterford located approximately 16.7km from OSS1. There are others Duncannon, Co. Waterford (approx. 25.7km from OSS4km), Dunmore East, Co. Waterford (approx. 20km from OSS4)
- Several fishing ports are situated near the OSS sites, the closest being Helvick, Co. Waterford, approximately 16.7km from OSS1. Other nearby fishing ports include Duncannon, Co. Wexford (approximately 25.7km from OSS4) and Dunmore East, Co. Waterford (approximately 20km from OSS4).
- There are four Royal National Lifeboat Institution (RNLI) Lifeboat stations located in the vicinity of the OSS sites. These are situated at the ports of Dunmore East and Helvick as mentioned above, as well as at Fethard, Co. Wexford and Tramore, Co. Waterford.
- Ireland's Marine Atlas displays the nearest buoy is a navigational buoy licence issued by the Commissioners of Irish Lights (CIL), located approximately 16.7km from OSS1. A metocean buoy, the Conningbeg buoy, is located approximately 26.3km east of OSS4. This buoy is a Type 1 South Cardinal Marker situated off the Wexford coast.
- Admiralty charts do not indicate any anchorage points overlapping the OSS sites.

4.6.2 Marine Traffic Analysis

2023 European Marine Observation Data Network (EMODNet) Vessel density data (all ship types) ranges from 02 – 2 vessel hours per km^2 within the vicinity of the OSS sites, with OSS1 and OSS4 located in higher shipping density areas (Figure 4-9: Drawing Reference: P2792-AIS-001). Vessel density Automatic Identification System (AIS) data is mandatory for vessels larger than 12m in length, therefore, certain smaller vessels (e.g., fishermen and pleasure craft) are not likely to be recorded. Cargo vessel density in the vicinity of the OSS sites is low, with routes centred on the entrance to Waterford estuary leading to the ports of Dunmore East and Waterford. Cargo vessel density is greatest at the OSS4 site with up to 0.5 cargo vessel hours per km^2 (Figure 4-10, Drawing Reference: P2792-AIS-002). The density of tanker vessels at the OSS sites is also low at 0-0.05 vessel hours per km^2 at all sites (Figure 4-11, Drawing Reference: P2792-AIS-003).

Figure 4-9 AIS Vessel Density - Average Monthly Vessel Hours All Vessels (Drawing Reference: P2792-AIS-001)

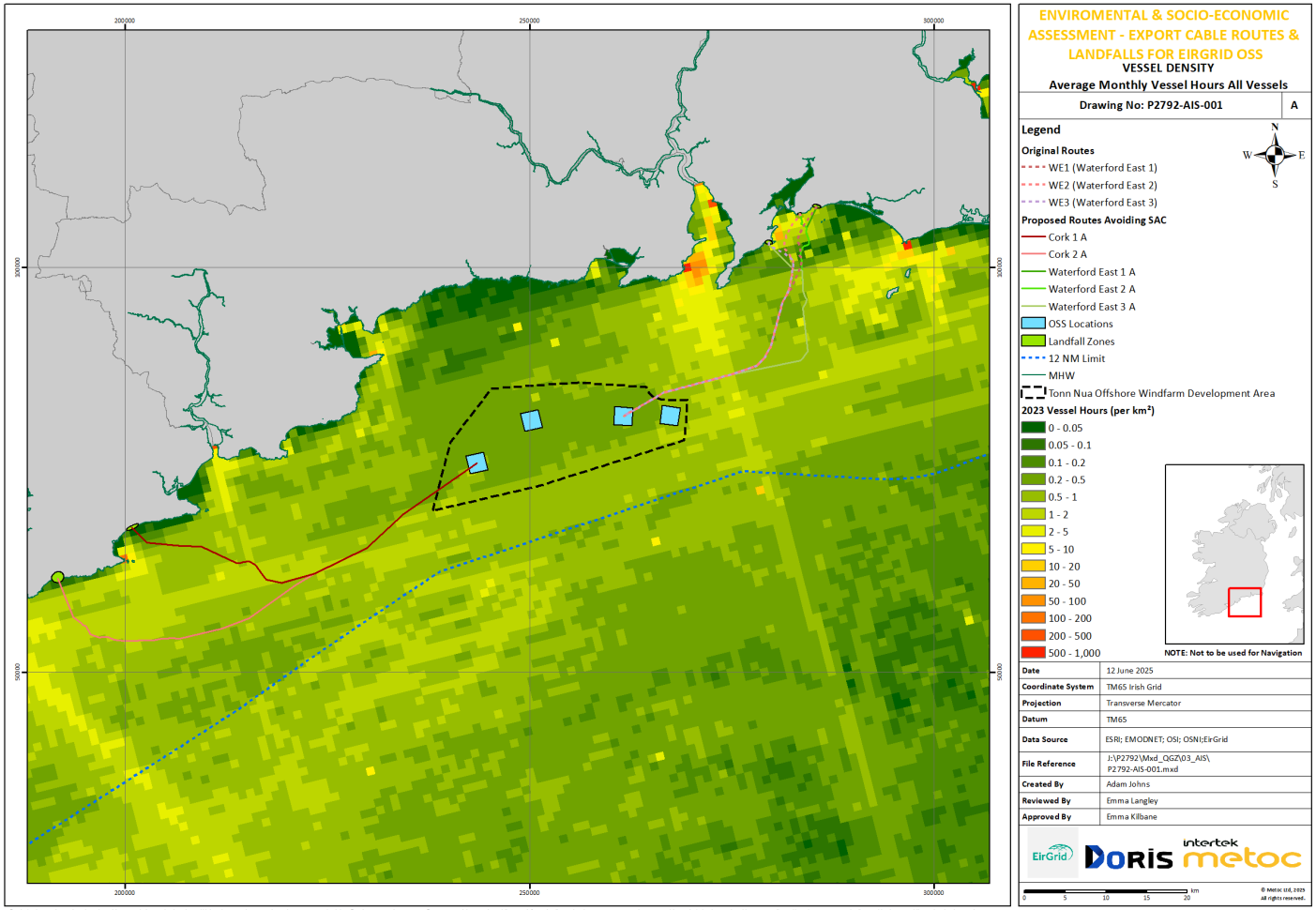


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Figure 4-10 AIS Cargo Vessel Density (Drawing Reference: P2792-AIS-002)

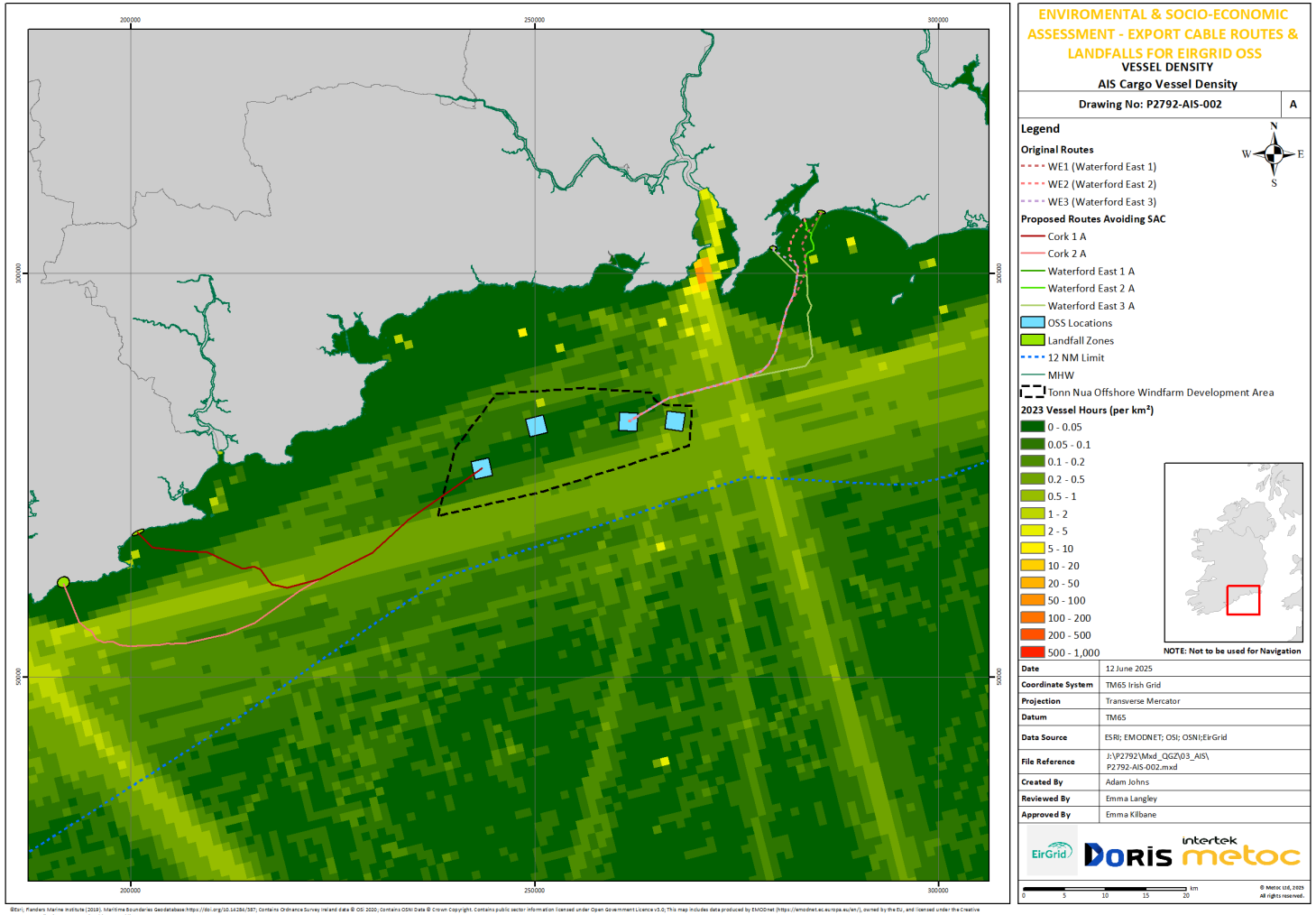

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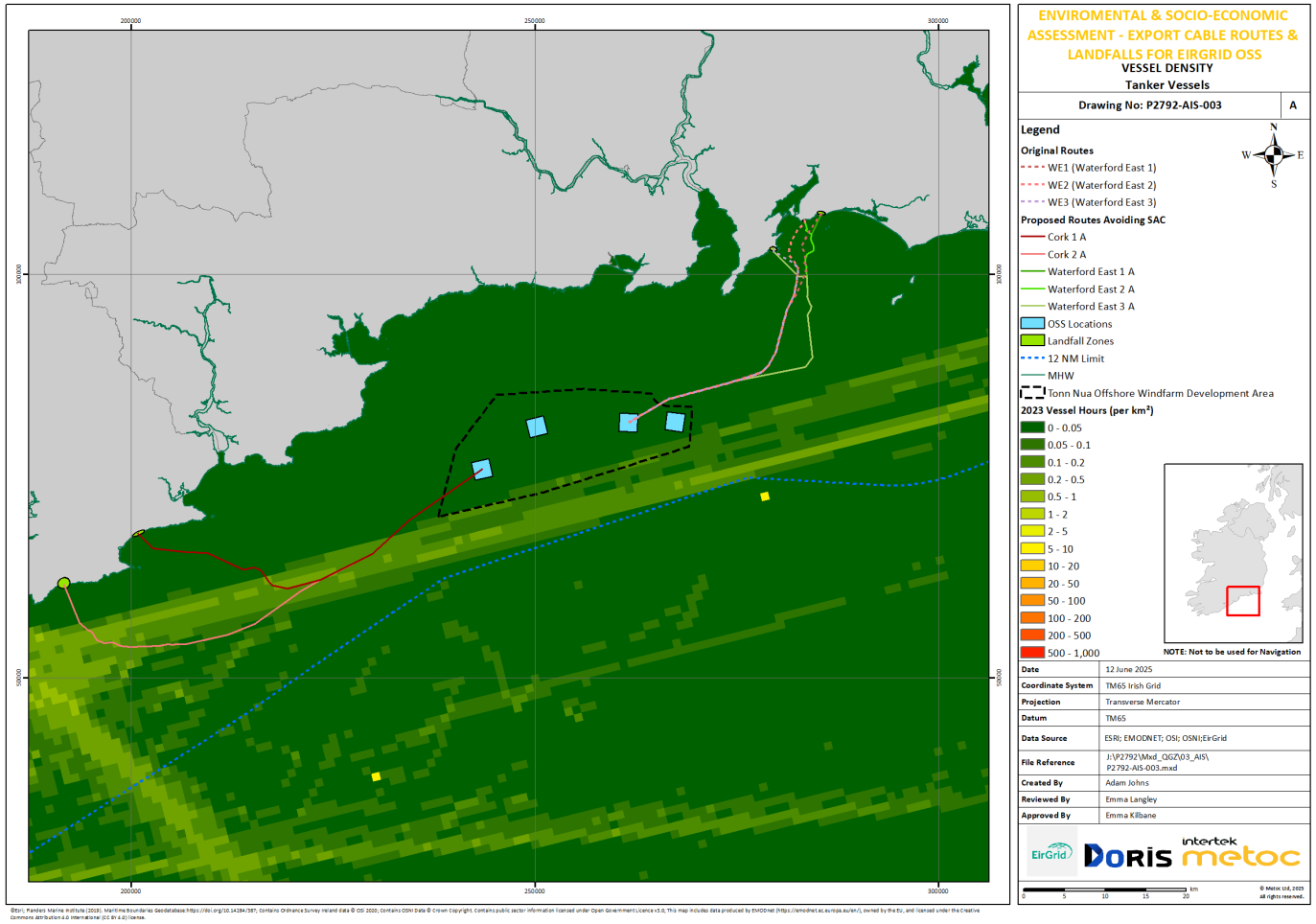
Figure 4-11 AIS Tanker Vessel Density (Drawing Reference: P2792-AIS-003)



4.6.3 Fishing

Vessel monitoring system (VMS) data was plotted to observe spatial fishing effort patterns in this region. As VMS is currently only a requirement for vessels >12m in length, it doesn't represent the fleet patterns for vessels <12m length. As detailed in Section 4.3, fishing vessel density in the OSS locations is low to moderate, peaking at 1 vessel hour per km^2 in the southern section of the OSS1 site.

As outlined in Section 4.3, the OSS sites intersect with several active commercial fisheries. OSS4 is situated within an area of particularly high dredging effort compared to the other OSS sites, OSS3 lies within an area of increased potting fishing, and OSS1 is located in an area of higher seine netting and bottom otter trawling effort.

4.7 Other Infrastructure

There are no cables or pipelines, or any oil and gas activity, or aggregate extraction sites, or military areas within the vicinity of any of the OSS sites. One disposal site, Eastern Celtic Sea, is located approximately 14.2km from OSS4.

There are currently no installed offshore wind farms in the vicinity of the OSS locations. The Tonn Nua DMAP site is designated for fixed bottom turbines and the Offshore Renewable Electricity Support Scheme (ORESS) 2.1 auction is to take place in June 2025. These windfarms will be collocated within Tonn Nua and the purpose of the OSS infrastructure will be to aid the development of these windfarms and therefore will not be conflicting with the OSS sites.

5. MULTI-CRITERIA ASSESSMENT

5.1 Introduction

This section presents the MCA undertaken to assess the potential environmental and socio-economic constraints which are associated with each of the four OSS locations. The desktop study carried out to inform the baseline presented in the previous section has been collated with publicly available data and spatial analysis to allow constraints identification. Each OSS location has been assessed for the key constraints using the risk ranking outlined in Section 2. This assessment supports the identification of preferred OSS locations and highlights potential individual constraints or no differentiators.

5.2 Multi-Criteria Analysis

Tables 5-1 and 5-2 display the identified environmental and socio-economic constraints and the assessment of risk to the proposed OSS based on the Step 3 Powering Up Offshore Risk Ranking.

Table 5-1 Risk Ranking for Environmental Considerations for Potential Offshore Substations

Environmental Criteria	OSS 1	OSS 2	OSS 3	OSS 4
Marine Designated Areas	No overlap with designated sites but OSS1 within vicinity of some protected sites (Hook Head SAC 24.85km and Seas off Wexford SPA 23.68km). Potential for indirect effects; however, these would be manageable with appropriate mitigation.	Similar to OSS1, indirect effects possible but manageable (OSS2 located 16.47km from Hook Head SAC and 15.66km from Seas off Wexford SPA).	Closer proximity but still no direct overlap; mitigation likely sufficient. (OSS3 located 6.99km from Hook Head SAC and 4.69km from Seas off Wexford SPA.).	No direct overlap but highest potential for indirect effects; mitigation and monitoring needed. Closest proximity (5.74km to Hook Head SAC, 2.68km to Seas off Wexford SPA).
Seabed communities and sensitive features	EUNIS A5.27 and A5.15 habitats (Vulnerable and Endangered per EU Red List). No Annex I habitats present. Impacts manageable with mitigation.	Same habitat types as OSS1; management through site-specific mitigation feasible.	Same habitats as OSS1 and OSS2 plus A4.27 faunal communities; more diverse but no unique sensitivity identified; mitigation required.	Same as OSS3 with A4.27 present; similar need for mitigation of benthic impacts.
Fish and shellfish	Overlaps spawning/nursery grounds for multiple species (e.g. cod, hake, whiting). Seasonal restrictions can reduce impact; risk manageable.	Same as OSS1; no differentiation in species presence; managed by seasonal timing.	Same as OSS1/OSS2; nursery/spawning overlap; timing mitigation sufficient.	Same as other OSS locations, though located in closest proximity to the Tramore herring spawning ground (2.86km); no unique additional constraints.
Local and migratory bird populations	Within range of seabird foraging zones; no direct overlap with SPAs. Effects manageable with standard measures.	Same as OSS1; similar distance from SPA; no unique sensitivity.	Closer to SPA but still outside boundaries; no significant differentiation; mitigation feasible.	Closest to SPA but no overlap; potential indirect effects, but managed through standard mitigation.
Marine Mammals	No SAC overlap; occasional presence of marine mammals (cetaceans, seals) possible.	Same as OSS1; similar risk profile; management feasible.	Same as OSS1/OSS2; general presence of marine mammals possible; mitigation adequate.	Slightly closer to SAC; same species present as other locations; mitigation

Environmental Criteria	OSS 1	OSS 2	OSS 3	OSS 4
	Standard exclusion zones and mitigations will be employed.			sufficient. Closest in proximity to seal haul out sites (22.5km) however, disturbance is not likely at haul out sites as seals are disturbed at 900m and their presence is unlikely in the vicinity of the OSS sites.
MCA Ranking (Environmental)	Low-moderate: Environmental risks identified but considered manageable across all receptors with bespoke mitigation and standard measures. No differentiators.	Low-moderate: Same as OSS1; no differentiators.	Low-moderate: Same as OSS1/OSS2; slightly more diverse benthic habitat but no differentiators.	Low-moderate: Same as OSS3; closer proximity to designated areas but not materially higher risk with mitigation applied. No differentiators.

Table 5-2 Risk Ranking for Socio-Economic Considerations for Potential Offshore Substations

Socio-Economic Criteria	OSS 1	OSS 2	OSS 3	OSS 4
Recreation and Tourism	OSS located offshore, well beyond main recreational use zones (e.g. beaches, kayaking, sailing). No impact expected.	Same as OSS1; remote offshore location, no interaction with coastal recreation.	Same as OSS1/OSS2; no proximity to key recreational sites.	Same as others; offshore location limits recreational interactions.
Commercial Fisheries	Located in area supporting commercial fisheries (mackerel, *Nephrops*, hake) and seine netting and bottom otter trawling activity. Landing ports relatively nearby.	Same as OSS1; similar overlap with active fisheries though no notable specific fishery type high effort areas.	Same as OSS1/OSS2; same fisheries activity levels in vicinity though notably in a potting fishery.	Closest to fishing ports (e.g. Dunmore East 20km) but same fisheries present though within an area of higher dredging effort; managed via timing,

Socio-Economic Criteria	OSS 1	OSS 2	OSS 3	OSS 4
	Managed via consultation and spatial planning.			consultation and route planning.
Landscape and Seascape	Offshore location (>20 km from coast), outside visual envelope of key receptors; no significant seascape effect.	Same as OSS1.	Same as OSS1/OSS2.	Slightly closer but still offshore; negligible visual impact given distance.
Marine Cultural Heritage	No known wrecks directly intersect OSS site; closest wreck 580m from OSS1. Avoidance possible through micro-routing.	No known wrecks within or near site; negligible risk.	Same as OSS2; no wrecks directly affected.	Same as OSS3; no wrecks directly affected.
Shipping and Navigation	Located within low vessel density area (0.2–2 vessel hours/km²). Proximity to fishing ports noted but limited interference with major shipping lanes. Nearest navigational buoy located approximately 16.7km. Noted high effort levels of seines and bottom otter trawl fishing vessels. Managed via navigational risk assessment.	Same as OSS1; limited vessel density; located outside key shipping routes. No notable specific fishery type high effort areas.	Same as OSS1/OSS2; no major commercial shipping present. Located within an area utilised by potting fishery vessels.	Slightly higher vessel density due to proximity to Waterford Estuary entrance, but still low overall shipping density. Highest possibility to impact cargo vessels with resultant effects of increased journey time. Conningbeg metocean buoy, is located approximately 26.3km east. High effort levels of dredging fishery vessels noted.
Other Infrastructure	No overlapping existing cables, pipelines, or military zones. No active oil & gas or aggregate areas nearby.	Same as OSS1.	Same as OSS1/OSS2.	Eastern Celtic Sea disposal site located 14.2km away; otherwise, no infrastructure overlap.

Socio-Economic Criteria	OSS 1	OSS 2	OSS 3	OSS 4
MCA Ranking (Socio-Economic)	Low-moderate: Minimal socio-economic constraints identified. All manageable through consultation, micro-routing, and standard planning measures. No differentiators.	Low-moderate: Same as OSS1. No differentiators.	Low-moderate: Same as OSS1/OSS2. No differentiators.	Low-moderate: Same as OSS3; slightly closer to shipping but not materially higher risk. No differentiators.

6. CONCLUSION

The MCA carried out on the environmental and socio-economic constraints for the proposed OSS locations identified a range of potential constraints. All the OSS locations are situated in proximity to sensitive environmental receptors such as protected sites, spawning and nursery grounds and sensitive benthic habitats. However, these risks have been assessed as manageable with the implementation of appropriate mitigation measures and ongoing consultation with relevant stakeholders. Socio-economic constraints primarily involved commercial fisheries and low levels of shipping activity which can both be managed with establish engagement practices. Whilst it is noted that the desktop study carried out to inform the baseline was limited to publicly available data sources, further detailed evaluation of the proposed OSS sites will be completed following acquisition of marine survey data. The MCA indicates that there is very little difference between the four proposed OSS locations, with no significant constraints identified which may stop the development of any option. All OSS locations scored low-moderate for environmental constraints and low-moderate for socioeconomic constraints. As such, all locations are viable for progression to the next stage of site selection, permitting and project development.

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E. Identification of Offshore Cable Route Corridors

CLIENT: EIRGRID

DOCUMENT TITLE:

OFFSHORE TRANSMISSION CABLE ROUTE CORRIDOR ASSESSMENT REPORT

DOCUMENT NUMBER : OCDP-EIR-P03-RP-CL-0004

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Rev	Purpose	List of Updated/Modified Sections
0	Issue for Review and Comment	-
1	Re-issued for Review and Comment	General revision with EirGrid CRS addressed
2	Re-issued for Review and Comment	General revision with EirGrid CRS addressed and feedback during a page-turn review session in Dublin.
3	Re-issued for Review and Comment	Revision per CRS comments to Rev2 received on 16th February 2026.
4	Issued for Design	-

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LIST OF ACRONYMS

Acronyms	Definition
AA	Appropriate Assessment
AOI	Area of Interest
BSF	Below Seafloor
CAPEX	Capital Expenditure
CBRA	Cable Burial Risk Assessment
CD	Chart Datum
DECC	Department of the Environment, Climate and Communications
DMAP	Designated Maritime Area Plan
ECR	Export Cable Route
ECS	Explosives Clearance Site
EIA	Environmental Impact Assessment
EU	European Union
EPA	Environmental Protection Agency
GCI	Grid Connection Information
GDG	Gavin & Doherty Geosolutions
GES	Good Environmental Status
GIS	Geographic Information System
GP	Geotechnical Provinces
GU	Geotechnical Unit
GW	Gigawatts
HDD	Horizontal Directional Drilling
HVDC	High Voltage Direct Current
IBTS	Irish Bottom Trawl Survey
ICES	International Council for the Exploration of the Sea
IWDG	Irish Whale and Dolphin Group
km	Kilometre(s)
m	Metre(s)
MBES	Multibeam echosounder
MC 2DUHR	Multichannel 2D ultra-high resolution
MCA	Multi-Criteria Analysis

Acronyms	Definition
MI	Marine Institute
MU	Management Unit
MW	Megawatts
NPWS	National Parks and Wildlife Service
ORE	Offshore Renewable Energy
OSS	Offshore Substation
OWF	Offshore Windfarm
PoW	Port of Waterford
PUOSC	Powering Up Offshore South Coast
SAC	Special Area of Conservation
SBP	Sub-bottom Profiler
SC 2DUHR	Single channel 2D ultra-high resolution
SC-DMAP	South Coast Designated Maritime Area Plan
SFPA	Sea-Fisheries Protection Authority
SPA	Special Protection Area
SSS	Side-scan Sonar
TSO	Transmission System Operator
UHR	Ultra-High Resolution
UXO	Unexploded Ordnance
VMS	Vessel Monitoring System

1 EXECUTIVE SUMMARY

This report recommends the offshore transmission cable route corridor from each of the two (2) OSS locations to the five (5) currently best performing landfall options in the Cork and Waterford / Wexford areas. The output of this report will inform the 2025 geophysical site surveys for proposed Offshore Cable Route Corridors.

The landfall zones are five (5) of the seven (7) landfall zones that are short listed in the Step 3 Emerging Best Performing Options Report, November 2024[1]. The seven (7) landfall zones are shown in Figure 2-3 and Figure 2-4 in Section 2. At this time, two (2) landfall zones (A - Inch Beach and D – Bunmahon Beach) and their associated cable route corridors are not recommended for inclusion in the 2025 site survey, as detailed in Section 5.

The Offshore Substation (OSS) locations are those identified in the Offshore Substation (OSS) Zone Assessment Report (OCDP-EIR-P03-RP-PM-0001)[2] within The South Coast Designated Maritime Area Plan (SC-DMAP)[3].

For the Wexford area, a total of nine (9) routes were developed to the three (3) landfall zones. Of these route options, six (6) cable route corridors, WE1, WE2, WE3, WE1A, WE2A and WE3A, were developed and evaluated using a high-level Multi-Criteria Analysis (MCA). The remaining three (3) options, WE1B, WE2B and WE3B, were added later in the process, and constitute hybrid route options to the six (6) options in the MCA.

The analysis shows a greater cable length of the three (3) routes passing around the SAC, namely WE1A, WE2A and WE3A, than the three (3) routes passing through it, namely WE1, WE2 and WE3.There are conceivably greater consenting risks and potentially greater environmental risks associated with installation through the SAC, than going around it. Following completion of the site survey, a more accurate assessment of the potential installation risks can be undertaken to determine the most appropriate route option.

It is recommended that the three (3) hybrid routes that pass through the SAC from the landfalls E, F and G, namely WE1B, WE2B, WE3B, are surveyed to the point where the route corridors converge into one (1). The survey should then be continued along that corridor to OSS3 (see Figure 6-4).

In the event additional constraints are identified within the SAC following surveys, consideration should be given to the alternative routes WE1A, WE2A and WE3A, which pass around Hook Head SAC.

---

[1] Step 3 Emerging Best Performing Options Report
[2] Offshore Substation (OSS) Zone Assessment Report (OCDP-EIR-P03-RP-PM-0001)
[3] The South Coast Designated Maritime Area Plan for Offshore Renewable Energy

For the Cork offshore cable routes, it is recommended that the surveys are undertaken along the corridors identified as Cork 1 and Cork 2 and both routes from the landfall zones should be surveyed to the point where the route corridors converge into one (1), and should continue along the single corridor all the way to offshore substation OSS1.

Cork 1 and Cork 2 routes are the results of a refined progression of the Cork preliminary routes studied in 2024, based on newly obtained and better refined geological datasets, as well as a final selected OSS1 location within Tonn Nua.

All recommended and alternative routes described above remain viable for progression to the next stages of detailed site selection, route surveys and engineering, environmental assessment, permitting, and project development. The present recommendations of suitable offshore cable routes should be revisited upon receipt and processing of acquired site-specific information from the scheduled ground-truthing offshore geophysical (planned to commence in 2025) and geotechnical surveys (planned to commence in 2026) and after corresponding site-specific informed studies have been completed.

It is recommended that the Waterford and Suir Estuary routing option be set aside in favour of more technically and environmentally feasible alternatives currently under consideration.

2 INTRODUCTION

2.1 Document Purpose

The purpose of this offshore transmission cable route corridor assessment report is to recommend the preliminary offshore export cable route corridors from each of the two (2) selected OSS locations within the SC-DMAP to the five (5) of the seven (7) currently emerging best performing landfall zones in the Cork and in Waterford / Wexford areas. The outputs of this report will inform the scope of the planned marine geophysical survey campaign.

2.2 EirGrid and Powering Up Offshore South Coast (PUOSC)

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, onshore and offshore.

Powering Up Offshore - South Coast[4] (PUOSC) is a project to build the new transmission grid infrastructure necessary to bring approximately 900 MW of electricity supplied from wind farms in the sea off Ireland's south coast to shore.

2.3 South Coast Designated Maritime Area Plan (SC-DMAP)

On October 10th, 2024, the Oireachtas, the Irish National Parliament approved the South Coast – Designated Maritime Area Plan (SC-DMAP, 2025[3]) and as per published report[3]. Maritime Area A (Tonn Nua) is the first of these designated areas within which an offshore wind farm will be developed.

[4] Powering Up Offshore South Coast - Update Report

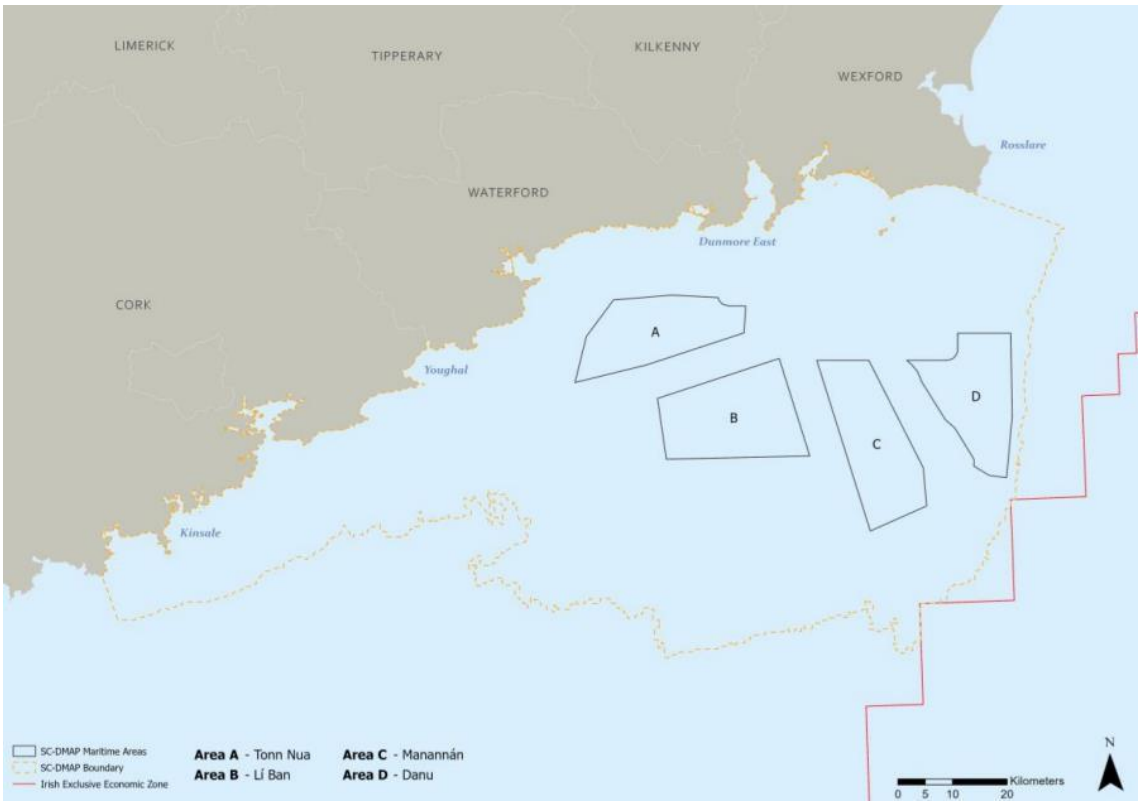

Figure 2-1 : South Coast Designated Maritime Area Plan (SC-DMAP)[3]

2.4 PUOSC Infrastructure

To enable the integration of offshore wind it is necessary for EirGrid to provide the following supporting infrastructure:

- Two offshore substation platforms to be located within the Maritime Area A of the (SC-DMAP).
- Offshore transmission cables connecting the offshore substations to landfall locations.
- Connections between landfalls and OCCs by underground cables.
- Onshore Compensation Compounds (OCC) and onshore substations.
- Loop-in connections to the existing electricity transmission network from the new substations by either underground cables or overhead lines.

2.5 EirGrid' Framework for Grid Development

The development of this project follows EirGrid's 6-Step approach to Grid Development which sets out the steps to be taken to identify and implement the best performing solution that meets the need to develop the electricity transmission grid through to the construction and subsequent project energisation.

Figure 2-2 : EirGrid 6-Step approach to Grid Development

As part of Step 3, EirGrid has evaluated options for Landfall Zones and Grid Connection Zones with the aim of identifying a short-list of options to bring forward to Step 4. In 2026, EirGrid will progress to Step 4, consulting on the best performing landfall options and cable route options.

2.6 Landfall and OSS Zones

The Step 3 Emerging Best Performing Options Report[1] identified a number of landfall zones. Five (5) of seven (7) landfall zones were shortlisted in Step 3 (see Table 2-1, Figure 2-3 and Figure 2-4). The Offshore Substation (OSS) Zone Assessment Report (OCDP-EIR-P03-RP-PM-0001)[2] was produced to determine the two (2) best performing OSS zones from a list of four (4) potential zones in Step 3. The two (2) OSS zones and five (5) landfall zones were used as the basis for assessing various offshore cable route corridors.

Table 2-1 : Summary of Landfall Zone Options

Zone	County	Location
A	Cork	Located across the townlands of Ballintra East, Inch, and Lahard.
B	Cork	Located within the townlands of Ballybranagan, Ballycroneen West, Ballyrobin South, and Ballycroneen East.
C	Cork	Situated within the townlands of Garryvoe Lower, Ballybutler, and Ballycrenane.
D	Waterford	Located within the townlands of Knockmahon, Templeyrick, Ballynassislassa, and Ballynagila.
E	Wexford	Located within the townland of Ramstown.
F	Wexford	Situated within the townlands of Bannow.
G	Wexford	Extends across the townlands of Blackhall, Haggard, Ballymadder, and Loftuscare.

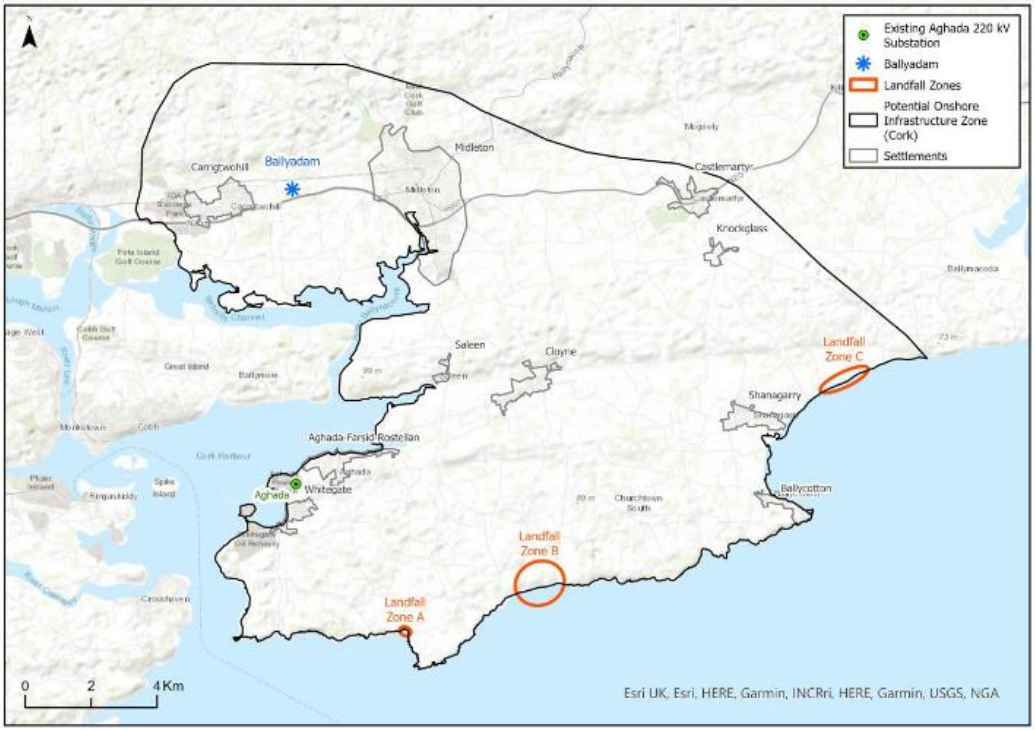

Figure 2-3 : Step 3 landfall zones (County Cork)[1]

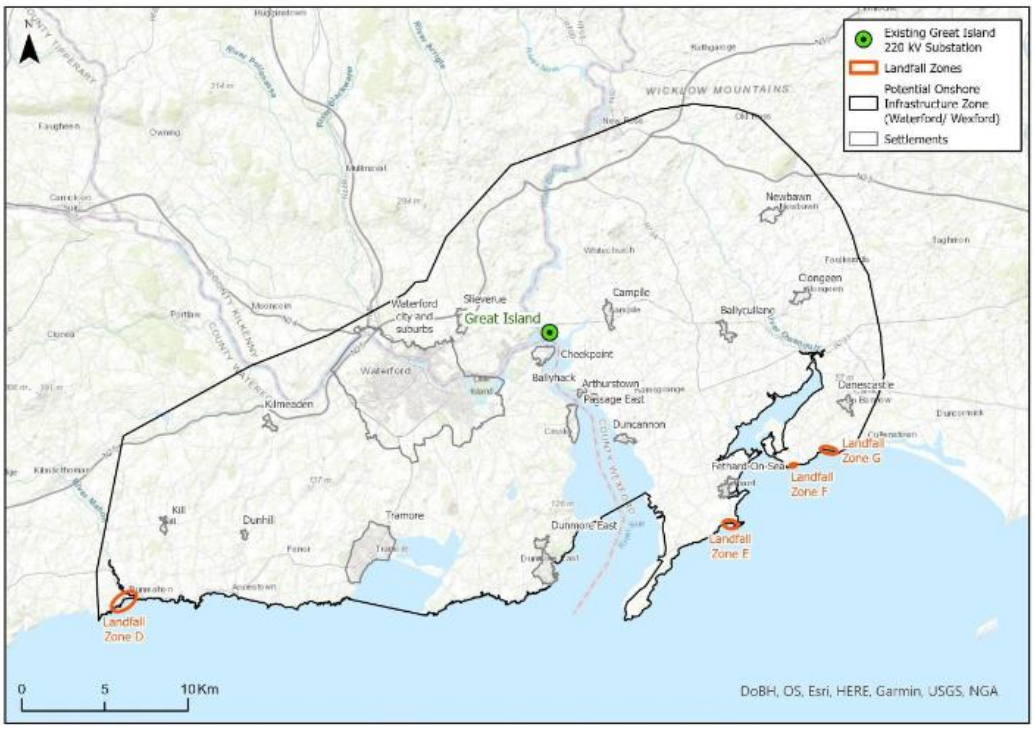

Figure 2-4 : Step 3 landfall zones (County Waterford / County Wexford)[1]

3 GROUND MODEL DEVELOPMENT

A ground model has been developed to establish an understanding of the geological conditions of the areas of interest and inform the cable routing development.

Initially in 2023, a conceptual ground model of low resolution was produced through a desktop study over the AOI areas, which informed conceptual OSS and offshore export cable routing corridor work. Following the SC-DMAP release by DECC in 2024 and the incorporation of newly obtained geophysical/geological datasets, the ground model was revisited and evolved into a better-informed model, enabling more accurate site-specific interpretation and a better refined cable routing corridor study.

3.1 Conceptual Ground Model

In June 2023 DORIS and its subcontractor Geo4D completed a geological desktop study, followed by a conceptual ground model over the AOI areas, utilising a variety of public-domain datasets and a small volume of privately procured geophysical and geotechnical data. This provided an assessment of engineering geological conditions, hazards and constraints, for input to initial siting of the two (2) offshore substation's (OSS's) and export cable route options landing near Cork and Waterford regions. See Figure 3-1 for the extent of the conceptual ground model. This work has been documented in 'OSS and Export Cable Geological Desk Study' (OCDP-EIR-P1-ST-GT-0001, Rev00)[5].

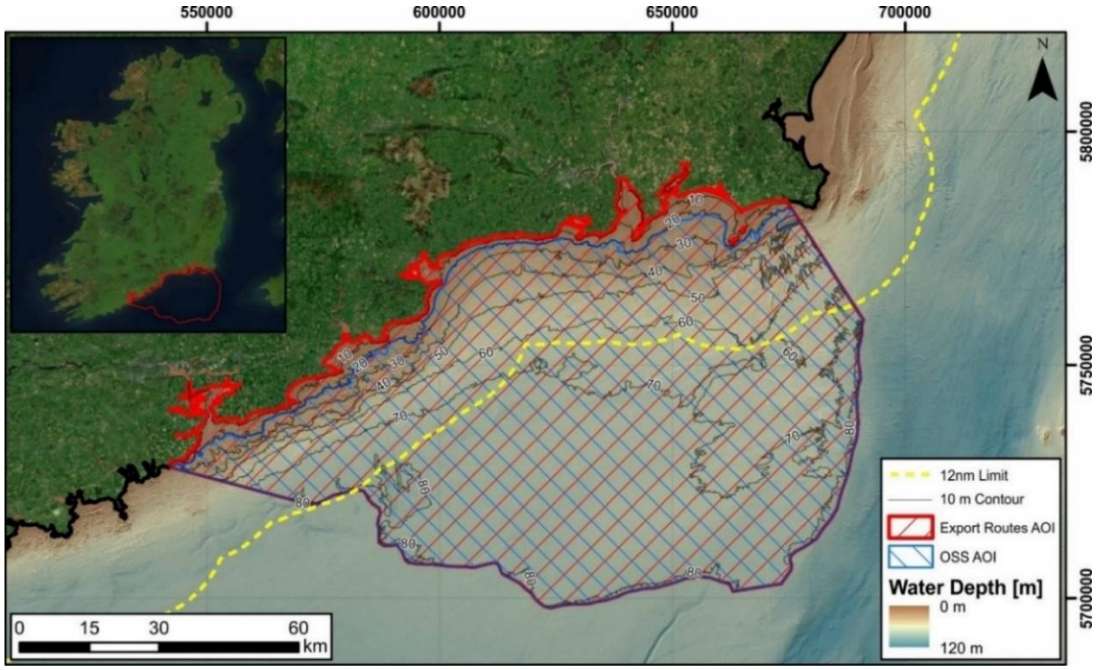

Figure 3-1 : Extent of 2023 Conceptual Ground Model

[5] OSS and Export Cable Geological Desk Study (OCDP-EIR-P1-ST-GT-0001, Rev00)

This work presented anticipated ground conditions for the OSS and offshore export cable areas of interest (AOI), along with a high-level assessment of natural and anthropogenic hazards and constraints, within the following limitations that were set at the time:

- OSSs AOI – 20 m to 80 m water depth, with 100 m below seafloor depth range of interest; and
- Export cable routes AOI – Shore to 80 m water depth, with 5 m below seafloor depth range of interest.

In spite of the naturally resulting low resolution and limitations (limitations such as indicative interpreted geotechnical provinces from limited sources and quality, absence of geotechnical surveys, poor understanding of seabed and quaternary sediment thickness/stratigraphy/composition), the conceptual ground model was considered suitable for a high-level screening of ground conditions to refine site and route selection, and guide future site investigations and studies, with a selection of geotechnical profiles generated to define a range of anticipated stratigraphies across the site, highlighting geotechnical variations considered pertinent to assessed OSS locations and offshore export cable routing selections.

The conceptual ground model had informed that the geology was dominated by outcropping bedrock in the south-east part of site and in the nearshore region, with a Pleistocene basin between infilled with highly variable sediments deposited largely during glaciated conditions. A variety of natural and anthropogenic hazards were also identified pertinent to offshore construction considerations, such as sediment mobility, shallow bedrock and rock outcrops up to 10-15km from shore and in parts further offshore, variable Pleistocene sediments of varying consolidation/densification, seafloor channel features in the western site part, locally present steep seafloor slopes due to outcropping bedrock and seafloor channel flanks, existing infrastructure in pipelines and cables and identified wrecks. Unmapped but possible constraints reported were those of potential presence of shallow gas and insulating sediments within the Pleistocene sedimental areas which could impact piling activity and cable heat dissipation respectively.

Despite its conceptual and low-resolution status, the conceptual ground model formed an essential tool for evolving the conceptual stages of the export route development work and form the basis of further refinement when more input data will to be made known to the project, in order to inform a more accurate route planning and reconnaissance marine survey scope of work.

3.2 Updated Preliminary Ground Model

In December 2024, new data were made available that merited consideration for a follow-on update of the ground model. DORIS was commissioned by EirGrid to review the newly acquired and available geophysical survey within the Tonn Nua boundary, a zone inside The South Coast Designated Maritime Area Plan (DMAP). The newly available information supplied by DECC in Q4 2024 consists of the GDG datasets (published in 2012 and 2017) and the Marine Institute (MI) geophysical survey dataset of Tonn Nua site

(performed and reported in 2024). They helped to improve the reliability of the early conceptual ground model with recent site-specific information, particularly the presence of the seismic soil / rock units. The findings, reported in OCDP-EIR-P03-RP-PM-0001 - Offshore Substation (OSS) Zone Assessment Report[2], also enabled the refinement of the two (2) proposed OSS locations as part of the Grid Connection Information (GCI)[6] pack prepared by EirGrid.

In 2025, DORIS and its subcontractor Geo4D revisited the conceptual ground model to produce an updated ground model under document 'Updated Preliminary Ground Model Technical Note' (OCDP-EIR-P03-TN-MD-0004, Rev00)[7], with new data from the Department of the Environment, Climate and Communications (DECC) and MI. See Figure 3-2 for the extent of updated ground model. This new data sets consist of:

- Geophysical datasets provided by Gavin & Doherty Geosolutions (GDG) for DECC, published in 2012 and 2017; and
- Geophysical datasets provided by the Marine Institute (MI) of the Tonn Nua site, conducted and reported in 2024.

Both datasets helped to improve the reliability of the early conceptual ground model by implementing recent site-specific information, particularly of the sub-bottom geological conditions across the region.

[6] Offshore-Phase-2-ORESS-2-Tonn-Nua-Grid-Connection-Information-Pack-V2.pdf
[7] 2025 Updated Preliminary Ground Model Technical Note (OCDP-EIR-P03-TN-MD-0004)

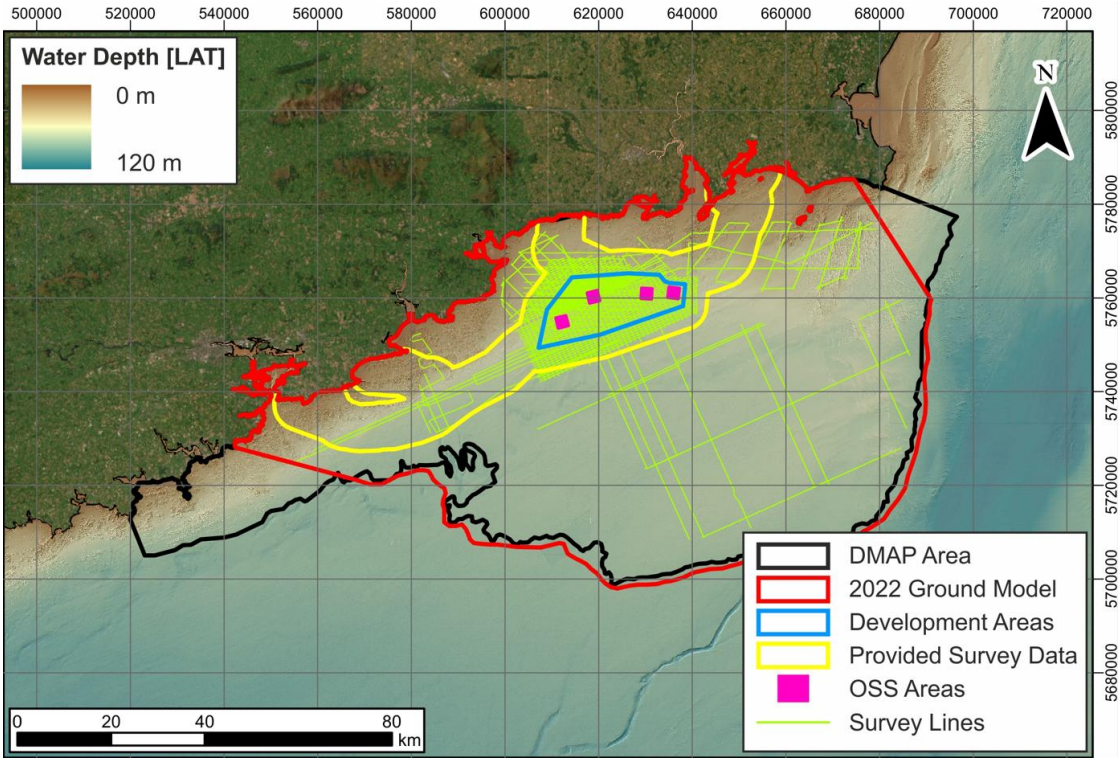

Figure 3-2 : Areas of interest reported in the 2025 Updated Preliminary Ground Model

For comparison, Figure 3-1 shows the plan coverage of the early (2023) conceptual ground model developed by DORIS, while Figure 3-2 presents the wider DMAP area, including wind farm development areas, the extent of the 2024 site-specific geophysical survey data, and the OSS zones and cable route corridors of interest (as of March 2025).

There were limited site-specific datasets available at the time of updating the 2025 Updated Preliminary Ground Model, with all assessments for export cable routes based largely on publicly available data supplemented by localised survey data.

- Tonn Nua preliminary reconnaissance survey data from the Marine Institute (2024), comprising the following data acquired on a 500 m main line and 2000 m cross line spacing:
  - 1 m resolution multibeam echosounder (MBES) bathymetry.
  - Knudsen hull-mounted sub-bottom profiler (SBP).
  - Multichannel 2D ultra-high resolution (MC 2DUHR) seismic survey using a sparker and air gun sources. It should be noted that only the air gun data was provided.
- DMAP regional survey data, reprocessed and provided by Gavin & Doherty Geosolutions (2024), comprising the following data:
  - 5 m resolution MBES bathymetry (unknown acquisition date).

- Reprocessed single channel ultra-high resolution (SC 2DUHR) seismic survey using a sparker source (acquired 2012 and 2017).
- Reprocessed multichannel ultra-high resolution (MC 2DUHR) seismic survey using an airgun source (acquired 2017).

It should be noted that limited geotechnical data is available across the region, comprising only a small number of publicly available datasets and spatially limited datasets provided for the Celtic interconnector project[8] (OSIRIS, 2015, 2016a and 2016b). As a result of this data limitation, sub-surface geotechnical conditions are highly inferred from experience in the region, experience from analogous sites, and the limited geotechnical datasets available at site. Routing assessments should be further refined following the imminent acquisition of route-specific geophysical and geotechnical data.

3.3 Areas of Interest

Two Areas of Interest (AOI) defined the study areas where the OSS and ECR would be located. There are two main AOIs as per Figure 3-3, one for OSS and another for ECR.

- Offshore Substation (OSS) AOI:
  - It comprises the extent of the MI data within the Tonn Nua development area.
  - It used the 2024 MI geophysical data to update the 2022 conceptual ground model up to depth of interest of 100 m below sea floor.
- Export Cable Route (ECR) AOI:
  - It comprises the extent of the proposed cable route options from the Tonn Nua development area to various landfall zones.
  - It used the GDG reprocessed seismic data (sparse line spacing) and MI geophysical data (provided in 2024) to update the shallow ground model under the planned cable routes to depth of interest of 5 m below seafloor. The geotechnical zones are shown in the ECR AOI in Figure 3-4).

The ECR length portion from the DMAP coastline boundary to the OSS AOI was used for estimating route lengths and informing survey data acquisition.

[8] Celtic-Interconnector-Project-Step-3-Offshore-Constraints-Report.pdf

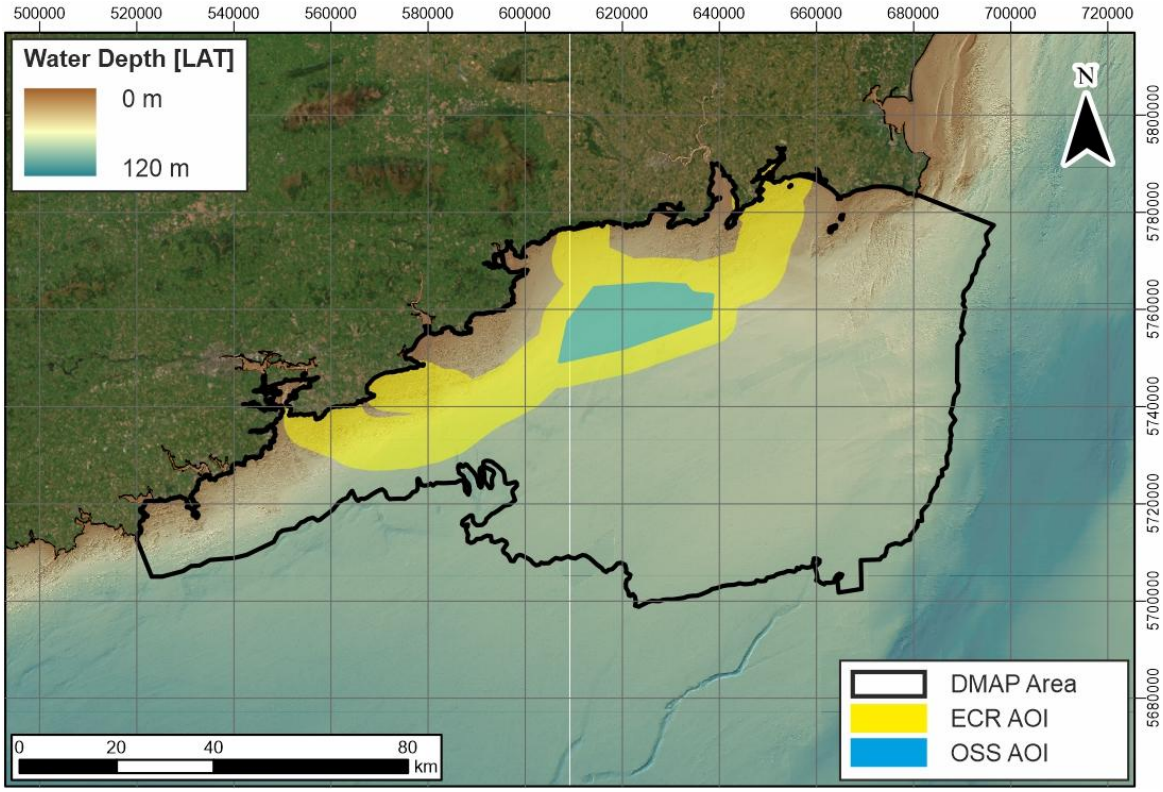

Figure 3-3 : Areas of interest pre-MUL (2024)

3.4 Summary of findings from the 2025 Updated Preliminary Ground Model

Five (5) key seismic horizons were interpreted in the data that delineate six (6) seismic units. The interpreted seismic units were integrated with the conceptual ground model to define seven (7) geotechnical units. The interpreted extent and geotechnical properties of these units were mapped across site as two (2) geotechnical models.

The stratigraphy across the OSS AOI to 100 m BSF was delineated in four (4) geotechnical provinces (GPA to GPD), based on the interpreted seismic horizons, and inferred geotechnical properties. The geotechnical provinces effectively summarise the range of stratigraphies and geotechnical properties across the OSS AOI.

The stratigraphy across the ECR AOI to 5 m BSF was delineated in four (4) geotechnical zones (GZA to GZD), and two (2) geotechnical zone modifiers, based on the limited regional seismic interpretations, and the conceptual ground model. The geotechnical zones effectively summarise the range of stratigraphies and geotechnical properties across the ECR AOI, whereas the modifiers indicate the potential extent of localised variants of the underlying geotechnical zones.

For the ECR AOI, Table 3-1 summarises in detail the expected geotechnical zones (% figures are subject to negligible rounding errors) and Figure 3-4 shows the geotechnical zone map.

Table 3-1 : ECR AOI geotechnical zone descriptions

GZ	ECR AOI Coverage	Descriptions
GZA	41%	Bedrock exposed, or within approximately 1 m of seafloor.
GZB	25%	Trenchable sediments (GU1 and GU3) are present with thickness of up to 2 m thick, underlain by geotechnical variable and potential boulder-rich Pleistocene sediments, or bedrock.
GZC	33%	Trenchable sediments (GU1 and GU3) are present with thickness greater than 2 m thick, underlain by geotechnical variable and potential boulder-rich Pleistocene sediments, or bedrock.
GZD	2%	Variable thickness (0-5 m) of potentially clayey Holocene sand overlying bedrock.
Modifier 1	4%	Encompasses localised channel infill deposits where GU1 may contain higher clay fraction.
Modifier 2	1%	Encompasses various bathymetric prominences, interpreted as potential Pleistocene esker deposits with increased gravel, cobble and boulder content.

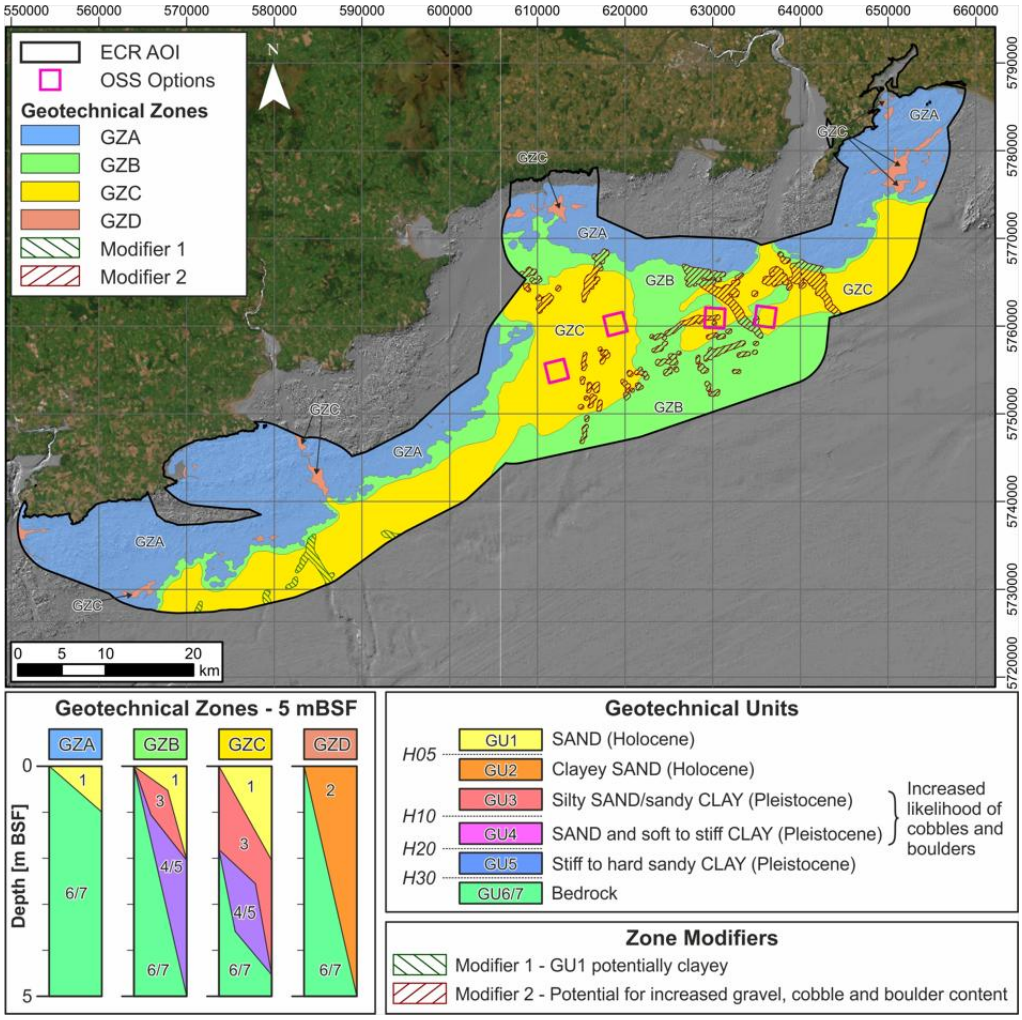

Figure 3-4 : ECR AOI Geotechnical Zones

3.4.1 Limitations and Uncertainties

The geotechnical model over the two (2) AOIs presents an appraisal of anticipated ground conditions, based on the available data. The models are subject to the following key limitations and uncertainties:

- The geotechnical model is based on the inference of geological formations from seismic data, with no geotechnical ground truthing of the seismic data.
- The presented lithologies and geotechnical parameters are inferred largely from analogous sites and therefore may not be representative of site conditions.
- Unanticipated ground conditions may be present in each geotechnical zone / province.
- Depth to bedrock is interpreted based on the seismic data, without geotechnical ground truthing, and therefore may be subject to inaccuracies.
- The geotechnical properties of the bedrock units, particularly the nature of the weathered zone, is poorly understood.
- The stratigraphic boundaries have been depth-converted using an assumed seismic velocity of 1650 m/s.
- The updated ECR AOI geotechnical zonation is based on a very sparse quantity of seismic data and therefore is still subject to a high degree of uncertainty.

3.4.2 Recommendations

The following recommendations are presented in the Update Preliminary Ground Model Technical Note (OCDP-EIR-P03-TN-MD-0004, Rev00[7]):

- Procure a UXO desk top study and risk mitigation strategy to define UXO risk and specific appropriate survey requirements for mitigating UXO risk prior to offshore geotechnical surveys.
- Conduct a detailed geophysical survey over the extent of the proposed OSS zones to acquire bathymetry, sidescan sonar and acquire sub-bottom profiler data along all cable route survey lines only. This survey will support the identification of suitable cable entries to the OSS, helping inform optimal routing, cable protection and cable installation strategies.
- Conduct a reconnaissance geophysical survey over the cable corridor, to acquire bathymetry, sidescan sonar, sub-bottom profiler and a cost-effective seismic method (single channel sparker seismic).
- Update the ground model with the results of the geophysical survey and optimise cable routing corridors and OSS zones.
- Site several geotechnical locations to characterise the geotechnical conditions, relevant to the engineering requirements and depth range of interest; and
- Update the ground model with the results of the geotechnical survey.

4 PRELIMINARY OFFSHORE CABLE ROUTE DEVELOPMENT

4.1 Early Routing Considerations – Cable Route Development

Early export cable routing options considered multiple potential cable corridors from a central OSS location in Tonn Nua area, to a potential landfall in Cork and Wexford. This is shown in the figure below (Figure 4-1), taken from OCDP-EIR-P03-ST-MD-0001 Export Cable Route Study May 2024.

A number of preliminary route corridor options were considered for the Cork and Wexford. This initial study was conducted as part of an exercise to identify preliminary routes to inform survey scope compilation and preliminary capital expenditure estimation work with the selection process driven primarily by MCA considerations and installation feasibility. The study is presented in Appendix I of this document.

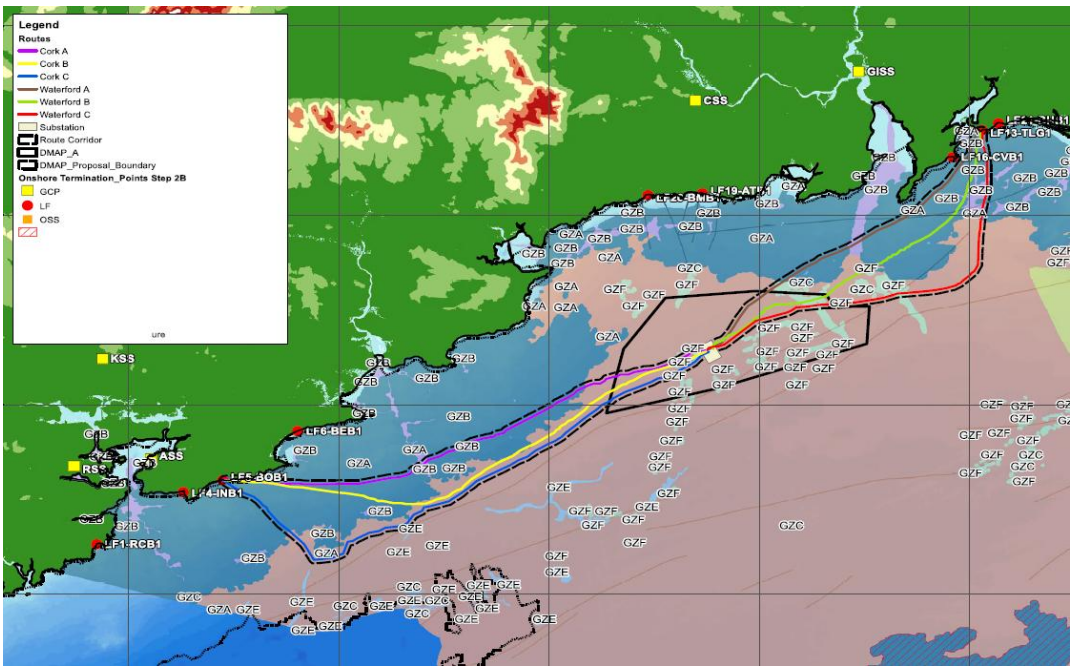

Figure 4-1 : Early export cable routing options (study 2024)

This early routing analysis showed that there is extensive outcropping bedrock off the south coast of Ireland (as illustrated under geotechnical zones GZA and GZB in Figure 4-1 and with reference to Table 3-1). Due to the significant constraint to installation posed by the extensive outcropping bedrock, there was limited benefit in considering multiple corridors to the selected landfall as all potential routes would be based on the same requirement to minimise crossing the bedrock and achieving the shortest cable route. Consequently, a single cable route which would avoid the bedrock offshore in Cork and Wexford was considered, with a corresponding branch route(s) to be developed for the respective landfall nearshore.

Note: The project concept was subsequently updated to include two OSS locations, additional potential landfalls and respective export cable corridors which are considered further within this document.

4.2 Development Considerations for the Preliminary Offshore Cable Route Assessment

Based on the identified zones in the preliminary ground model, several corresponding offshore cable route corridors were evaluated to inform future offshore survey work scopes for these cable route options, using the information available at this time.

The ECR corridors (of 1 km width) are the link between the landfall zones and the OSS zones.

The landfall zones are identified in the Step 3 Emerging Best Performing Options report[1], as described in Section 5.

This report contributes to this initial assessment in which the potential cable route corridors between the landfall options and the two selected OSS zones within Tonn Nua are evaluated based upon the existing known constraints and site conditions.

The ECRs between the landfall zones and the OSS zones shown in this report have been established based upon the principle of ensuring shortest distance whilst satisfying the following criteria:

- The considerations as detailed in Section 6 and Section 7, along with the MCA criteria in Section 8.
- Minimized installation in areas of outcropping bed rock and minimized rock cutting.
- Avoidance so far as possible of 3rd-party infrastructure.
- Avoidance of known wreck sites.

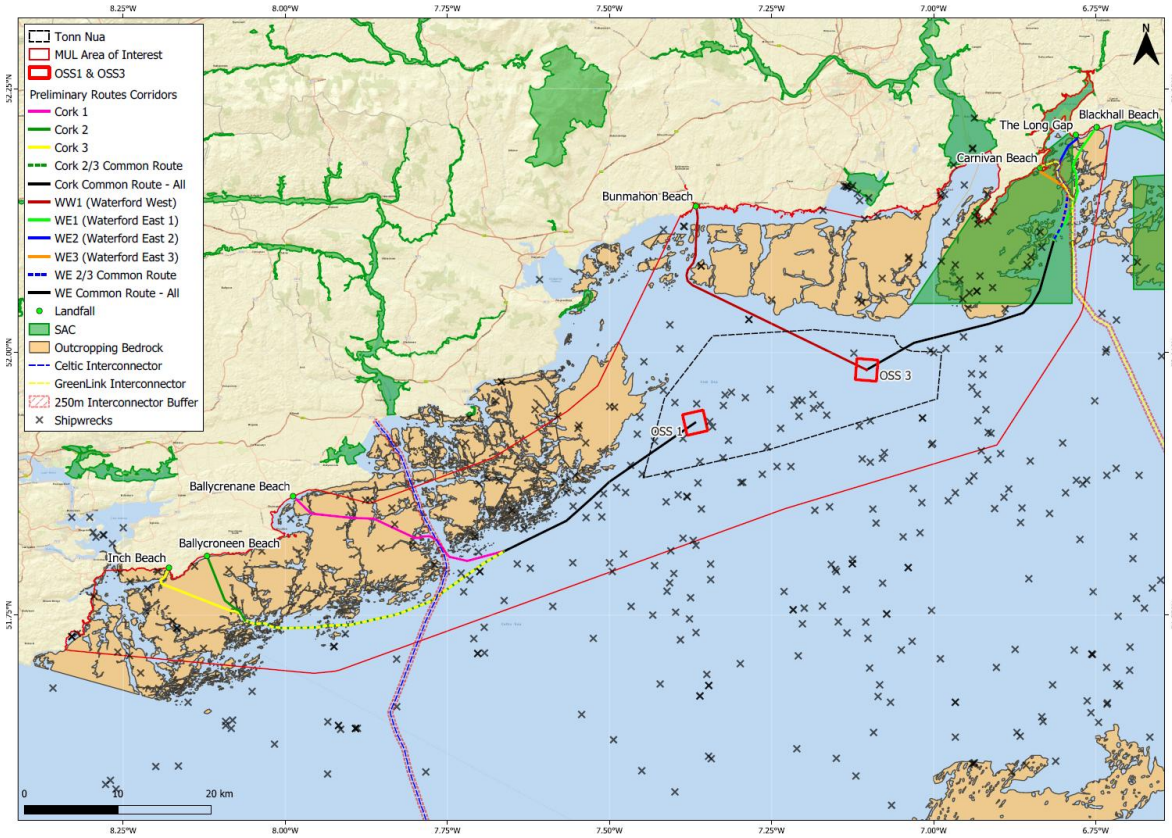

Figure 4-2 : Preliminary Wexford/Waterford and Cork route corridors

The OSS zones are from the options identified in the OSS zone assessment report OCDP-EIR-P03-RP-PM-0001[2].

At the early phase of the project between 2020 and 2023, within the constraint of limited publicly available data of ground conditions and the ongoing studies, the project identified several OSS areas of interest (three (3) at Cork side and three (3) at Waterford side) using a set of agreed criteria (by the Gateway 2 Management Investment Committee) as reported in the Wind Farm – Assessment of Offshore Site Options[9]. Later on in 2024, with the availability of recent site data and additional study highlighted and explained in detail in Section 3, the OSS zones (of 2 km^2 square in size) have been further refined to two (2) as shown in Appendix A of the GCI[6].

4.3 Preliminary Wexford Routes

In 2024, a number of preliminary route corridor options were developed for the Wexford area, with the selection process driven primarily by MCA considerations and installation feasibility. The study is presented in Appendix I of this document.

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9 Gateway 2 Management Investment Committee) as reported in the Wind Farm – Assessment of Offshore Site Options

Later in 2025, for the Waterford / Wexford area four (4) initial routes were developed WW1, WE1, WE2, WE3 following the principles outlined in section 4.2 and 4.3. For Wexford these considered a cable route avoiding outcropping bedrock further offshore with branches to each landfall nearer to shore.

WW1 route to landfall D at Bunmahon, constitutes its own separate route. All routes are shown in Figure 4-2.

4.4 Preliminary Cork Routes

In 2024, a number of preliminary route corridor options were developed for the Cork area, with the selection process driven primarily by MCA considerations and installation feasibility. The study is presented in Appendix I of this document.

The study was conducted as part of an exercise to identify preliminary routes to inform survey scope compilation and preliminary capital expenditure estimation work. Three (3) preliminary Cork routes were assessed, all starting from a hypothetical central OSS location and landing to a single landfall zone at Ballycroneen. The chosen landfall at Ballycroneen was considered at the time a highest scoring option, however it was still preliminary and subject to further analysis. The study evaluated short, medium and long-distance options, with the longest route (route Cork C in Appendix I) identified as the potentially most secure option of the three assessed options due to the limited length over rock outcrops, also avoiding key MCA constraints, while remaining technically achievable with lower reliance on external protection measures.

The remaining two (2) route options, namely the short and medium length routes, were considered as alternative options, which were also assessed to demonstrate mitigation through avoidance of sensitive areas and reduction of installation risks over outcropping rock.

The assessment was based on conceptual ground model data which included preliminary rock outcropping data, with the ground model further refined later on in 2025 and which in hindsight resulted in a more refined route length assessment.

4.5 Additional landfall considered - Waterford and Suir Estuary option

4.5.1 Constraints for Routing a Cable in the Estuary

Step 2 identified an extensive list of prospective landfall locations along the South Coast and following a high-level comparative desktop MCA a shortlist of landfall locations was developed. At that time, the result of the Step 2 analysis discounted any submarine cable installation and landfalls within the Waterford and Suir Estuary.

Figure 4-3 illustrates a prospective cable route through the Suir Estuary which has been designed to avoid a number of identified features, such as the SAC, dredging channel and spoil disposal site in the estuary.

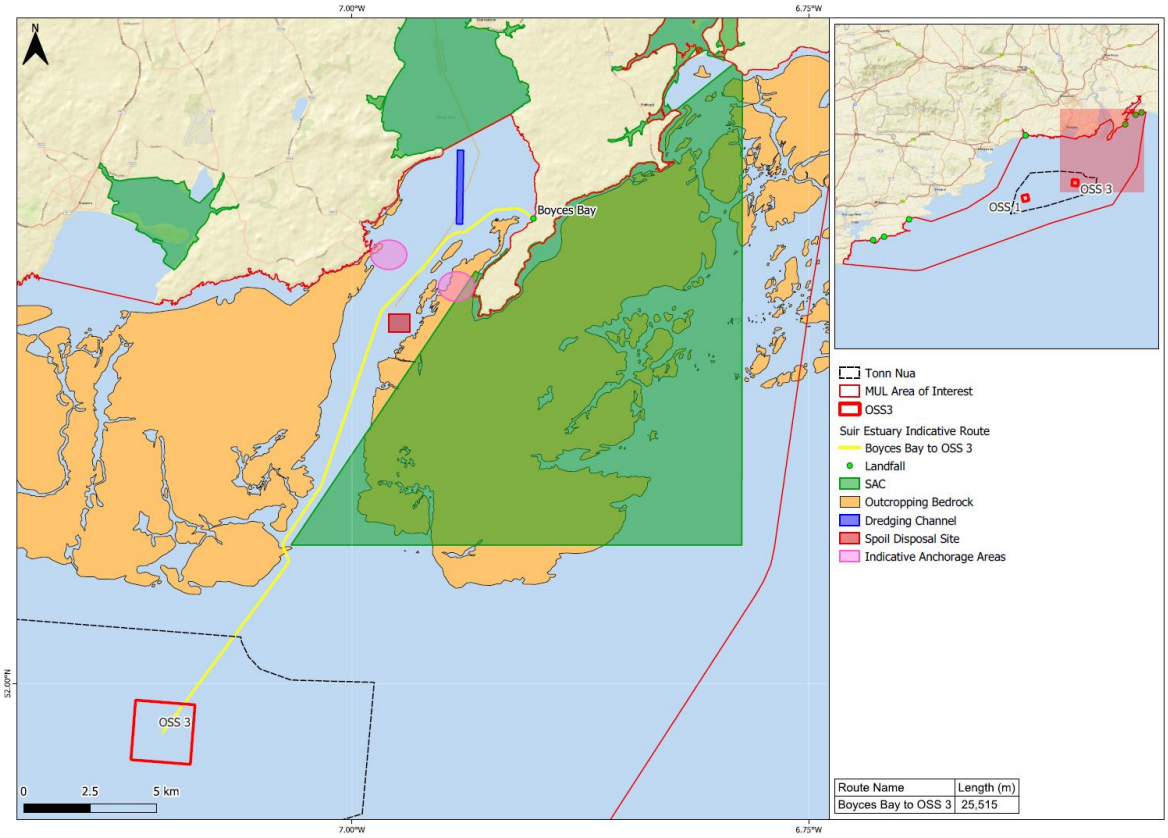


Figure 4-3 : Indicative cable route corridor in the Suir Estuary

The route from OSS3 to Boyces Bay was assessed with a number of identified environmental, navigational, technical and aquacultural constraints.

A follow-on meeting with the Port of Waterford Authority (PoW) in February 2025 provided further information to better understand and assess constraints of routing options through the Waterford and Suir Estuary. The newly gathered information identified multiple constraints outlined below:

- There are no specific designated anchoring zones in force within Waterford and Suir Estuary, which indicates that ships can anchor anywhere in the estuary dependant on weather and direction of the wind. Indicative anchorages are shown in pink circles in Figure 4-3. The biggest vessel anchoring was stated to be circa 180 m in length, corresponding to large bulk carrier vessels.
- Cable routing access is limited due to the presence of a seabed dredging zone, where excavated seabed material is moved to a soil disposal site, from where the excavated material is relocated to areas of bedrock outcrops within the estuary, with the soil dumping zones controlled by Ireland's Environmental Protection Agency (EPA) on the Southeastern side of the estuary.
- With dredging activity currently occurring two (2) to three (3) times a year, dredging depths of 7.5 m are reported at present, with a licence in place allowing up to 8 m and with future plans to acquire a new licence to dredge up to 10 m.

A post-meeting review also identified a number of further constraints due to environmental considerations which are summarised below:

- Fisheries issues (noted that this is relatively well understood by the team),
- Presence of spawning grounds to the north of Templetown Beach. There are also herring spawning grounds outside the mouth of the estuary that could present complications to activities between September and February[10].
- Presence of maerl beds is a highly protected coralline red algae, near the mouth of the estuary.
- Presence of migrating native salmon (Salmo salar) and European eel (Anguilla anguilla), both protected species which can lead to specific sensitivities, particularly in relation to interference with electromagnetic navigation of these species, much of which is poorly understood.

4.5.2 Summary and Recommendation

The constraints identified above highlighted risks in finding a suitable submarine cable route corridor within the Waterford and Suir Estuary, which could prove to be very challenging from an installation and long-term cable protection perspective. The risks of installing, maintaining and protecting a submarine cable in this environment are considered high for the reasons outlined. It is therefore recommended that the option of routing through the Waterford and Suir Estuary is put on hold with more suitable prospective routing options being available at this moment in time.

[10] Fish Spawning Habitats | Infomar

5 LANDFALL ZONE A AND ZONE D REVIEW

This section provides an update to the emerging best performing landfall options that were identified post Step 3 Emerging Best Performing Options Powering Up Offshore South Coast November 2024 (Step 3)[4], and in advance of subsequent marine survey works scheduled for 2025 and 2026. It includes consideration of the decommissioned Kinsale Energy 24" gas pipeline at Landfall zone A, Inch Beach, in the Cork region, as discussed in Section 5.1 and 5.2, and the decision to exclude both Landfall Zone A and Landfall Zone D, Bunmahon Beach in the Waterford region, from progressing to Step 4a. The section also highlights the continued focus on the three (3) remaining options in the Wexford region for the grid connection option east of Great Island.

5.1 Landfall Zone A - Cork Area Landfall and Nearshore

5.1.1 Background

In Step 3, landfall zones A, B and C presented a number of challenges in terms of physical constraints and the marine approach to make landfall for the offshore transmission cables. That said, it was deemed that these challenges are manageable, and it was determined therefore that all of the Step 3 landfall zones for County Cork merit further analysis before a determination can be made on the emerging best performing option.

Subsequent to the Step 3 analysis, EirGrid received position data for the decommissioned Kinsale Energy 24" gas pipeline into Inch Beach, landfall zone A. Upon analysing the position of this pipeline within Inch beach and the approaching channel, a number of constraints became apparent as identified below:

- The pipeline coordinates identified the pipeline more or less in the centre of the small beach, which is approximately 100 - 120 m wide. This would reduce the available width to land the export cable to approximately 50 m which is insufficient to ensure that there is sufficient physical separation from the pipeline. Whether the cable be trenched or bored / tunnelled, a minimum 50 m would be required for safe installation and operation and maintenance. A proximity agreement with the pipeline owners would also be required.
- The preliminary cable route presents constraints in terms of constructability due to the proximity of the pipeline, rock outcrops and manoeuvrability of the cable installation vessel.
- Approximately 8 km of rock outcrops from the nearshore to offshore. This would require significant mechanical trenching and / or potential alternative cable protection methods.
- A prospective repurposed use of the Kinsale gas pipeline has been considered since 2023. When data was acquired by EirGrid in 2025 it was reviewed and it was concluded that the use of pipeline as a cable conduit would introduce significant complexity and risk to the installation and whole life integrity and

maintenance of the cable(s). It was therefore discounted from being a viable option, when alternative landing zones offered viable landfall options.

5.1.2 Summary and Recommendation

Based on these constraints, it is recommended that a proposed marine survey on the proposed route Cork 3 into Inch beach, landfall zone A will not be progressed at this point in time.

On this basis, EirGrid's proposed Marine Surveys in 2025 and 2026 will focus on landfall zones B and C and associated cable route corridors.

5.2 Landfall Zone D - Waterford / Wexford Landfall and Nearshore

5.2.1 Background

From a geotechnical point of view, based on desk-top studies undertaken during Step 3, landfall zone D offered the best performing marine approach for the offshore transmission cable installation amongst the Waterford / Wexford options. The zone does however present other significant technical, environmental, social and deliverability challenges which were addressed in the Step 3 report. It will be particularly challenging to connect into the identified available emerging best performing Grid Connection Zone options east of Great Island 220 kV Substation in County Wexford and these challenges include likely extensive third-party agreements and crossing of the Barrow / Suir / Nore rivers.

From an environmental point of view, landfall zone D (Bunmahon Beach), was an outlier amongst landfalls areas and the only landfall with potential presence of highly sensitive breeding seabirds (and peregrine falcon) on cliffs adjacent the landfall. Therefore, the focus for the 2025 and 2026 planned marine offshore survey campaigns will be on the remaining three (3) options in Wexford region, for the grid connection option east of Great Island.

In Step 3, landfall zone D, was considered *"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"* compared with the three (3) other landfall zone options which were considered *"Moderate: Identified but manageable risk requiring bespoke mitigation measures"*, but brought forward in Step 3, as the emerging best performing option for a landfall zone East of Hook Head.

Although supported by a well-developed road network, this landfall zone may require a route up to twice as long as other options. Combined with traffic, transport, and river or estuary crossing challenges, it presents a significant constraint compared to zones E, F, and G.

Following the issuance of the Step 3 report, Landfall zone D was identified in the Powering Up Offshore - South Coast Step 3 Engagement and Consultation Report in March 2025[11].

5.2.2 Summary and Recommendation

Based on these constraints, Landfall Zone D and consequently the Waterford West (WW1) route corridor is not being progressed for the 2025 and 2026 marine surveys at this point in time and will only be brought forward to Step 5 for planning if no other options are available.

Further studies and surveys will be undertaken in Step 4a, and there are information gaps in the absence of such studies / surveys having been undertaken.

Marine Surveys in 2025 and 2026 will focus on landfall zones E, F and G and associated cable route corridors, where landfall zone D can be revisited later if required.

[11] Powering Up Offshore - South Coast Step 3 Engagement and Consultation Report - March 2025 | Eirgrid

6 FURTHER OFFSHORE CABLE ROUTE DEVELOPMENT

Cable route development work was ongoing throughout the early portion of 2025 in advance of the 2025 marine survey. This included reevaluating constraints, acquiring additional data and building the understanding of the area of interest and potential routing options.

Figure 6-1 shows the preliminary selected routes, including the alternative routes avoiding the SAC.

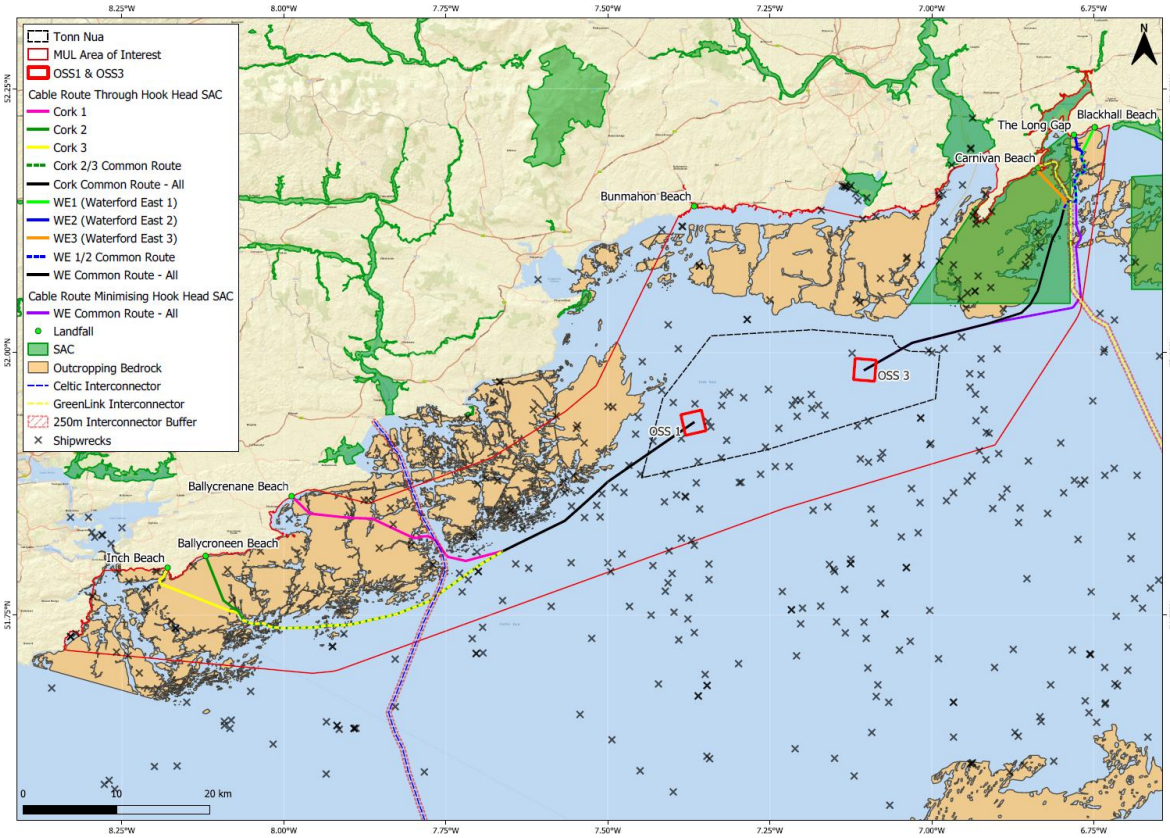
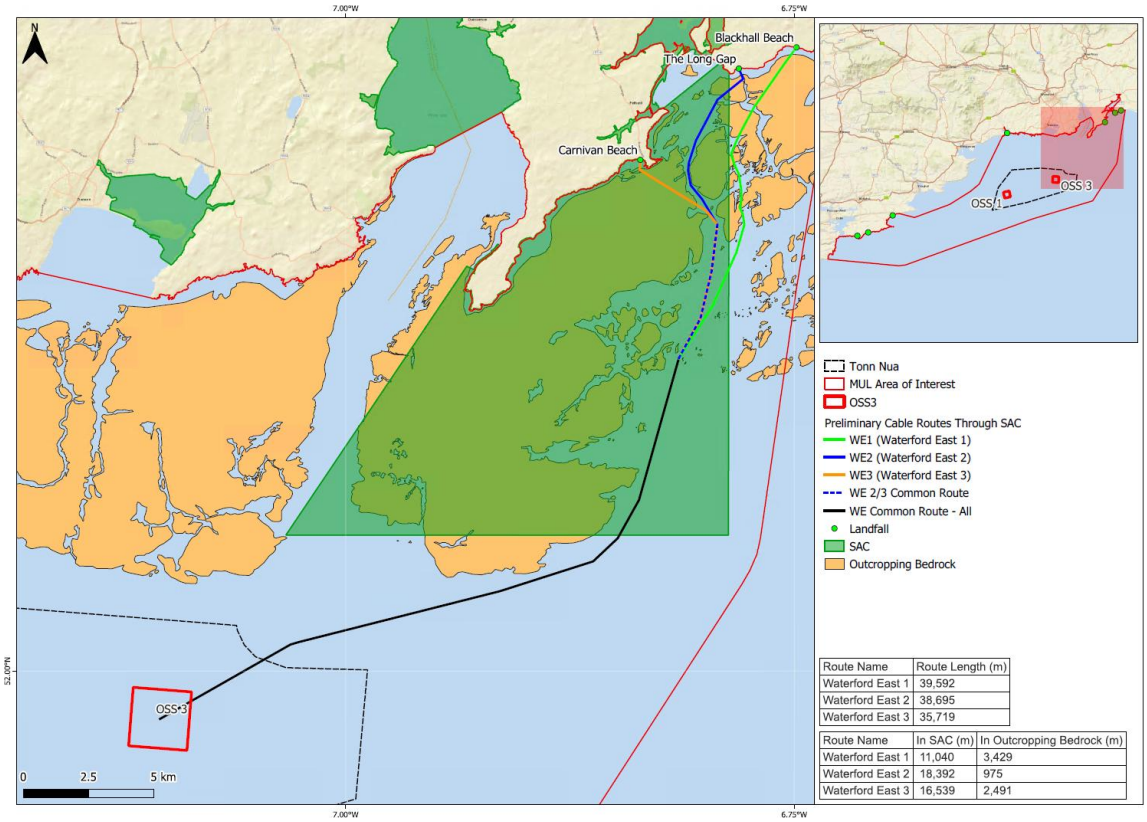


Figure 6-1 : Further developed Wexford and Cork offshore export cable route corridors

6.1 Wexford Routes' Development

The preliminary Wexford route options, for the option in which routes cross the SAC Hook Head area, are shown in Figure 6-2.

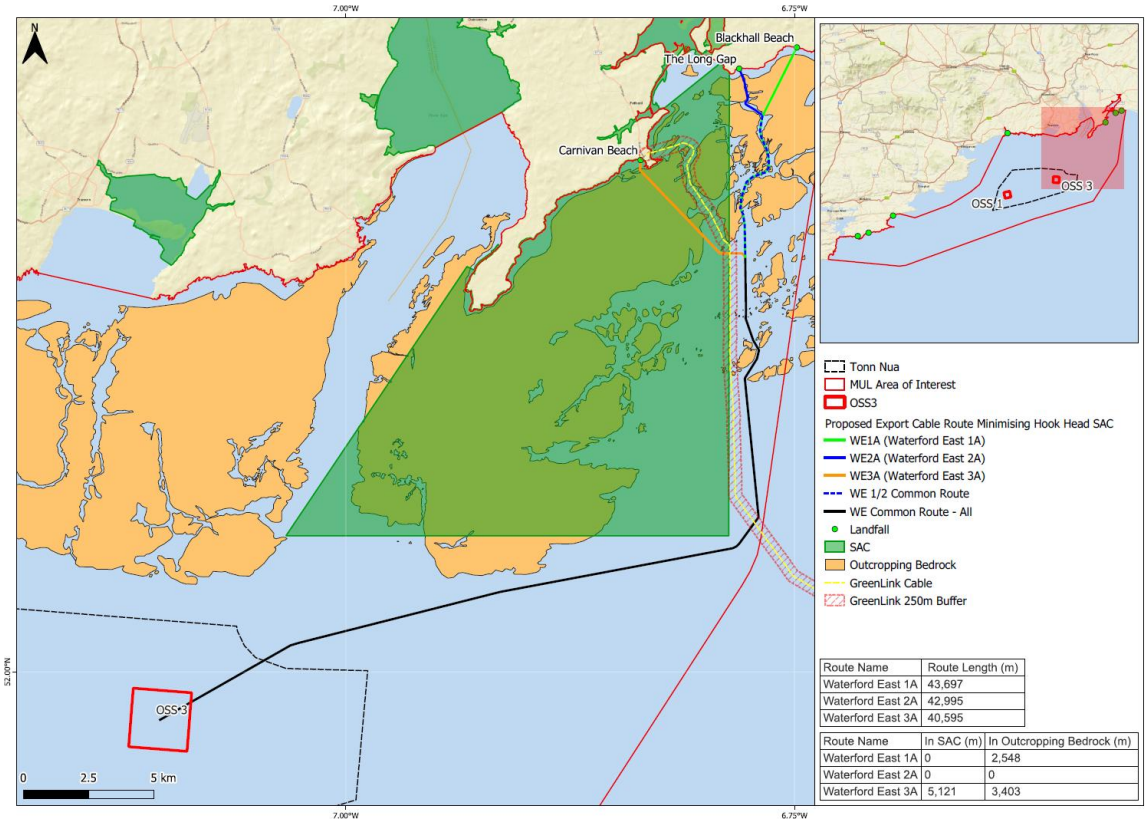
New route options were proposed to avoid or reduce the footprint in the Hook Head SAC in Wexford. WE1A and WE2A completely avoid the SAC, with route WE3A (Carnivan) passing through a reduced portion of the SAC. Figure 6-3 shows these alternative Wexford route options.



Route Name	Route Length (m)
Waterford East 1	39,592
Waterford East 2	38,695
Waterford East 3	35,719

Route Name	In SAC (m)	In Outcropping Bedrock (m)
Waterford East 1	11,040	3,429
Waterford East 2	18,392	975
Waterford East 3	16,539	2,491

Figure 6-2 : Preliminary Wexford cable route corridors routed through the Hook Head SAC



Route Name	Route Length (m)
Waterford East 1A	43,697
Waterford East 2A	42,995
Waterford East 3A	40,595

Route Name	In SAC (m)	In Outcropping Bedrock (m)
Waterford East 1A	0	2,548
Waterford East 2A	0	0
Waterford East 3A	5,121	3,403

Figure 6-3 : Alternative Wexford cable route Corridors avoiding / minimising impact to Hook Head SAC

A workshop was held in June 2025 to discuss these options. It was acknowledged that installation through the SAC would pose some consenting risks, though it did not preclude it so long as there would not be adverse effects to the conservation objectives of the SAC.

The route around the SAC would involve approximately 4 km additional cable length, which would result to increased costs of cable supply, installation and protection measures. This would also involve an increase in the disturbed footprint of the cable installation works. Additional survey costs would also be incurred to account to cover additional route corridors.

It was concluded at the time that the preliminary proposed routes of WE1, WE2 and WE3 would be surveyed in 2025.

On completion of the survey, all survey data would be reviewed to further understand the environment in the southern portion of the SAC; this will be examined with respect to potential adverse effects to the conservation objectives of the Hook Head SAC.

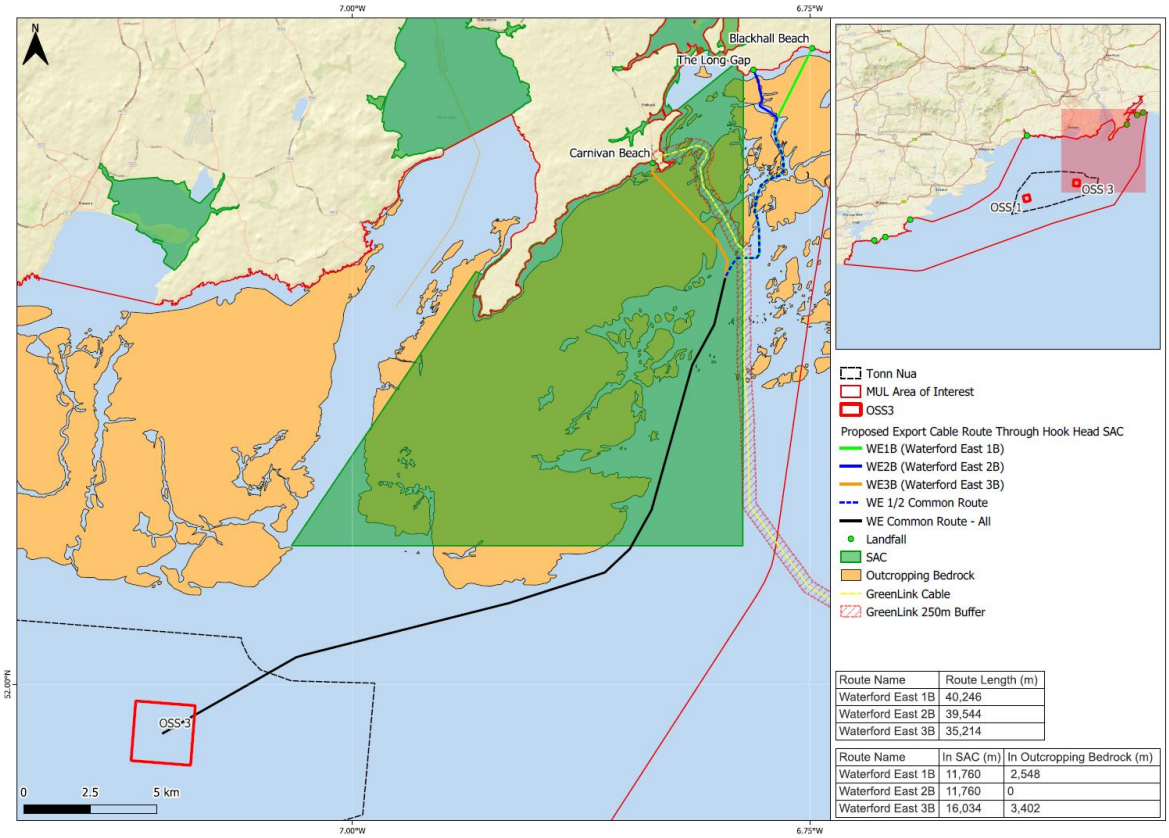
This would allow the project team to make an informed decision whether or not it was also required to survey routes that mainly avoid the SAC.

6.2 Wexford Nearshore Route Refinement (Hybrid Route)

Immediately prior to the marine surveys in July 2025, further discussions were held to refine the survey strategy for the Wexford area. A hybrid route was proposed. The purpose of this route refinement was to change the approach to the crossing of the Greenlink cable and to avoid rock outcrops so far as possible. This realignment moved two (2) of the nearshore route options outside of the SAC close to shore. These route options were given the name of WE1B, WE2B, WE3B.

These routes would reduce risks, from cable installation works and potential impacts to Annex I reef habitats (EMODnet, 2025) near shore within the SAC. The 2025 marine survey lines were altered to ensure this area was targeted during the survey.

The hybrid routes WE1B, WE2B and WE3B nearshore, along with their respective WE common cable, were proposed as the final 2025 survey corridors. These are shown within Figure 6-4.



Route Name	Route Length (m)
Waterford East 1B	40,246
Waterford East 2B	39,544
Waterford East 3B	35,214

Route Name	In SAC (m)	In Outcropping Bedrock (m)
Waterford East 1B	11,760	2,548
Waterford East 2B	11,760	0
Waterford East 3B	16,034	3,402

Figure 6-4 : Hybrid Wexford cable route corridors routed through the Hook Head SAC

Furthermore, Section 8 of this document includes an MCA of routes WE1, WE2, WE3, and WE1A, WE2A and WE3A in County Wexford; and routes Cork 1 and Cork 2 in County Cork. The MCA presented in Section 8 does not include an MCA of the additional route options WE1B, WE2B, WE3B, as they were proposed immediately prior to survey. Routing outside the SAC (WE1A, WE2A and WE3A) delivers consequential environmental benefits by minimising interaction with designated habitats and species. This reduces potential disturbance and supports compliance with conservation objectives. A full MCA will be repeated for route options following the survey to determine the best performing option.

6.3 Cork Cable Route

Development of the Cork cable route progressed further throughout early 2025 alongside other regional route options. Work focused on reviewing constraints, acquiring additional data, and building understanding of the area to inform potential routing options.

Three initial route options for Cork (Cork 1, Cork 2, and Cork 3) were proposed. All three options initially converged at a common Cork route corridor heading towards OSS1. All landfall locations include areas of outcropping bedrock, which present challenges for cable installation. Following further assessment, Cork 3 is not being progressed due to landfall constraints and the difficulty of installation in the outcropping bedrock.

The remaining Cork route options (Cork 1 and Cork 2) avoid designated sites, including SACs, and therefore do not pose the same environmental or consenting risks as some other routes. This reduces the need for route deviations, minimising additional cable length, installation complexity, and associated costs.

The proposed Cork alignments were confirmed for marine survey, allowing the project team to gather detailed baseline data. On completion of the survey, all collected data will be reviewed to verify that there are no adverse effects on protected habitats or compliance requirements under EU Directives and national legislation. This will support final route confirmation without the need for alternative alignments to avoid sensitive areas.

Further details of the preliminary Cork route corridors are presented in Figure 6-5.

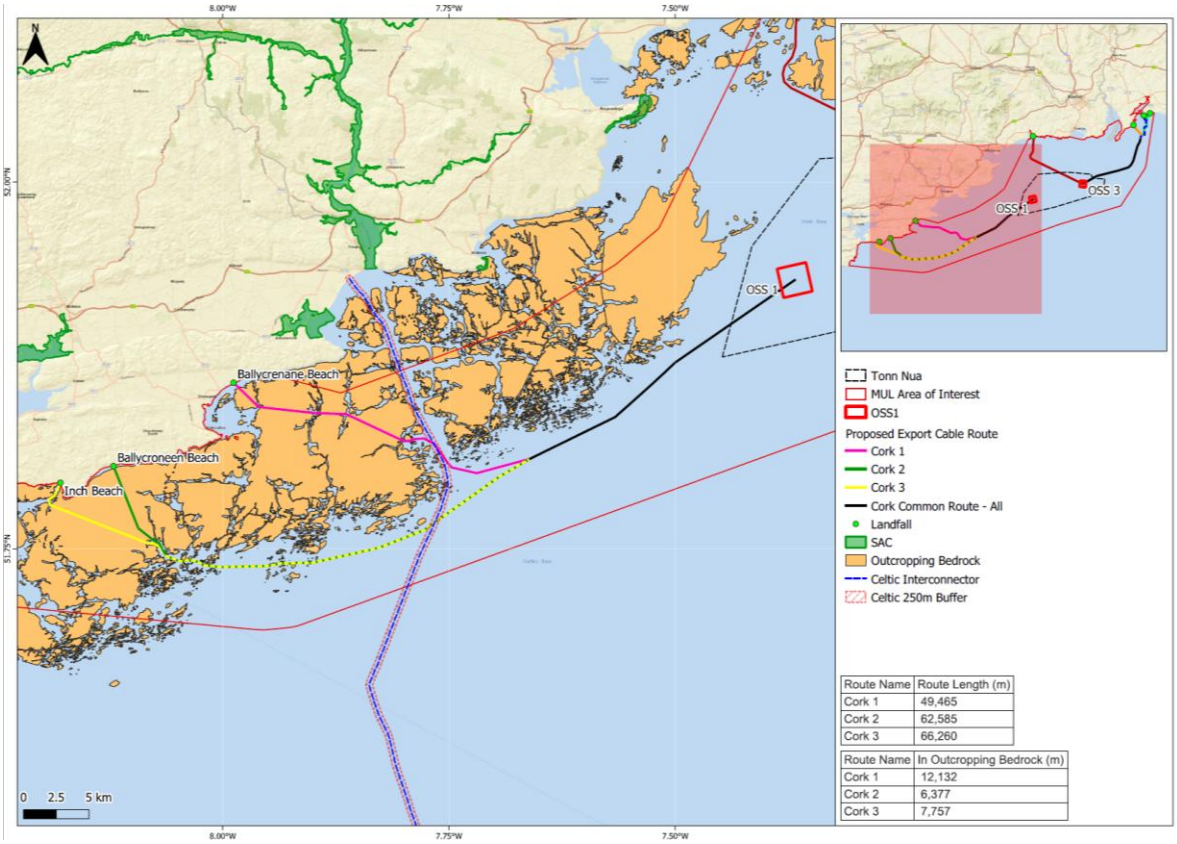


Figure 6-5 : Preliminary Cork cable route corridors

6.4 Summary of Cable Routes and Landfall Zones

The following table provides a summary of all offshore export cable route options and associated landfall zones considered for the project. It consolidates the preliminary, alternative, and hybrid route variations alongside the proposed Cork and Waterford West routes. For each route, the Table 6-1 identifies the OSS connection point, landfall location, corresponding landfall zone, relevant figures, and any interaction with the Hook Head SAC. This summary is intended to support comparison across route options and provide a clear reference for subsequent environmental and technical assessments.

Table 6-1 : Summary of cable routes and landfall zones

Cable Route	OSS	Landfall Name	Landfall Zone	Figure	SAC Impact
Preliminary Routes					
WE1 (Waterford East 1)	3	Blackhall Beach	**G**	Figure 6-2	Through Hook Head SAC
WE2 (Waterford East 2)	3	The Long Gap	**F**		Through Hook Head SAC
WE3 (Waterford East 3)	3	Carnivan Beach	**E**		Through Hook Head SAC
Alternative (Alt) Routes					
WE1A (Waterford East 1A Alt)	3	Blackhall Beach	**G**	Figure 6-3	Avoiding Hook Head SAC
WE2A (Waterford East 2A Alt)	3	The Long Gap	**F**		Avoiding Hook Head SAC
WE3A (Waterford East 3A Alt)	3	Carnivan Beach	**E**		Avoiding Hook Head SAC
Future Proposed Hybrid (Hyb) Routes					
WE1B (Waterford East 1B Hyb)	3	Blackhall Beach	**G**	Figure 6-4	Through Hook Head SAC
WE2B (Waterford East 2B Hyb)	3	The Long Gap	**F**		Through Hook Head SAC
WE3B (Waterford East 3B Hyb)	3	Carnivan Beach	**E**		Through Hook Head SAC
Cork Routes					
Cork 1	1	Ballycrenane Beach	**C**	Figure 6-5	N/A
Cork 2	1	Ballycroneen Beach	**B**		N/A
Cork 3	1	Inch Beach	**A**		N/A
Waterford West Route					
WW1 (Waterford West)	3	Bunmahon Beach	**D**	Figure 4-2	N/A

7 OFFSHORE EXPORT CABLE PROTECTION METHODOLOGY

Cable protection considerations form a vital component when it comes to identifying workable cable routes. Protecting undersea cables involves a multi-layered approach combining physical measures and route selection. Route selection aims to avoid high-risk areas like designated anchorages or areas of high fishing activity. As such, a summary of prospective cable protection considerations has been included in this section, which are considered in conjunction with the acquired surveyed data to enhance risk assessments and cable routing refinement in the future stages of the project.

Based on desk-top studies undertaken for the landfalls and analysed in Step 3 Emerging Best Performing Options Report[1] the preliminary offshore cable routes were developed to minimise all risks including technical risks and find the safest route for the cables.

To support this process, a summary of prospective cable protection considerations has been included in this section. These considerations, together with the survey data that will be acquired, will facilitate enhanced risk assessment and subsequent cable route refinement in later stages of the project. Importantly, they allow cross-comparison of various route options, ensuring that the relative technical, environmental, and installation risks can be systematically evaluated and that route selection decisions are clearly justified.

The outcomes of this assessment also inform a number of key inputs to the MCA section, by providing early visibility of potential protection requirements, localised impacts, and interactions with sensitive habitats or designated marine areas.

7.1 Summary of Cable Burial Tools

The assessment and selection of the correct burial tool will be an iterative process as the route designs develop, and more site-specific information becomes available. The tools associated with each of the different burial concepts, as a high-level indication, are identified in Figure 7-1. The suitability of the tools in various soils and rock has been used in estimating the lengths included in Section 7.2. Actual cable protection methodologies will be determined after analysis of the actual seabed geotechnical data has been collated and a Cable Burial Risk Assessment (CBRA) has been undertaken.

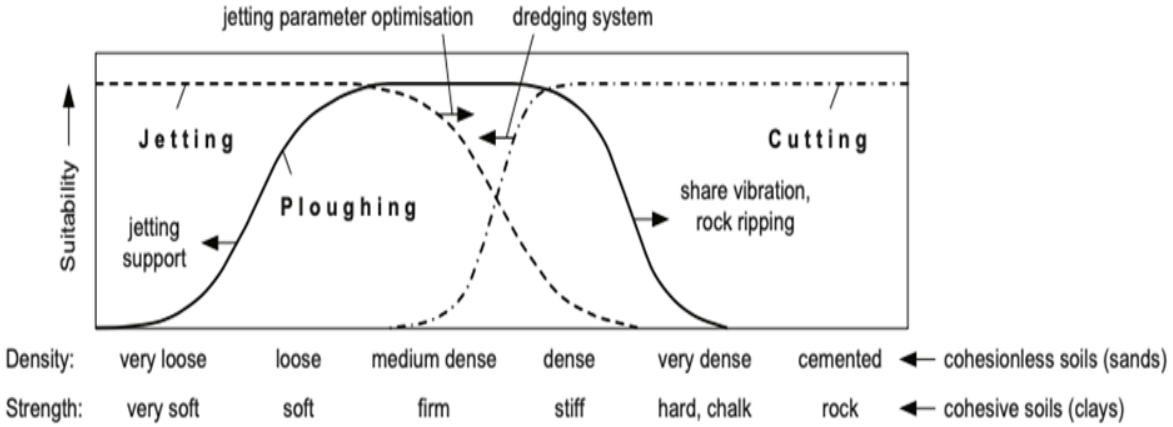


Figure 7-1 : High-level indicative offshore cable burial tool capabilities[12]

In general, ploughing is applicable across a broad range of ground conditions, jetting is most effective in softer or looser sediments, and mechanical cutting becomes necessary where soils are very dense, hard, or transitioning into rock.

When the cable cannot be buried using ploughing or jetting techniques, or mechanical trenching techniques (such as chain cutter or rock wheel) alternative methods of cable protection would be required and may include the use of rock placement, articulated piping shell products, concrete mattresses, or rock-filled bags.

7.2 Summary of Cable Lengths and Proposed Burial Methods

7.2.1 Waterford / Wexford

Table 7-1 shows the export cable route lengths and potential cable burial methodology for the various seabed conditions. Approximate route length in the SAC is provided for information.

The lengths have been used as an input to the Economics MCA.

[12] EN010125-001772-8.20 Cable Statement (Revision 5) (Tracked).pdf

Table 7-1 : Wexford cable route lengths and protection methodology for seabed conditions

Route Corridor	Landfall	OSS	Total Route Length (km)	Plough/Water Jetting Burial Techniques Installation Length (km)	Mechanical Trenching/ Alternative Cable Protection Methods Length (km)	Route Length in SAC Length (km)
WE1 (Waterford East 1)	Blackhall Beach (G)	3	39.6	36.2	3.4	11.0
WE2 (Waterford East 2)	The Long Gap (F)	3	38.7	37.7	1.0	18.4
WE3 (Waterford East 3)	Carnivan Beach (E)	3	35.7	33.2	2.5	16.5
WW1 (Waterford West)	Bunmahon (D)	3	29.3	29.3	0.0	0.0
WE1A (Waterford East 1 Alt)	Blackhall Beach (G)	3	43.6	41.1	2.5	0.0
WE2A (Waterford East 2 Alt)	The Long Gap (F)	3	43.0	43.0	0.0	0.0
WE3A (Waterford East 3 Alt)	Carnivan Beach (E)	3	40.6	37.2	3.4	5.1
WE1B (Waterford East 1 Hyb)	Blackhall Beach (G)	3	40.2	37.7	2.5	11.8
WE2B (Waterford East 2 Hyb)	The Long Gap (F)	3	39.5	39.5	0.0	11.8
WE3B (Waterford East 3 Hyb)	Carnivan Beach (E)	3	35.2	31.8	3.4	16.0

WE1, WE2 and WE3 share approximately 26 km of common route corridor from OSS3 until they diverge to their respective landfalls (Figure 6-2).

WE1A, WE2A and WE3A (avoiding Hook SAC) share approximately 35 km of common route corridor from OSS3 until they diverge to their respective landfalls (Figure 6-3).

WE1B, WE2B and WE3B (hybrid routes) share approximately 30 km of common route corridor from OSS3 until they diverge to their respective landfalls (Figure 6-4).

7.2.2 Cork

Table 7-2 shows the export cable route corridor lengths and potential cable burial methodology for the various seabed conditions identified.

Table 7-2 : Cork cable route lengths and protection methodology for seabed conditions

Route Corridor	Landfall	OSS	Total Route Length (km)	Plough/Water Jetting Burial Techniques Installation Length (km)	Mechanical Trenching/ Alternative Cable Protection Methods Length (km)
Cork 1	Ballycrenane Beach (C)	1	49.5	37.4	12.1
Cork 2	Ballycroneen Beach (B)	1	62.6	56.2	6.4
Cork 3	Inch Beach (A)	1	66.3	58.5	7.8

For the Cork route corridor, it shows that Cork 1 and Cork 2 share approximately 25 km of common route corridor from OSS1 until they diverge to their respective landfalls (Figure 6-5).

Cork 3 route has been analysed in Section 6.3 and found to be unsuitable on technical, safety and economic grounds and it was not progressed further.

8 MULTI-CRITERIA ANALYSIS (MCA)

A multi-stage methodology was applied to identify and evaluate potential technical, economic, environmental; socio-economic and deliverability performance associated with the cable routes.

There are two (2) MCA groups for the chosen preliminary routes' corridors.

- **Waterford / Wexford:** Six (6) MCAs have been conducted, one for each of the six (6) cable routes: WE1, WE2 and WE3, and their alternative routes, WE1A, WE2A and WE3A that avoid the SAC. Routes WE1B, WE2B, and WE3B, which are a hybrid of WE1, WE2, WE3 and their alternative routes WE1A, WE2A, and WE3A, were proposed immediately prior to the marine surveys. These routes will be included in a future MCA to determine the best-performing options.

- **Cork:** Two (2) MCAs have been conducted, one for each of the Cork cable route corridors: Cork 1 and Cork 2.

Further information supporting the environmental performance is provided in the report included in Appendix E, and the MCA for environmental criteria has been developed on the basis of the findings presented in that report.

8.1 Performance Criteria for Offshore Transmission Cable Route Corridor Selection

The following performance criteria have been used to assess the export cable route from a preliminary proposed substation location to provisional landfalls locations in the Cork and the Waterford / Wexford areas:

- Technical,
- Economic,
- Deliverability,
- Socio-Economic,
- Environmental.

The risk ranking can be found in Appendix A and Appendix B and for this study equal weighting was given across the five (5) criteria.

Each route option – six (6) routes WE1, WE2, WE3, WE1A, WE2A and WE3A for Waterford / Wexford and two (2) routes for Cork, Cork 1 and Cork 2 – was assessed in the MCA against the above listed criteria, which are described in detail below. The MCAs are contained in Appendix C and Appendix D.

8.2 Technical Performance

Technical performance of the different cable routes and landings was assessed under consistent and conventional headings. These include constructability, obstacles, route, landfall, design, interfaces, ground conditions (land and subsea), metocean, expansion, stakeholders (land and subsea cables / pipes).

Technical considerations for all route corridors analysed the potential of other third-party user demands (expansion), primarily at the landfall zone and its approach to the landfall, taking into account ground conditions, marine processes and nearshore and further offshore obstacles such as wrecks, boulders, other offshore infrastructure such as cables, pipelines etc.

The overall route corridor length assumed that cable protection measures would be required for seabed soils identified along the routes. In addition, the key technical issue of cable transportation and installation was assessed. Landfall, OSS termination, lay, burial and protection of an asset with a life of many years, together with design of its monitoring, inspection, repair and replacement are key issues that were assessed comparatively.

The types of installation vessels were considered based on the approach corridor distance to the 15 m contour, and whether a single deep-drafted installation vessel could perform the operations, or if, due to water depths, a shallow installation vessel would be required for the nearshore and landfall operations, followed by a deep-drafted installation vessel for the remaining operations.

The geotechnical conditions were considered for each route. The length of the cable route impacts the economic performance; however, the split of installation by plough (in clays and sands) versus installation by trenching (hard clay and rock) makes a difference in the technical assessment of the different routes. The risk of boulders, and other obstructions was also assessed. Metocean conditions were assumed not to be different across the cable route options.

8.3 Economic Performance

Economic performance of the different cable routes and landings was assessed under consistent and conventional headings. These include length of cable, unit cost of installation, obstacles, near shore, landfall, boulders, commercial and risk.

The assessment is primarily driven by the route / cable lengths which directly impacts manufacture, transport and installation times, cable burial and protection methodology used, the number of cable crossings and the number of installation vessels that may be required which increases time, risk and cost.

Analysis identified that the extent of rock outcrop in cable route (in km), and the assumed methodology of installation and cable protection was one of the principal issues. Section 7.2 provides a summary of cable lengths and proposed burial methods.

The number of cable installation vessels that may be required and the number of cable and pipe crossings also impacts the overall cost.

Each of these issues have been included in the comparable economic analysis of the overall cable length from each landfall to the nominated OSS.

8.4 Deliverability Performance

Deliverability performance of the different cable routes and landings was assessed under consistent and conventional headings. These include seasonal constraints, constructability, enabling works, access, reinstatement, obstacles, permits, programme, weather, interfaces, and stakeholders.

Deliverability is very dependent upon the comparative difficulty and challenges of the installation methodology. This in turn is based on cable route corridor lengths, relevant seabed geotechnical considerations and assumed cable protection methodology, number of cable crossings and number of installation vessels that may be required and additional post lay burial operations.

Deliverability is also dependent upon the commercial market for the supply, transportation and installation of the cable. This is considered not to be a differentiator except in the case of the comparative complexity of the scope and design.

In summary, deliverability is assumed not to be differentiator, taking into account seasonal or local constraints, enabling works, re-instatement, permits and wayleaves, achieving statutory consent and obtaining third party consents.

8.5 Socio-Economic Performance

8.5.1 Introduction

This section presents the current socio-economic baseline and provides a clear understanding of the existing human and economic activities along each proposed cable route option. The baseline has been developed using a range of publicly available datasets and studies, all of which are cited appropriately within the text.

The following socio-economic receptors have been considered:

- Recreation and Tourism,
- Commercial Fisheries,
- Landscape and Seascape,
- Marine Cultural Heritage,
- Shipping and Navigation.

8.5.1.1 Recreation and Tourism

A bathing water designated beach, Garryvore, is located approximately 1.2 km north-east of the Cork 1 landfall. Both are located on the same beach. Besides this, there is no overlap between any of the landfall areas and a designated bathing water area.

No ferry routes are crossed by any of the proposed cables.

Recreational usage of the coast includes activities such as sailing and kayaking and occurs across all routes to a small degree.

8.5.1.2 Commercial Fisheries

Commercial fisheries are active within Irish waters, with over two thousand (2,000) registered fishing vessels and an estimated number of one thousand three hundred eighteen (1,318) active vessel. The majority of these are under 12 m in length, so are not captured within vessel monitoring system (VMS) data (Perry et al., 2024). The Irish fishing fleet is engaged in a variety of fisheries and targets a wide range of commercial species. Of the fisheries active in the country, the most important are for demersal and shellfish including blue whiting, Atlantic mackerel, anglerfish, European hake, edible crab, and Norway lobster (SFPA, 2024). The cable routes are located within the International Council for the Exploration of the Sea (ICES) Celtic Sea Ecoregion, division 7.a (Irish Sea).

Multiple fishing ports are also located within the area. In 2023, Ballycotton landed 986 tonnes of fish and Kilmore Quay landed 4,315 tonnes. Dunmore East (the largest fishing port located within the vicinity of the Waterford cable routes) landed 6,566 tonnes of fish (SFPA, 2024).

Gear types used varied in intensity across the proposed cable routes. Beam trawling had higher effort across the Cork routes and continued to trawl along the Cork 2A route on its approach to landfall, whilst use of beam trawls across the Waterford routes was low. Bottom trawling effort was generally low, with a slightly higher area of activity located south of the Cork routes within the Tonn Nua boundary. Dredging was concentrated along the western section of the Waterford routes but did not occur on the Cork routes. Gill netting effort was low and only occurred in the nearshore area of both Cork routes. No long lines were recorded as being used across any of the cable routes. Pelagic trawls, however, had an elevated level.

The commercial fisheries baseline described above has been taken into account during the socio-economic evaluation of the route options. Details are included in Appendix E. Each route has a slightly different commercial fishery impact; however, no unique operational constraints have been identified for any of the options. Nevertheless, consultation will be required to manage timing of cable installation.

Commercial fisheries were not treated as a hard constraint, given the temporary nature of cable construction and the expectation that fishing activity can resume during operations. This will be reconsidered in more detail during final route selection.

8.5.1.3 Landscape and Seascape

The submarine cable, whichever route is selected, will not be visible above shore so will not impact on landscape or seascape after the temporary installation phase has concluded. As a result, this will not be considered further.

8.5.1.4 Marine Cultural Heritage

All planned cable routes avoid all known and charted wrecks. There are multiple wrecks within the vicinity of the planned routes, particularly around the Cork 1A and Cork 2A routes, with vessels including a steam trawler SS Exeter, and a steel steamship SS Gracia, two (2) examples located within 1 km of the Cork 2A and Cork 1A routes respectively. A map of known wrecks is presented in Figure 8-1.

However, the area between Hook Head and the Saltee Islands is known to contain numerous unidentified or uncharted wrecks, which may present additional constraints during survey and construction activities.

All routes will be laid 250 m from any known wreck.

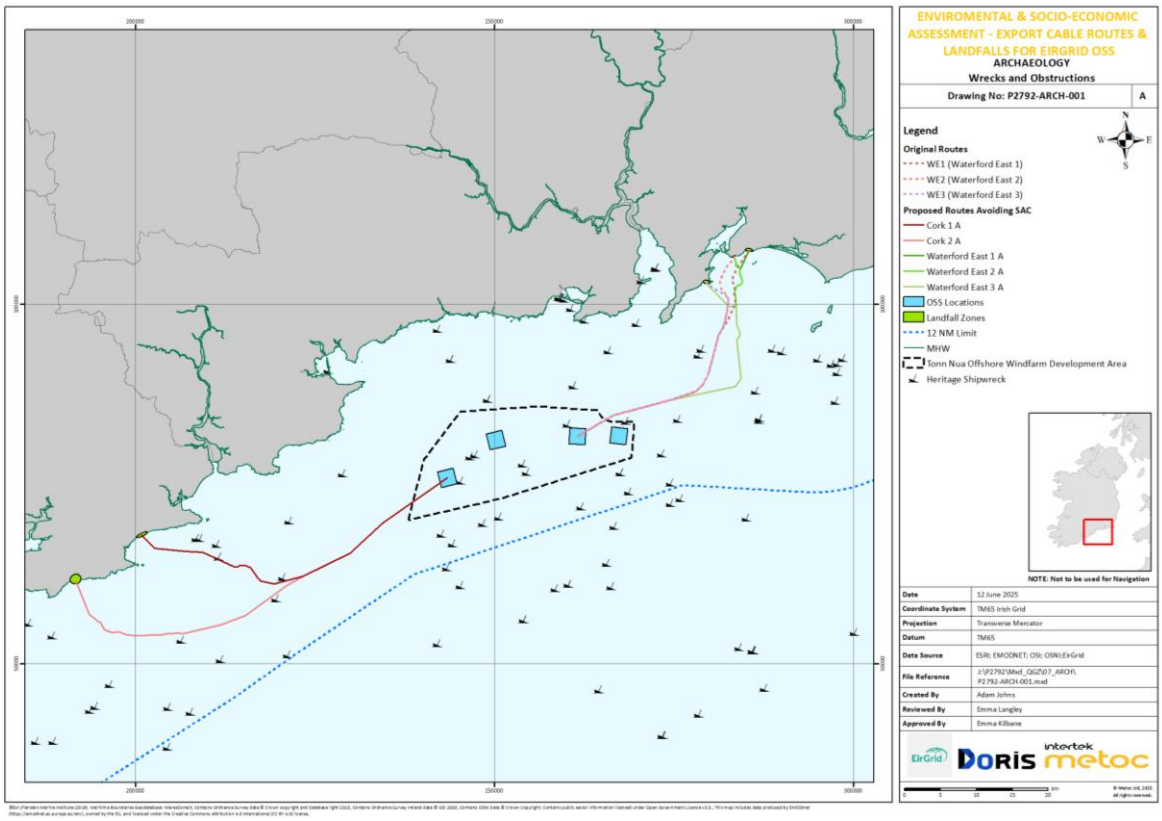


Figure 8-1 : Wrecks within the vicinity of the planned cable routes

8.5.1.5 Shipping and Navigation

Vessel traffic (as shown in Figure 8-2) is relatively low across all proposed cable routes, with the exception of a small hotspot between the WE2 and WE3 routes close to shore. Another hotspot is noted to the east of the Cork 1A landfall, which is associated with Ballycotton Harbour.

A route to enter the River Barrow is seen crossing all Wexford routes in a perpendicular orientation, however the vessel density is still low with between two (2) to five (5) vessel hours per km2 per year shown in the vicinity of the cable routes. This is made up largely of Cargo vessels, and another increase in vessel traffic to the same level is shown parallel to the Cork routes, running in a west to east direction and this is made up primarily of tanker vessels.

Fishing activity (as shown in Figure 8-3) is more sporadic, with activity concentrated outside of the 12 nm limit and within bays close to the shore. An increase in activity is observed close to all Wexford landfalls; however, this is still considered low level of activity at two (2) to five (5) vessel hours per km^2 per year. A similar hotspot is seen to the east of the Cork 1A landfall, associated with Ballycotton Harbour.

Sailing activity is low density and concentrated around the coast. Vessels tend to travel parallel to the coastline and therefore slight increases in activity are seen across all proposed cable routes.

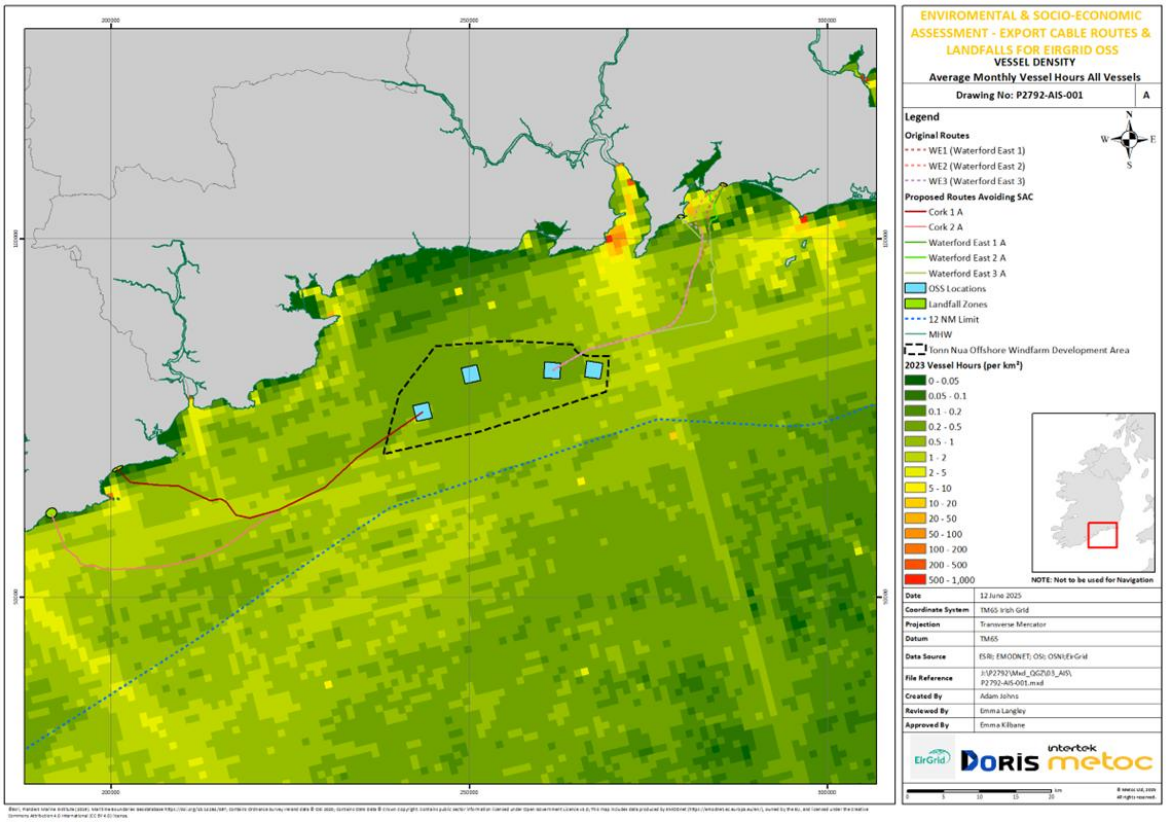


Figure 8-2 : Average monthly vessel hours (all vessels)

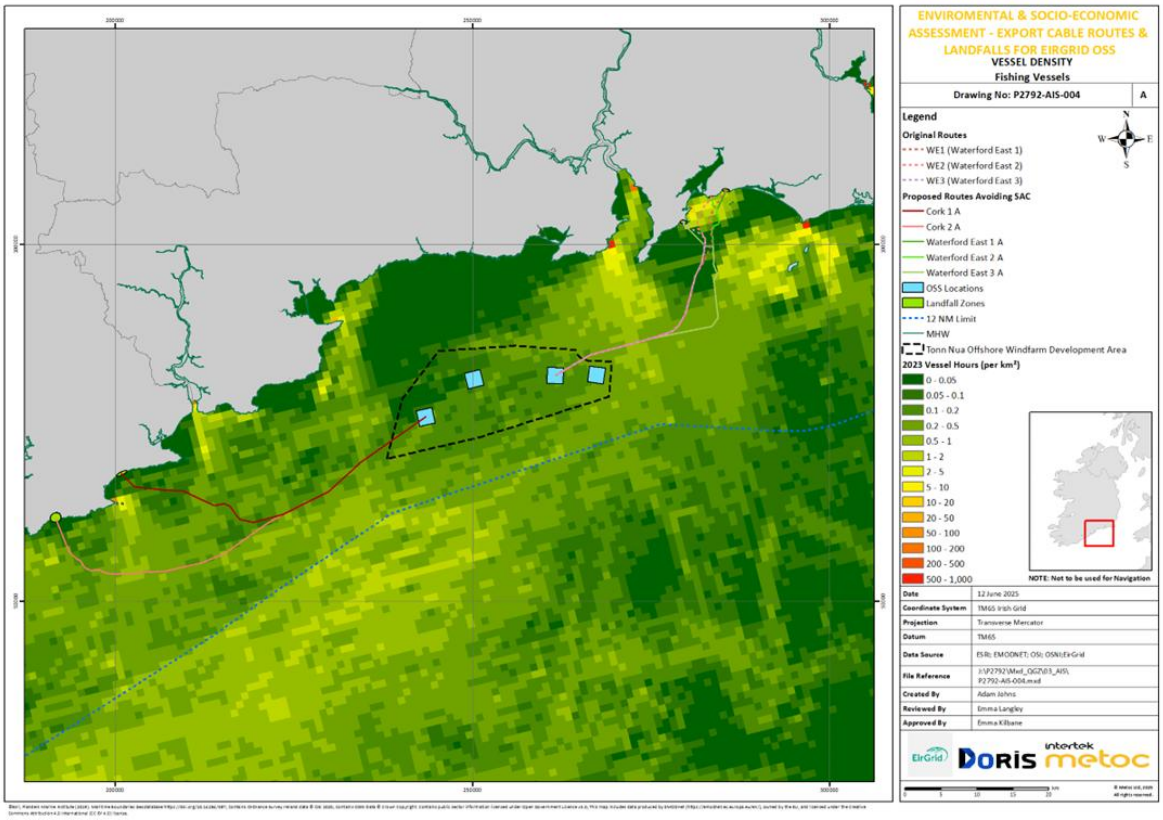


Figure 8-3 : Fishing vessels density

8.6 Environmental Performance

Environmental performance of the different cable routes and landings was assessed under consistent and conventional headings. These include marine designated areas, seabed sensitive areas, fish, crustaceans, marine mammals and birds.

The environmental performance review contributes to the route selection and the OSS siting by assessing publicly available data to identify the optimum route. It outlines the environmental baselines that may influence route selection. Further information can be found in Appendix G to Appendix H.

A comparative environmental impact of the 4 km of additional cable lengths compared with routing through the Hook Head SAC has not been assessed.

8.6.1 Environmental Baseline

An assessment of the potential environmental effects of an operation relies on a thorough understanding of the existing environmental conditions. This section outlines the current baseline of environmental receptors in the region that may be subject to influence from any of the proposed cable routes.

The environmental baseline has been established using publicly available data sources, which are referenced accordingly within the text. The following receptors have been considered:

8.6.1.1 Marine Designated Areas

As presented in Figure 8-4, there are two (2) marine designated areas that overlap with the cable route options: Hook Head SAC and Seas off Wexford SPA. In addition, Kerragh Islands SPA and Bannow Bay SAC are located in close proximity to the Wexford landfall options and should also be considered in the environmental assessment.

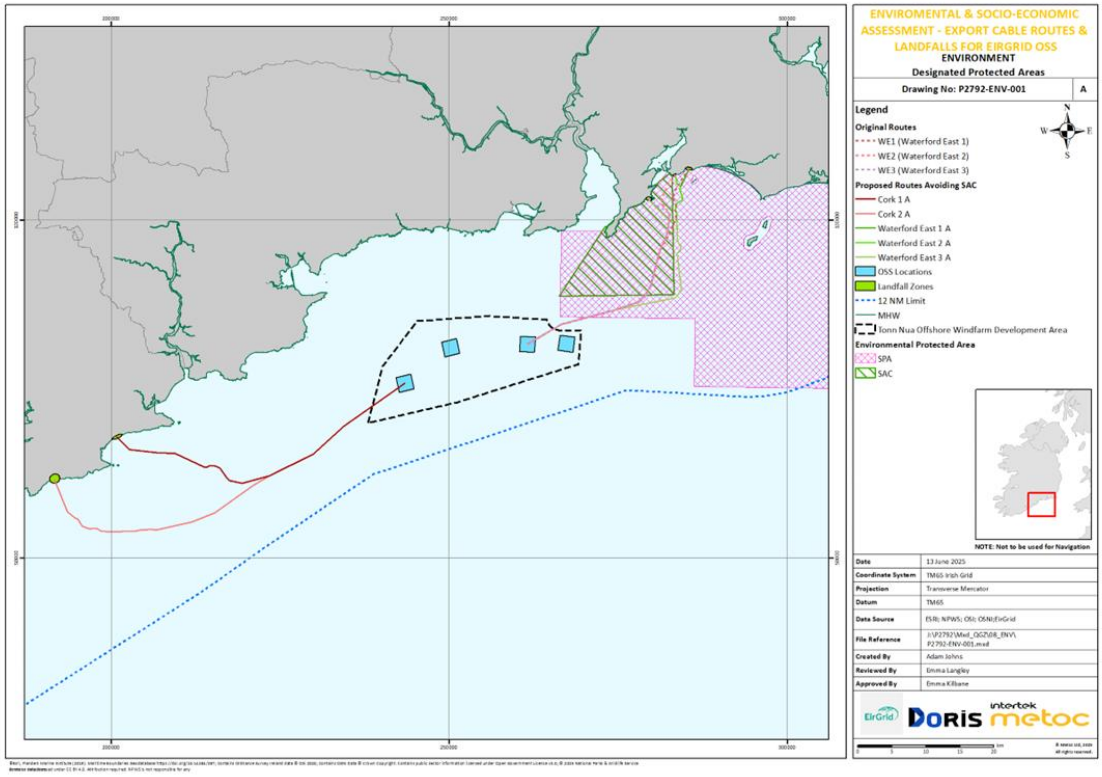


Figure 8-4 : Designated sites that interact with the proposed cable routes

8.6.1.2 Seabed communities and sensitive features

Benthic ecology refers to the habitats and species associated with the seabed, and an assessment of sensitive habitats along the cable routes was conducted using predictive data from the EUSeaMap Broad-Scale Predictive Habitat Map (EMODnet, 2025). Annex I biogenic and geogenic reefs, protected within the Hook Head SAC, are present in the region, as seen in Appendix F, with routes WE3, WE3A, and WE2 crossing these reef areas to varying extents. Biogenic reefs formed by Sabellaria spinulosa and Sabellaria alveolata have also been identified, with one (1) reef patch located near the Long Gap landfall, though not intersected by any cable routes.

Figure 8-5 presents EMODnet seabed habitat data, while Figure 8-6 shows the corresponding NPWS Annex I reef habitat information for the Waterford cable area.

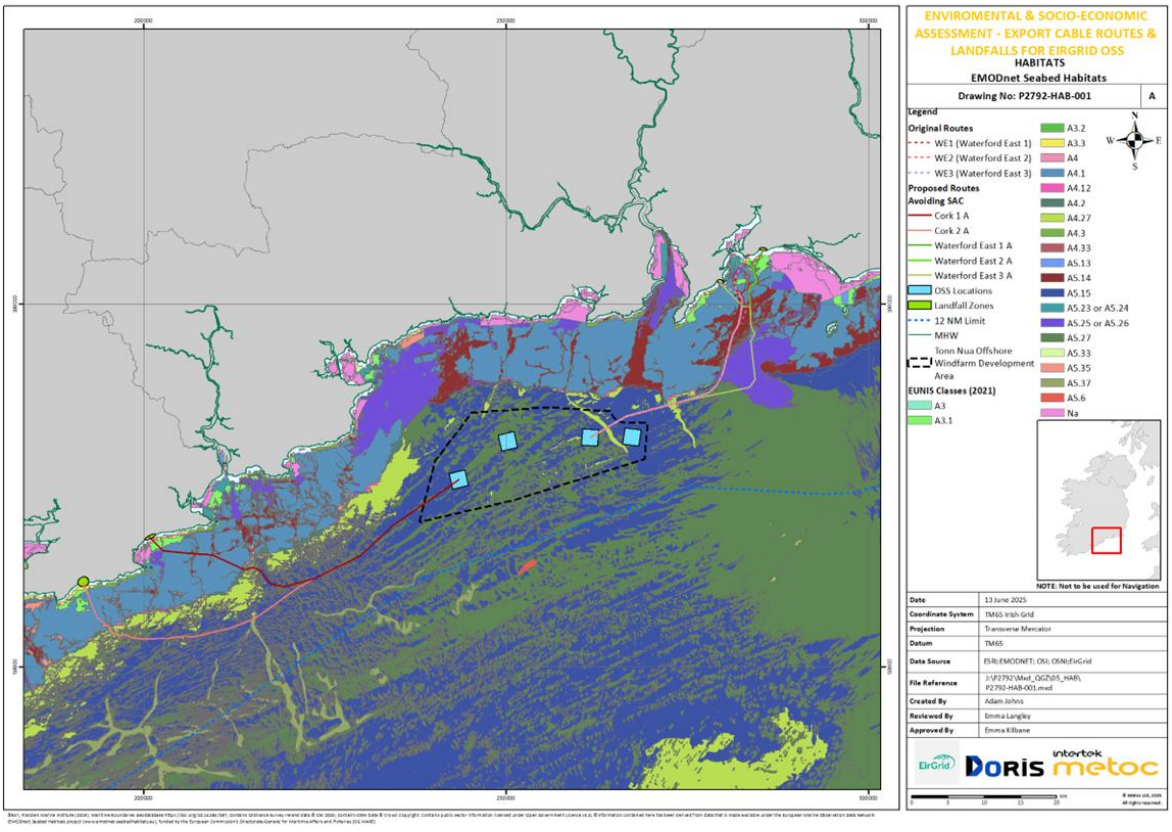


Figure 8-5 : EMODnet seabed habitats

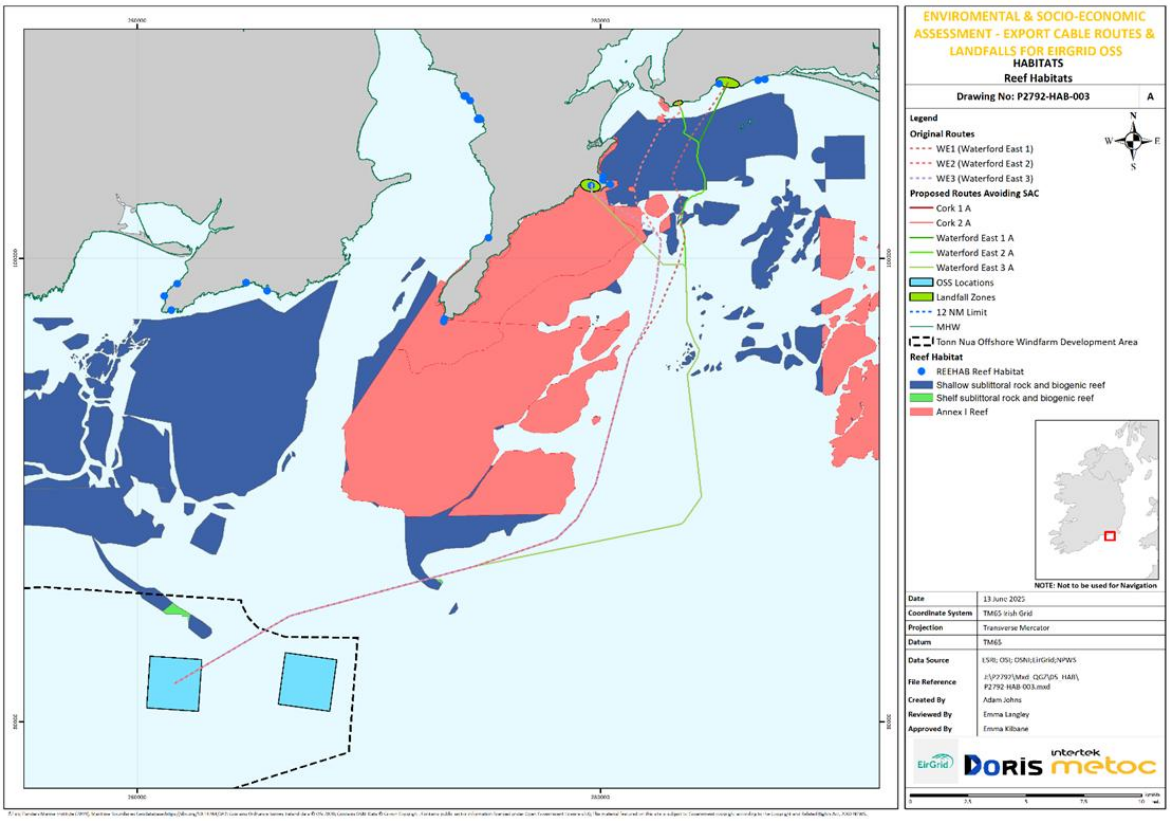


Figure 8-6 : Annex I Reef Habitats NPWS Data in relation to Waterford Cables

8.6.1.3 Fish and crustacean spawning grounds and nursery areas

The Irish Sea supports a wide range of demersal and pelagic fish species that use the area for key life stages such as spawning and nursing, with proposed cable routes overlapping spawning and nursery grounds for eight (8) commercially important species, including cod, mackerel, and herring. Notably, herring spawning grounds, particularly the Baginbun I area near Carnivan Beach and the Tramore and Hook Head regions, intersect or lie close to several Waterford route options. A summary of spawning and nursery periods for commercially important fish species in the vicinity of the proposed cable routes is in Figure 8-7, Appendix G and Appendix H.

Table 8-1 : Distance of each route through herring spawning grounds and beds

Cable route	Ballycotton Spawning Ground	Tramore Spawning Ground	Baginbun Spawning Ground	Baginbun Spawning Bed
WE1 (Waterford East 1)	N/A	2.9 km	19.9 km	N/A
WE2 (Waterford East 2)	N/A	2.9 km	19.5 km	3.4 km
WE3 (Waterford East 3)	N/A	2.9 km	15.8 km	3.8 km
WE1A (Waterford East 1 Alt)	N/A	2.9 km	14.9 km	N/A
WE2A (Waterford East 2 Alt)	N/A	2.9 km	14.4 km	N/A
WE3A (Waterford East 3 Alt)	N/A	2.9 km	11.5 km	3.4 km
WE1B (Waterford East 1 Hyb)*	N/A	2.9km	20.6km	N/A
WE2B (Waterford East 2 Hyb)*	N/A	2.9km	20.2km	N/A
WE3B (Waterford East 3 Hyb)*	N/A	2.9km	15.3km	3.5km
Cork 1	17.1 km	N/A	N/A	N/A
Cork 2	10.5 km	N/A	N/A	N/A
***WE1B, WE2B and WE3B estimated by Intertek post-MCA**				

Crustacean species such as Nephrops and brown crab are also prevalent along the coastline, although no aquaculture or designated shellfish waters intersect with the cable routes, and thus these receptors are not considered further.

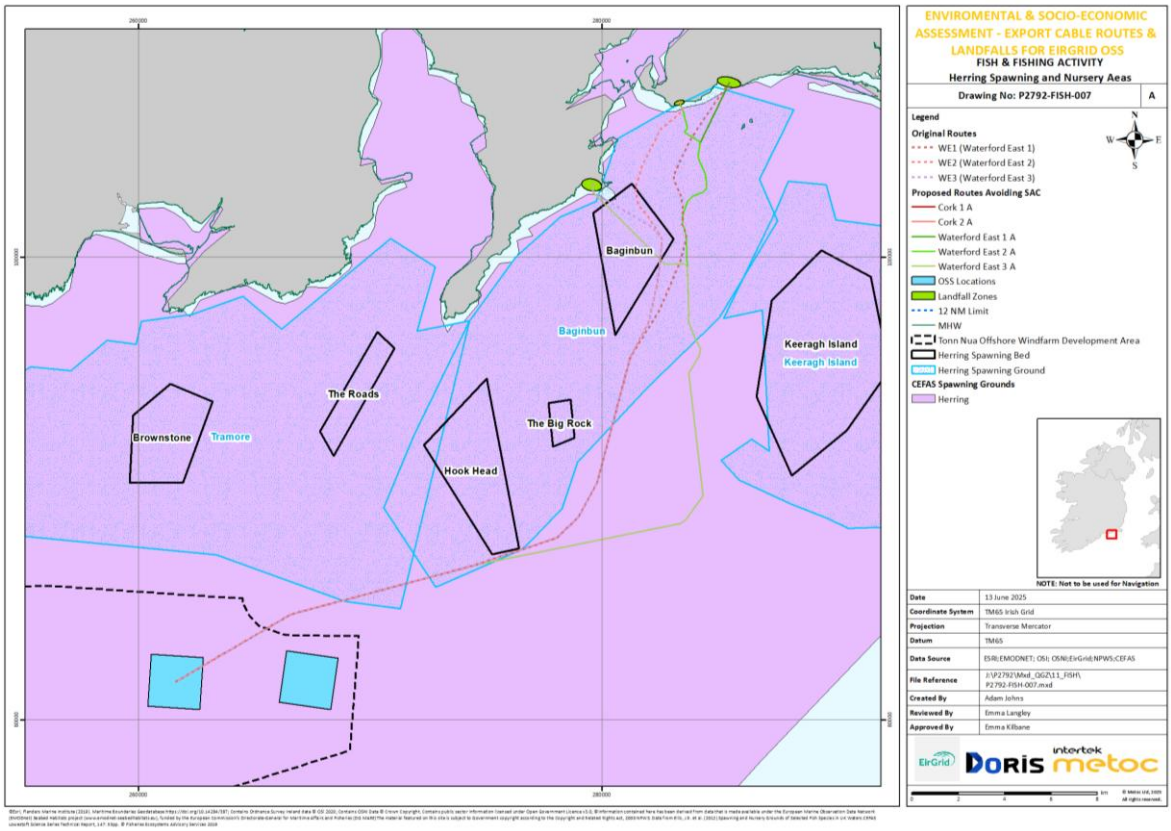


Figure 8-7 Herring spawning areas[13] in relation to Waterford Cable

8.6.1.4 Local and migratory bird populations

Aerial surveys identified twenty-four (24) seabird species along the Irish coastline, with frequently observed species including auk species, northern gannet, northern fulmar, and black-legged kittiwake, and seasonal variation noted between summer and winter populations. Although surveys did not specifically cover inshore areas near the proposed cable routes, species such as Manx shearwater, black guillemot, and gulls were recorded along the south coast. The seas off Wexford SPA overlap with the Waterford routes and support both breeding and non-breeding bird species; however, due to bird mobility and the proximity of routes, it is not possible to determine a clear difference in bird presence across individual route options.

In addition, the Kerragh Islands SPA is located in close proximity to the Wexford landfall options and supports breeding seabird populations. While no direct overlap with the SPA is currently identified, the potential for disturbance during sensitive breeding periods should be considered. This highlights the potential need for temporal restrictions, to be further assessed at the EIA stage.

[13] (PDF) An Inventory of Irish Herring Spawning Grounds

8.6.1.5 Marine mammals

Approximately six (6) cetacean species, including common dolphin, bottlenose dolphin, harbour porpoise, and fin whale, have been recorded off Ireland's south coast and may be present seasonally, while deep-water species like sperm and pilot whales are unlikely to occur in the inshore cable route areas. Sightings data from the Irish Whale and Dolphin Group (2025) indicate relatively low observation levels in Waterford, with one hundred and sixty-four (164) records submitted between June 2024 and June 2025, predominantly of common dolphins. As cetaceans are wide-ranging, individuals encountered in the Celtic Sea belong to broader populations, and management units (MUs) have been established for seven (7) common species to guide impact assessments across appropriate spatial scales.

8.7 Combined MCA for the Waterford / Wexford Cable Corridors

Table 8-3 is the high-level combined summary for the Wexford cable corridors, and details can be found in Appendix C.

Table 8-2 : MCA legend

Ranking	Description
	High: High probability that the risk would result in an overall proposed development that is not deliverable or may not be granted consent.
	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.
	Moderate: Identified but manageable risk requiring bespoke mitigation measures.
	Low Moderate: Identified risk, but manageable with appropriate and standard mitigation measures.
	Low: An opportunity or a limited risk, assuming that accepted best practice is followed.

Table 8-3 : Wexford high-level combined MCA summary

HIGH LEVEL MCA SUMMARY						
REGION	WEXFORD AREA					
Route Corridor	WE1	WE1A	WE2	WE2A	WE3	WE3A
OSS	OSS3	OSS3	OSS3	OSS3	OSS3	OSS3
LANDFALL	Blackhall Beach (G)	Blackhall Beach (G)	The Long Gap (F)	The Long Gap (F)	Carnivan (E)	Carnivan (E)
Technical						
Economic						
Deliverability						
Socio-Economic						
Environmental						

8.8 Combined MCA for the Cork Cable Corridors

Table 8-4 is the high-level combined summary for the Cork cable corridors, and details can be found in Appendix D.

Table 8-4 : Cork high-level combined MCA summary

HIGH LEVEL MCA SUMMARY		
REGION	CORK AREA	
Route Corridor	Cork 1	Cork 2
OSS	OSS1	OSS1
LANDFALL	Ballycrenane (C)	Ballycroneen (B)
Technical		
Economic		
Deliverability		
Socio-Economic		
Environmental		

9 SUMMARY AND RECOMMENDATIONS

This report provides the export cable route corridor development summary, spanning from the early concept stages of the project and all the way to the recommended route corridors for the 2025 planned marine site surveys.

In Wexford, a total of nine (9) routes were developed. Of these, six (6) routes (namely WE1, WE2, WE3, WE1A, WE2A and WE3A) were assessed by MCA based on a high-level analysis that considered technical, economic, deliverability, socio-economic, and environmental performance criteria. Routes WE1B, WE2B, and WE3B, which are a hybrid of WE1, WE2 and WE3 and WE1A, WE2A and WE3A respectively, have been introduced and proposed ahead of the 2025 marine surveys. These will form part of a future MCA to identify the best performing options.

For the Wexford routes, the MCA concluded the following:

- From an economic perspective, there is no noticeable difference between five (5) of the six (6) routes: WE1, WE2, WE1A, WE2A, WE3A.
- The three (3) routes (WE1, WE2 and WE3) that cross more of the Hook Head SAC than WE1A, WE2A and WE3A, carry higher consenting risks due to installation within the SAC.
- Routes WE1A, WE2A and WE3A, which avoid the SAC, are approximately 4 km longer, these result in a larger footprint, increased disturbance and increased cable requirements. Two (2) of the routes, WE1A and WE2A, avoid the SAC and scored more favourably.

Following the further preliminary offshore cable route development stage, covered in Section 6.2, the recommendation for the Wexford region ahead of the 2025 geophysical marine survey, as of July 2025, is to:

- Adjust the geophysical and environmental surveys to include routes WE1B, WE2B and WE3B, which avoid the near shore reef within the SAC, with the southern portion of the route passing through the SAC.
- Based on information due to be gathered during the surveys, together with the potential installation and rock protection requirements, described in Section 7, an assessment will be carried out to determine whether the route that passes through the southern portion of the SAC carries significant consenting risks which may warrant progressing the portion of the route that avoids the SAC entirely (WE1A, WE2A and WE3A).

In Cork, a total of six (6) routes were developed in 2024 and 2025, of which the three (3) routes in 2024 were identified as preliminary and the latest three (3) routes in 2025 (namely Cork 1, Cork 2 and Cork 3) identified as the further developed / refined route selections.

The first three (3) preliminary routes were assessed through a high-level MCA (see Appendix I) based on the use of a hypothetical central OSS location and a single landfall location at Ballycroneen. Later on in 2025, the newly refined routes Cork 1, Cork 2 and Cork 3 have been introduced and proposed ahead of the 2025 marine surveys.

Cork 3 route was found to be unsuitable on technical, safety and economic grounds and was not progressed further.

For the Cork routes, the MCA concluded the following:

- Cork 1 and Cork 2 show no major economic difference and perform similarly over all the combined MCA Performance Criteria.
- Cork 1 (Ballycroneen C) scores slightly higher on technical and deliverability criteria than Cork 2. Environmental and socio-economic performance is broadly similar across both corridors.

The recommendation for the Cork region ahead of the 2025 geophysical marine survey, as of July 2025, is to:

- Conduct marine surveys along both corridors identified as Cork 1 and Cork 2. Each route should be surveyed from its respective landfall to the point where the route corridors converge into one (1), and then a single survey should continue along the shared corridor to OSS1.

At this stage, all offshore export cable routes assessed in the MCA for Cork and Wexford remain viable options for progression to the next stages of the project, including detailed site selection, engineering design, environmental assessment, permitting, and broader project development.

10 DATA SOURCES AND REFERENCES

10.1 Specific Technical DATA Sources and References

Footnote Sources:

Source #1: Step 3 Emerging Best Performing Options - Powering Up Offshore South Coast, Mott Macdonald (November 2024).

Source #2: Offshore Substation (OSS) Zone Assessment Report (OCDP-EIR-P03-RP-PM-0001), DORIS (June 2025).

Source #3: The South Coast Designated Maritime Area-Plan for Offshore Renewable Energy (SC-DMAP), DECC (June 2025).

Source #4: Powering Up Offshore South Coast Update Report – Powering Up Offshore South Coast, EirGrid (November 2024).

Source #5: OSS and Export Cable Geological Desk Study (OCDP-EIR-P1-ST-GT-0001, Rev00), DORIS (June 2023).

Source #6: ORESS Tonn Nua Bidder Information Pack (Grid Connection Information Pack), EirGrid (June 2025).

Source #7: 2025 Updated Preliminary Ground Model Technical Note (OCDP-EIR-P03-TN-MD-0004), DORIS (March 2025).

- The information used in the update of Source #7 – Update Preliminary Ground Model is:
    - Tonn Nua geophysical survey data (Marine Institute, 2024), provided to DORIS by EirGrid in December 2024.
    - Regional 2D UHR seismic data (GDG, 2012 and 2017), provided to DORIS by EirGrid in between December 2024 and February 2025.
    - GIS database and preliminary geological model prepared by DORIS – data source used for this model are described in the Geological Desk Study 514301-IRE-DOR-ST-GT-0001.

Source #8: Celtic Interconnector Offshore Constraints Report (400584-PL-TN-004 Rev3), Wood (April 2019).

Source #9: EirGrid Wind Farm – Assessment of Offshore Site Options – Gateway 2. Management Investment Committee Paper, EirGrid (January 2023).

Source #10: Fish Spawning Habitats, Mapping herring spawning beds with reported fisheries and backscatter data, INFOMAR

Source #11: Step 3 Engagement and Consultation – Powering Up Offshore South Coast, M-CO (March 2025).

Source #12: Dogger Bank South Offshore Wind Farms – Cable Statement (Revision 5) (Tracked), RWE Renewables UK (June 2025).

Source #13: O'Sullivan, David & O'Keeffe, Eimear & Berry, Alan & Tully, Oliver & Clarke, Maurice. (2013). An Inventory of Irish Herring Spawning Grounds. Irish Fisheries Bulletin. 42. 10.1002/9781118527085.ch1.

10.2 Specific Environmental and Socio-Economic Data Sources and References

10.2.1 Data Sources

Data Source	Accessed Data	Data Comments
Biodiversity Maps (NBDC)	09/06/2025	Historic data on various protected species / Point data from the National Invasive Species Database.
Data.gov.ie	09/06/2025	Multiple datasets - National boundaries.
EIA Portal	09/06/2025	EIAR planning website.
EPA Maps	09/06/2025	Bathing waters and Shellfish waters data.
EMODnet	09/06/2025	Bathymetry and geophysical data, Annex I habitat data, Human Activities data, Shipping densities, benthic habitats.
National Monuments Services	09/06/2025	Wrecks data.
Marine Atlas	09/06/2025	Multiple datasets - fishing activities/densities, benthic and reef habitat data, spawning and nursery grounds.
NPWS Protected Areas	09/06/2025	Boundary data for SAC, SPA, NHA and pNHA sites.
National Parks and Wildlife Service: QI/SCI features	09/06/2025	Shapefiles of QI?SCI features associated with European sites.
Surveying Open Data Portal	09/06/2025	Environmental data and infrastructure data.
NPWS 2024 Reef Inventory	12/06/2025	Reef data.
Reef habitat Dara	12/06/2025	Reef data.
Centre for Environment, Fisheries and Aquaculture Science (CEFAS)	12/06/2025	Fish Spawning and Nursery areas.
Department of Energy & Climate Change (DECC)	12/06/2025	Offshore infrastructure datasets and location data.
ESRI	12/06/2025	Basemap overlay for all map visualisations.

10.2.2 References

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3 O'Sullivan, D., O'Keefe, E., Berry, A., Tully, O. and Clarke, M., 2013. An inventory of Irish herring spawning grounds. Marine Institute.

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5 DCCAE (2015). Irish Offshore Strategic Environmental Assessment (IOSEA) 5 Environmental Report. [online] Available at: https://assets.gov.ie/static/documents/iosea5-environmental-report.pdf [Accessed June 2025].

6 STECF. (2018). The 2018 Annual Economic Report on the EU Fishing Fleet (STECF 18-07). [Online]. Available at: https://stecf.jrc.ec.europa.eu/reports/economic/-/asset_publisher/d7Ie/document/id/2262395 [Accessed June 2025].

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10 OSPAR, 2008. OSPAR List of Threatened and/or Declining Species and Habitats [online]. Available at: https://www.ospar.org/documents?v=32794 [Accessed June 2025].

11 Russell, D. J. H. (SMRU). (2017). Updated Seal Usage Maps: The Estimated at-sea Distribution of Grey and Harbour Seals: Scottish Marine and Freshwater Science Vol 8 No 25. [Online]. Available at: doi:10.7489/2027-1 [Accessed June 2025].

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13 National Parks & Wildlife Service, Department of Housing, Local Government and Heritage, NPWS Seal Database, National Biodiversity Data Centre, Ireland, image, accessed 12 June 2025, https://maps.biodiversityireland.ie/Dataset/MarineRecordDistributionMapPrintSize/91

14 Rogan, E., Breen, P., Mackey, M., Cañadas, A., Scheidat, M., Geelhoed, S. & Jessopp, M. (2018). Aerial surveys of cetaceans and seabirds in Irish waters: Occurrence, distribution and abundance in 2015-2017. Department of Communications, Climate Action

& Environment and National Parks and Wildlife Service (NPWS), Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland. 297pp.

15 EMODNet, 2023. EUSeaMap [online]. Available at: https://emodnet.ec.europa.eu/en/seabed-habitats [Accessed June 2025].

16 EUNIS, 2025. Habitat Types Search [online]. Available at: https://eunis.eea.europa.eu/habitats.jsp [Accessed June 2025].

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APPENDIX A MCA RISK RANKING TECHNICAL, ECONOMIC AND DELIVERABILITY

Wexford

Sub-Criteria (Colour)	Technical	Economic Delta Costs (%M)	Plough/Jetting Length (km)	Mechanical trenching / Alternative Protection Methods (km)
	Most significant / difficult / risk High: To be reserved for high probability that the risk would result in an overall proposed development that is not feasible / consent able / deliverable.	>30%	Not used	Not used
	Moderate High: Identified risk which may be challenging to mitigate to the satisfaction of the consenting authorities and prescribed bodies. Should only be considered where no other options are available.	<20<30	Not used	Not used
	Moderate: Identified but manageable risk requiring bespoke measures to mitigate risk	>10<20	>40<60	>5>10
	Low Moderate: Identified risk, but manageable with appropriate and standard mitigation	>0<10	>20<40	>0<5
	Least significant / difficult / risk Low: Limited risk, assuming accepted best practice is followed and / or an opportunity.	0%	>0<20	0

Cork

Sub-Criteria (Colour)	Technical	Plough/Jetting Length (km)	Mechanical trenching / Alternative Protection Methods (km)
	Most significant / difficult / risk High: To be reserved for high probability that the risk would result in an overall proposed development that is not feasible / consent able / deliverable.	Not used	Not used
	Moderate High: Identified risk which may be challenging to mitigate to the satisfaction of the consenting authorities and prescribed bodies. Should only be considered where no other options are available.	Not used	Not used
	Moderate: Identified but manageable risk requiring bespoke measures to mitigate risk.	>40<60	>10>12
	Low Moderate: Identified risk, but manageable with appropriate and standard mitigation.	>20<40	>0<10
	Least significant / difficult / risk Low: Limited risk, assuming accepted best practice is followed and / or an opportunity.	>0<20	0

For Wexford economic ranking refers to Appendix C Cork MCA Details.

For Cork economic ranking refer to Appendix D.

APPENDIX B MCA RISK RANKING ENVIRONMENTAL AND SOCIO-ECONOMIC

Ranking	Risk Level	Classification	Examples of Constraints
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.	**Constraints to be Avoided** These are subjects or areas where installation of cables or platforms is not feasible due to physical immovability or significant financial and legal consequences.	Routing through an Annex I biogenic Reef habitat within a designated site. Route through protected historic wreck. Conflict with other marine infrastructure such as currently installed cables.
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.	**Significant Impacts Requiring Complex or Unproven Mitigation** These areas present challenges that may require extensive consultation, regulatory exemptions, or the development of complex or untested mitigation measures. Such impacts could lead to project delays or legal challenges. Note: For marine protected areas classified as moderate-high risk, it is assumed initially that no rock protection will be required within the protected site (aside from known crossings). If rock protection becomes necessary in locations where burial is not possible, the project must demonstrate, that no feasible alternative routes or installation methods are available; and that effective mitigation measures can be implemented to prevent adverse effects on the site's conservation interests.	Crossing military zones- Proximity to active aggregate dredging areas- Conflicts with OREI exclusion zones- Adjacent to strategically sensitive infrastructure. Cable intersecting an SAC or marine SPA with no viable alternative, avoiding designated features where possible.

Ranking	Risk Level	Classification	Examples of Constraints
Dark Green	**Moderate**: Identified but manageable risk requiring bespoke mitigation measures.	**Areas Requiring Negotiation or Further Assessment** These areas would be located outside protected sites but may necessitate additional information gathering, surveys, or consultations, and could impact project timelines, costs, or risks during the development and construction phases. The significance of these areas arises from their potential legal, financial, or physical constraints on cable routing and platform placement.	Routing through non-designated fouling areas- Passing through spawning / nursery grounds with timing constraints- Proximity to sensitive benthic habitats (e.g., Annex I habitats).
Light Green	**Low Moderate**: Identified risk, but manageable with appropriate and standard mitigation measures.	**Lower Significance Areas** These areas pose minimal legal, financial, or physical constraints on cable routing or platform siting. While additional surveys, data collection, or consultations may be beneficial, impacts are expected to be addressed during detailed micro-routing after marine surveys. Routing through these areas is permissible if no practical alternatives exist, as they do not present fundamental barriers to cable installation.	Cable near third-party assets (pipelines, telecoms)- Minor disposal sites with baseline data- Adjacent to non-designated conservation areas. Intersecting marine mammal migration routes.
Yellow	**Low**: An opportunity or a limited risk, assuming that accepted best practice is followed.	There are **no feasible or practical constraints** that would prevent cable installation.	Following pre-disturbed corridors- Adjacent to industrial landfall zones- Within areas designated for future infrastructure or low-value intertidal.

APPENDIX C WEXFORD MCA DETAILS

Route Corridor	WE1	WE1A	WE2	WE2A	WE3	WE3A
OSS	OSS3	OSS3	OSS3	OSS3	OSS3	OSS3
Landfall	Blackhall Beach (G)	Blackhall Beach (G)	The Long Gap (F)	The Long Gap (F)	Carnivan (E)	Carnivan (E)
Technical Criteria						
Sub-Criteria						
Expansion or Expendability	Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. If no channel exists and installation is across rock outcrops there maybe potential for expansion. No differentiator at this time.	Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. If no channel exists and installation is across rock outcrops there maybe potential for expansion. No differentiator at this time.	Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. If no channel exists and installation is across rock outcrops there maybe potential for expansion. No differentiator at this time.	Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. If no channel exists and installation is across rock outcrops there maybe potential for expansion. No differentiator at this time.	Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. If no channel exists and installation is across rock outcrops there maybe potential for expansion. No differentiator at this time.	Other offshore infrastructure presents a potential risk in terms of sharing a nearshore channel. If no channel exists and installation is across rock outcrops there maybe potential for expansion. No differentiator at this time.
Constructability (Ground Conditions and Marine Processes)	Low-moderate - Open cut or HDD Installation at landfall.	Low-moderate - Open cut or HDD Installation at landfall.	Low-moderate - Open cut or HDD Installation at landfall.	Low-moderate - Open cut or HDD Installation at landfall.	Moderate: HDD Installation at landfall.	Moderate: HDD Installation at landfall.
Nearshore obstacles such as wrecks, boulders, other offshore infrastructure such as cables, pipelines etc.	Low-moderate - No evidence of shipwrecks near landfall. Greenlink HVDC is further away than for Carnivan and The Long Gap. No pipelines identified. 1 Crossing (Greenlink).	Low-moderate - No evidence of shipwrecks near landfall. Greenlink HVDC is further away than for Carnivan and The Long Gap. No pipelines identified. 1 Crossing (Greenlink).	Low-moderate - No evidence of shipwrecks near landfall. Greenlink HVDC is further away than for Carnivan and The Long Gap. No pipelines identified. 1 Crossing (Greenlink).	Low-moderate - No evidence of shipwrecks near landfall. Greenlink HVDC is further away than for Carnivan and The Long Gap. No pipelines identified. 1 Crossing (Greenlink).	Low-moderate - No evidence of shipwrecks near landfall. Greenlink HVDC is further away than for Carnivan and The Long Gap. No pipelines identified. No Crossing.	Moderate: No evidence of shipwrecks near landfall. Greenlink HVDC interconnector installed narrow 200 m wide channel. No pipelines identified. 2 Crossing (Greenlink).
Overall, Cable Length (km)	39.6	43.7	38.7	43.0	35.7	40.6
Plough / Jetting Length (km)	36.2	41.1	37.7	43.0	33.2	37.2
Mechanical trenching / Alternative Protection Methods (km)	3.4	2.5	1.0	0.0	2.5	3.4
Access						
Wave condition and exposure to weather	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Marine traffic (fishing / leisure activities)	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Vessel suitability	Moderate: Shallow sloping sea will require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route.	Moderate: Shallow sloping sea will require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route.	Moderate: Shallow sloping sea will require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route.	Moderate: Shallow sloping sea will require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route.	Low: Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used.	Low: Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used.
Physical Constraints						

Route site characteristics	Moderate extent of bedrock outcrop with slate / siltstone substrate. Minimum of 9.1 km of rock outcropping. Shallow sloping sea may lead requirement for shallow draft vessel followed by a deep-water vessel. Open cut / HDD installation at landfall subject to site surveys and engineering studies.	Low-moderate - extent of bedrock outcrop with slate / siltstone substrate. Minimum of 2.5 km of rock outcropping, then channel through rock outcrops is narrow in places <100 m. Shallow sloping sea may lead requirement for shallow draft vessel followed by a deep-water vessel. Open cut / HDD installation at landfall subject to site surveys and engineering studies. Channel characterised by sand and coarse substrate.	Moderate extent of rock outcropping with a minimum of 6.9 km in total. Shallow sloping sea may lead requirement for shallow draft vessel followed by a deep-water vessel. Open cut / HDD installation at landfall subject to site surveys and engineering studies. A channel through bedrock outcrops is narrow and 200 m across at narrowest point. May not be possible due to other cable assets in channel. Channel characterised by sand and coarse substrate.	Low-moderate - low extent of rock outcropping. Shallow sloping sea may lead requirement for shallow draft vessel followed by a deep-water vessel. Open cut / HDD installation at landfall subject to site surveys and engineering studies. Channel through rock outcrops is narrow in places <100 m. Channel characterised by sand and coarse substrate.	Moderate: HDD feasible at landfall. Minimum of 5.3 km of rock outcropping. Bedrock softer sedimentary rock. Channel characterised by sand and coarse substrate. Channel through bedrock outcrops is narrow and 200 m across at narrowest point. May not be possible due to other cable assets in channel.	Low-moderate - HDD feasible at landfall. Minimum of 3.4 km of outcropping soft sedimentary bedrock. Channel through rock outcrops is narrow in places <100 m. Channel characterised by sand and coarse substrate.
Onshore landfall site characteristics	Moderate: Till and Strong sandstone beneath landfall.	Moderate: Till and Strong sandstone beneath landfall.	Moderate: Some exposed rock on beach. Till and Strong sandstone beneath landfall.	Moderate: Some exposed rock on beach. Till and Strong sandstone beneath landfall.	Moderate: Till and Mudstones / Siltstones beneath landfall.	Moderate: Till and Mudstones / Siltstones beneath landfall.
MCA Ranking (Technical)	Moderate: Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Low-moderate - Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Moderate: Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Low-moderate - Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Moderate: Based on potential landfall methodology (HDD), amount of outcropping to cross, but no cable crossings, and 1 installation vessels required.	Moderate: Based on potential landfall methodology (HDD), potentially no outcropping to cross and 1 installation vessels required.
Economic Criteria						
Distance from OSS 3 zone to landfall zone (km)	39.6	43.7	38.7	43.0	35.7	40.6
Cable / Pipeline crossing or Proximity Agreements required	1 Crossing (Greenlink)	1 Crossing (Greenlink)	1 Crossing (Greenlink)	1 Crossing (Greenlink)	1 Crossing (Greenlink)	2 Crossing (Greenlink)
Extent of rock outcrop in cable route (km)	3.4	2.5	1.0	0	2.5	3.4
Approx distance of 15 m water depth from shore (km). 1 or 2 vessel solution	5.1	5.1	4.4	4.4	1.3	1.3
MCA Ranking (Economic)	Moderate: Based on potential route corridor length, number of installation vessels required and amount of rock outcrop that would require mechanical or alternate protection measures.	Moderate: Based on potential route corridor length, number of installation vessels required and amount of rock outcrop that would require mechanical or alternate protection measures.	Moderate: Based on potential route corridor length, number of installation vessels required and amount of rock outcrop that would require mechanical or alternate protection measures.	Moderate: Based on potential route corridor length, number of installation vessels required and amount of rock outcrop that would require mechanical or alternate protection measures.	Low-moderate: Based on potential landfall methodology (HDD), potentially no outcropping to cross and 1 installation vessels required but shorter route length.	Moderate: Based on potential landfall methodology (HDD), potentially no outcropping to cross and 1 installation vessels required.
Deliverability Criteria						
Sub-Criteria						
Implementation Timelines						

Seasonal or Local Constraints (No differentiator)	Area characterised by long period swell. Assumed no differentiator at this time. High weather downtime.	Area characterised by long period swell. Assumed no differentiator at this time. High weather downtime.	Area characterised by long period swell. Assumed no differentiator at this time. High weather downtime.	Area characterised by long period swell. Assumed no differentiator at this time. High weather downtime.	Area characterised by long period swell. Assumed no differentiator at this time. High weather downtime.	Area characterised by long period swell. Assumed no differentiator at this time. High weather downtime.
Installation Methodology	Moderate: 2 x installation vessels (1 shallow draft and 1 deep water vessel). Estimated 30.5 km of plough / jetting burial techniques and 9.1 km of mechanical trenching / alternative cable protection methods Open cut or HDD Installation at landfall.	Moderate: 2 x installation vessels (1 shallow draft and 1 deep water vessel). Estimated 41.1 km of plough / jetting burial techniques and 2.5 km of mechanical trenching / alternative cable protection methods. Longer route overall. Open cut or HDD Installation at landfall.	Moderate: 2 x installation vessels (1 shallow draft and 1 deep water vessel). Estimated 31.8 km of plough / jetting burial techniques and 6.9 km of mechanical trenching / alternative cable protection methods Open cut or HDD Installation at landfall.	Moderate: 2 x installation vessels (1 shallow draft and 1 deep water vessel). Estimated 43.0 km of plough / jetting burial techniques and 0 km of mechanical trenching / alternative cable protection methods Open cut or HDD Installation at landfall.	Low-moderate - Single vessel solution. Estimated 30.3 km of plough / jetting burial techniques and 5.3 km of mechanical trenching / alternative cable protection methods HDD Installation at landfall.	Low-moderate - Single vessel solution. Estimated 37.2 km of plough / jetting burial techniques and 3.4 km of mechanical trenching / alternative cable protection methods HDD Installation at landfall.
Enabling Works	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Re-instatement	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Dependence on other Projects (Outages)	Yes (Greenlink - no outages required).	Yes (Greenlink - no outages required).	Yes (Greenlink - no outages required).	Yes (Greenlink - no outages required).	Yes (Greenlink - no outages required).	Yes (Greenlink - no outages required).
Permits and Wayleaves						
Securing timely access to land	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Achieving statutory consent	Moderate: 28% in SAC	Low-moderate - 0% in SAC	Moderate: 48% in SAC	Low-moderate - 0% in SAC	Moderate: 46% in SAC	Moderate: 13% in SAC
Obtaining 3 party consents	Low- moderate: 1 Cable Crossing Agreement.	Low- moderate: 1 Cable Crossing Agreement.	Low- moderate: 1 Cable Crossing Agreement.	Low- moderate: 1 Cable Crossing Agreement.	Low: Cable Crossing / Proximity Agreement.	Low-moderate- 2 Cable Crossing / Proximity Agreement.
Project Plan Flexibility (offshore routing)	Limited due to potential of crossing bedrock nearshore then further offshore routing can be variable. No other infrastructure.	Limited due to potential of crossing bedrock nearshore then further offshore routing can be variable. No other infrastructure.	Limited due to potential of crossing bedrock nearshore then further offshore routing can be variable. No other infrastructure.	Limited due to potential of crossing bedrock nearshore then further offshore routing can be variable. No other infrastructure.	Limited due to potential of crossing bedrock nearshore then further offshore routing can be variable. No other infrastructure.	Limited due to potential of crossing bedrock nearshore then further offshore routing can be variable. No other infrastructure.
MCA Ranking (Deliverability)	Moderate: Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Low-moderate - Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Moderate: Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Low-moderate - Based on potential landfall methodology, amount of outcropping to cross and number of installation vessels required.	Moderate: Based on potential landfall methodology (HDD), amount of outcropping to cross, but no cable crossings, and 1 installation vessels required.	Moderate: Based on potential landfall methodology (HDD), potentially no outcropping to cross and 1 installation vessels required.
Socio-Economic Criteria						
Recreation and Tourism	No overlaps with designated bathing waters or major recreational sites. Recreational boating present but low intensity.	Same as WE1; no overlap with bathing or tourism sites; recreational usage minimal.	Same as WE1; no designated bathing areas crossed. Low recreational activity.	Same as WE1A; low recreation/tourism pressure.	Same as WE1 / WE2; some increase in nearshore recreational vessel density but still low impact.	Same as WE1A; slight increase in recreational sailing nearshore but no material difference.

Commercial Fisheries	Overlaps demersal and pelagic fisheries; pelagic trawling prominent nearshore; Dredging and Pelagic fishing is a higher concentration on this route; Dunmore East port nearby (6,566 tonnes annual landings). Consultation required to manage timing.	Same fishing effort as WE1; same overlap with pelagic nearshore activity. Engagement with fishing industry still required. Dredging and Pelagic fishing activity is lower in this route. Bottom otter trawling is slightly elevated on this route.	Same as WE1; slightly longer overlap with similar fishery activity; pelagic and demersal species targeted. Dredging and Pelagic fishing is a higher concentration on this route.	Same as WE1A; fisheries active but manageable with consultation. Dredging and Pelagic fishing activity is lower in this route. Bottom otter trawling is slightly elevated on this route.	Same as WE1 / WE2; similar fishing activity; slight variation in gear effort but no change in risk level. Dredging and Pelagic fishing is a higher concentration on this route.	Same as WE1A; fisheries presence maintained but no additional conflicts. Dredging and Pelagic fishing activity is lower in this route. Bottom otter trawling is slightly elevated on this route.
Landscape and Seascape	No long-term visual impact: cable buried subsea. Minor temporary construction presence at landfall only.	No long-term visual impact: cable buried subsea. Minor temporary construction presence at landfall only.	No long-term visual impact: cable buried subsea. Minor temporary construction presence at landfall only.	No long-term visual impact: cable buried subsea. Minor temporary construction presence at landfall only.	No long-term visual impact: cable buried subsea. Minor temporary construction presence at landfall only.	No long-term visual impact: cable buried subsea. Minor temporary construction presence at landfall only.
Marine Cultural Heritage	Avoids all known wrecks; nearest wrecks over 1 km from cable route.	Avoids all known wrecks; nearest wrecks over 1 km from cable route.	Avoids all known wrecks; nearest wrecks over 1 km from cable route.	Avoids all known wrecks; nearest wrecks over 1 km from cable route.	Avoids all known wrecks; nearest wrecks over 1 km from cable route.	Avoids all known wrecks; nearest wrecks over 1 km from cable route.
Shipping and Navigation	Low vessel density; Barrow River crossing but very low traffic volumes (2-5 vessel hours / km²).	Same as WE1; very low vessel activity levels throughout route.	Same as WE1; similar vessel activity throughout route.	Same as WE1; very low vessel activity levels throughout route.	Same as WE1 / WE2; slight nearshore sailing hotspot but still low risk.	Same as WE1; very low vessel activity levels throughout route.
Other Infrastructure	No existing cables, pipelines, or offshore infrastructure crossings. ECS disposal site 2.3 km east of route.	No existing cables, pipelines, or offshore infrastructure crossings. ECS disposal site 2.3 km east of route.	No existing cables, pipelines, or offshore infrastructure crossings. ECS disposal site 2.3 km east of route.	No existing cables, pipelines, or offshore infrastructure crossings. ECS disposal site 2.3 km east of route.	No existing cables, pipelines, or offshore infrastructure crossings. ECS disposal site 2.3 km east of route.	No existing cables, pipelines, or offshore infrastructure crossings. ECS disposal site 2.3 km east of route.
MCA Ranking (Socio-Economic)	Moderate: No overlaps with designated bathing waters or major recreational areas. Commercial fishing activity present, primarily pelagic nearshore and demersal offshore. Located close to Dunmore East port but no unique operational constraints. Avoids known wrecks and located within low vessel traffic area. No infrastructure crossings. Risks manageable through consultation and micro-routing.	Low - Moderate: Commercial fisheries, shipping, and recreation all remain at low levels. No socio-economic differentiators.	Moderate: Similar to WE1; no additional socio-economic constraints identified. Slightly longer route length but comparable fishing effort and vessel activity levels. No significant differentiators.	Low - Moderate: Same as WE1A. No additional socio-economic constraints identified. Fisheries and navigation risks remain low and manageable.	Moderate: Same as WE1 and WE2. Slight increase in proximity to recreational boating nearshore but remains low intensity. Same level of commercial fishing and vessel traffic. No wrecks or infrastructure overlaps.	Low - Moderate: Same fishing and vessel density profiles as WE1A and WE2A. Slight increase in proximity to recreational boating nearshore but still low. Managed by standard engagement measures.
Environmental Criteria						
Marine Designated Areas	Crosses Hook Head SAC (28% of route); fully within Seas off Wexford SPA.	Avoids SAC; fully within Seas off Wexford SPA.	Crosses Hook Head SAC (48% of route); fully within Seas off Wexford SPA.	Avoids SAC; fully within Seas off Wexford SPA.	Crosses Hook Head SAC (46%); fully within Seas off Wexford SPA. Cable specifically crosses protected reef community.	Crosses SAC (13%); fully within Seas off Wexford SPA. Cable specifically crosses protected reef community.

Seabed Communities and Sensitive Features	EUNIS A5.27, A5.15 and A4.27 habitats (Vulnerable and Endangered per EU Red List). No Annex I habitats present. Impacts manageable with mitigation. Landfall is in the vicinity (~400 m) of Intertidal reef.	Same habitat types as WE1; Management through site-specific mitigation feasible. Landfall is in the vicinity (~400 m) of Intertidal reef.	Same habitat types as WE1; Also crosses Annex I for 200 m. Management through site-specific mitigation feasible.	Same habitat types as WE2; Management through site-specific mitigation feasible.	Same habitat types as WE1; Also crosses Annex I for 2.8 km. Management through site-specific mitigation feasible. Landfall is in the vicinity (~30 m) of Intertidal reef.	Same as WE3. Also crosses Annex I reef for 3.4 km. Management through site-specific mitigation feasible. Landfall is in the vicinity (~30 m) of Intertidal reef.
Fish and Crustacean Spawning / Nursery Areas	Overlaps spawning / nursery for cod, hake, whiting, anglerfish, blue whiting, ling, herring (Baginbun), sandeel.	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Same as WE1. However, route and landfall are approximately 3 km from the herring spawning grounds at Dunmore. Management may be required with seasonal restrictions.	Same as WE1; no differentiation in species presence; managed by seasonal timing.
Local and Migratory Birds	Fully within Seas off Wexford SPA. SPA designated for both breeding and non-breeding species and therefore could come under both seasonal restrictions.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.
Marine Mammals	No SAC overlap; occasional presence of marine mammals (cetaceans, seals). Standard exclusion zones and soft-start protocols mitigate impacts.	Same as WE1; similar risk profile; management feasible.	WE2 route is the closest in proximity to the known haul out site at Saltee Islands (approximately 10 km east).	Same as WE1; similar risk profile; management feasible.	Same as WE1; similar risk profile; management feasible.	Same as WE1; similar risk profile; management feasible.
MCA Ranking (Environmental)	Moderate High: Environmental risks identified, mainly due to overlap with Hook Head SAC and full overlap with Seas off Wexford SPA. Overlaps with Annex I habitat (reef habitat present nearby but not directly intersected). Also overlaps several spawning / nursery grounds. Considered deliverable with detailed site-specific mitigation, but significant regulatory sensitivities remain due to multiple protected sites.	Moderate: Avoids Hook Head SAC entirely and reduces reef interaction to zero; still fully within Seas off Wexford SPA but reduces exposure to designated benthic habitats. Significantly lowers potential for adverse effects on SAC qualifying features. Requires standard bird and marine mammal mitigation.	Moderate High: Same as WE1 but with greater SAC overlap (48% of route length), increasing exposure to potential habitat sensitivities. Crosses the corner of Annex I reef habitat (200 m). Requires complex mitigation for designated features but remains deliverable.	Moderate: Same as WE1A. Fully avoids SAC and reef features, but remains within SPA, requiring similar mitigation for avian species. No differentiating constraints identified.	Moderate High: Crosses Hook Head SAC (46% of route length), fully within SPA, and intersects 2.8 km of Annex I reef habitat, increasing environmental complexity. Greater potential for adverse effect on reef features compared to WE1 / WE2. Additional mitigation likely but not prohibitive.	Moderate High: Crosses Hook Head SAC for 13% of route length and intersects 3.4 km of Annex I reef, representing a higher environmental risk than WE1A / WE2A. Similar constraints to WE3 but reduced SAC exposure. Requires more bespoke mitigation for reef and SAC habitats.

APPENDIX D CORK MCA DETAILS

Route Corridor	Cork 1	Cork 2
OSS	OSS1	OSS1
Landfall	Ballycrenane (C)	Ballycroneen (B)
Technical Criteria		
Sub-Criteria		
Expansion or Expendability	Low-moderate - No significant constraints in terms of Expansion or Extendibility identified at the time of writing.	Low-moderate - No significant constraints in terms of Expansion or Extendibility identified at the time of writing.
Constructability (Ground Conditions and Marine Processes)	Low-moderate - Open cut or HDD Installation at landfall.	Low-moderate - Open cut or HDD Installation at landfall.
Nearshore obstacles such as wrecks, boulders, other offshore infrastructure such as cables, pipelines etc.	Low-moderate - No evidence of shipwrecks near landfall. No identified pipelines or cables 1 crossing (Celtic Interconnector).	Low-moderate - No evidence of shipwrecks near landfall. No identified pipelines or cables 1 crossing (Celtic Interconnector).
Overall, Cable Length (km)	49.5	62.6
Plough / Jetting Length (km)	37.4	56.2
Mechanical trenching / Alternative Protection Methods (km)	12.1	6.4
Access		
Wave condition and exposure to weather	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Marine traffic (fishing / leisure activities)	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Vessel suitability	Moderate: Distance to 15 m water depth contour may require a shallow draught vessel for nearshore cable installation and a deep draught installation vessel for remaining cable route.	Moderate: Nearshore bathymetry would likely enable a single deep draught offshore cable installation vessel to be used.
Physical Constraints		
Route site characteristics	Moderate extent of rock outcropping in this landfall location. HDD or open cut feasible at landfall Minimum of 12.1 km of rock outcropping.	Moderate extent of rock outcropping in this landfall location. HDD or open cut feasible at landfall Minimum of 6.4 km of rock outcropping.
Onshore landfall site characteristics	Low-moderate - Sandstones / mudstones then a fault followed by Limestones / Mudstones.	Low-moderate - Sand and mud stones for approx. first 500 m.
MCA Ranking (Technical)	Moderate: Based on amount of outcropping to cross, with 1 cable crossings, and 1 installation vessels required.	Low-moderate - Based on reduced amount of outcropping to cross, with 1 cable crossings and 1 installation vessels required.
Economic Criteria		

Distance from OSS1 zone to landfall zone	49.4	62.6
Cable / Pipeline crossing or Proximity Agreements required	1 x Celtic Interconnector	1 x Celtic Interconnector
Extent of rock outcrop in cable route (km)	12.1	6.4
Approx distance of 15 m water depth from shore (km). 1 or 2 vessel solution	2.6 km	2.0 km
MCA Ranking (Economic)	Moderate: Based on amount of outcropping to cross, with 1 cable crossings, and shorter overall length and 1 installation vessels required. Assumed 2 vessels installation required.	Low-moderate - Based on reduced amount of outcropping to cross, even though cable length increased with 1 cable crossings and 1 installation vessels required.
Deliverability Criteria		
Sub-Criteria		
Implementation Timelines		
Seasonal or Local Constraints (No differentiator)	Area characterised by long period swell. High weather downtime.	Area characterised by long period swell. High weather downtime.
Installation Methodology	Moderate High: 2 x installation vessels (1 shallow draft and 1 deep water vessel). Estimated 37.3 km of plough / jetting burial techniques and 12.1 km of mechanical trenching / alternative cable protection methods. Open cut or HDD Installation at landfall.	Moderate: Estimated 56.2 km of plough / jetting burial techniques and 6.4 km of mechanical trenching / alternative cable protection methods. Open cut or HDD Installation at landfall.
Enabling Works	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Re-instatement	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Dependence on other Projects (Outages)	1 x Celtic Interconnector -no outages required).	1 x Celtic Interconnector -no outages required).
Permits and Wayleaves		
Securing timely access to land	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Achieving statutory consent	Assumed no differentiator at this time.	Assumed no differentiator at this time.
Obtaining 3 party consents	Low- moderate: 1 Cable Crossing Agreement.	Low- moderate: 1 Cable Crossing Agreement.

Project Plan Flexibility (offshore routing)	Requirement to minimise cable route across large extent of rock outcropping will limit flexibility. Very wide beach with options to come to the main road network at Ballinwillig or at Garryvoe.	Requirement to minimise cable route across large extent of rock outcropping will limit flexibility. Landfall zone wide enough to determine optimum location and methodology.
MCA Ranking (Technical)	Moderate: Based on amount of outcropping to cross, but no cable crossings, and 1 installation vessels required.	Low-moderate - Based on reduced amount of outcropping to cross, but no cable crossings, and 1 installation vessels required.
Socio-Economic Criteria		
Recreation and Tourism	Landfall 1.2 km from Garryvoe designated bathing beach; potential temporary impact during cable installation. Otherwise, no conflicts with major recreation / tourism use.	Same as Cork 1-A; slightly further from bathing beach; same recreational sensitivity applies.
Commercial Fisheries	Higher beam trawl, seine, and pelagic effort nearshore; Ballycotton port nearby (986 tonnes). Requires engagement with local fishermen during installation.	Same as Cork 1-A; similar fisheries pressure and port proximity.
Landscape and Seascape	Same as WE1; no visual impact after construction, temporary works only.	Same as Cork 1-A.
Marine Cultural Heritage	Multiple wrecks present in area (e.g. SS Exeter, SS Gracia) but micro-routing can avoid; no direct conflicts.	Same as Cork 1-A; wrecks nearby but route avoids them.
Shipping and Navigation	Low vessel density; minor hotspot east of Ballycotton Harbour, but manageable with navigation risk assessment.	Same as Cork 1-A; low density traffic maintained.
Other Infrastructure	No overlaps with cables or offshore infrastructure; no disposal sites in vicinity.	Same as Cork 1-A.
MCA Ranking (Socio-Economic)	Low-moderate - Close proximity (1.2 km) to Garryvoe designated bathing beach but no direct conflict with recreational use. Fisheries more active (beam trawl, seine, pelagic) nearshore; Ballycotton port nearby. Minor increase in vessel traffic east of landfall but remains manageable. Known wrecks in wider area but avoided by routing.	Low-moderate - Same as Cork 1-A. No differentiators in terms of fisheries, shipping or cultural heritage. Risks remain low and manageable through standard consultation and routing processes.
Environmental Criteria		
Marine Designated Areas	Does not overlap with any SAC / SPA designations.	Does not overlap with any SAC / SPA designations.

Seabed Communities and Sensitive Features	A4.2, A4.27, A5.14, A5.37 (diverse but does not overlap with Annex I reef).	Same as Cork 1-A
Fish and Crustacean Spawning / Nursery Areas	Overlaps spawning / nursery for cod, hake, whiting, anglerfish, blue whiting, ling (no sandeel or herring).	Same as Cork 1-A
Local and Migratory Birds	Within range of seabird foraging zones; no direct overlap with SPAs. Effects manageable with standard measures.	Same as Cork 1-A; within SPA boundary; but no other unique sensitivity.
Marine Mammals	No SAC overlap; occasional presence of marine mammals (cetaceans, seals). Standard exclusion zones and soft-start protocols mitigate impacts.	Same as Cork 1-A; similar risk profile; management feasible.
MCA Ranking (Environmental)	Moderate: No overlap with SAC, SPA, and Annex I reef habitats. Crosses a more diverse range of benthic habitats, but none are designated or highly sensitive. Environmental risk remains low and manageable with standard mitigation.	Moderate: Same as Cork 1-A. No SAC, SPA or Annex I habitat interactions; benthic habitats similar to Cork 1-A. No additional environmental sensitivities identified.

APPENDIX E INTERTEK ENVIRONMENTAL AND SOCIO-ECONOMIC CONSTRAINTS REPORT

intertek metoc
Pioneering Energy & Water Solutions

DORIS UK

Environmental and Socio-Economic Constraints Analysis

Tonn Nua Export Cable Routes and Landfall

R2792_P6883_Rev0 | 8 July 2025

Intertek Metoc
Exchange House, Station Road, Liphook, Hampshire GU30 7DW, United Kingdom

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Environmental and Socio-Economic Constraints Analysis

Tonn Nua Export Cable Routes and Landfall

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GLOSSARY

AA
Appropriate Assessment

AIS
Automatic Identification System

BIM
Bord Iascaigh Mhara

CCS
Carbon Capture Storage

EIA
Environmental Impact Assessment

EMODnet
European Marine Observation Data Network

EPS
European Protected Species

EU
European Union

GES
Good Environmental Status

GIS
Geographic Identification System

IBTS
Irish Bottom Trawl Survey

ICES
International Council for the Exploration of the Sea

MAP Act
Maritime Area Planning Act

MARA
Marine Area Regulatory Authority

MCA
Multi-Criteria Analysis

MU
Management Unit

OREI
Offshore Renewable Energy Installations

OSPAR
Oslo and Paris Conventions

OSS
Offshore Substations

RNLI
Royal National Lifeboat Institution

SAC
Special Area of Conservation

SC-DMAP
South Coast Designated Maritime Area Plan

SPA
Special Protection Area

WFD
Water Framework Directive

1. INTRODUCTION

As part of the Powering Up Offshore South Coast initiative, EirGrid plans to develop Offshore Substations (OSS) and associated export cables. This new infrastructure will enable the integration of power generated by offshore wind farms into Ireland's national electricity transmission system.

The project will specifically support the connection of fixed-bottom Phase 2 offshore wind farms developed by third-party operators off Ireland's south coast. These developers will be selected through the ORESS Tonn Nua auction, scheduled for 2025.

The Chapter will feed into the platform siting and route development report to help identify the optimum route and platform location from an environmental perspective, with review of publicly available data. The work will feed into a Multi-Criteria Analysis (MCA) with consideration of potential environmentally sensitive features. Constraints will be identified in accordance with current industry guidance, and a ranking will be provided for each route and platform location, helping to identify a preferable route/ platform location and provide a robust initial assessment of options developed.

1.1.1 Project Area

The OSS are planned to be developed within the South Coast Designated Maritime Area Plan (SC-DMAP) Area A - Tonn Nua. Four substations are currently be considered and different cable routing options from these stations are being considered (Figure 1-1; Drawing Reference: P2792-LOC-001). This section considers the cable routes and landfall and section X-X considers the OSS development. Table 1-1 and 1-2 highlights the cable routing and relevant landfall zones.

Table 1-1 Waterford Cable Routes; Original Cable Route and Routes Minimising Impact with SAC

Original Cable Route	Route Length (km)	Alternative Routes minimising impact on SAC	Route Length (km)	Landfall
Waterford East 1 (WE1)	39.6	Waterford East 1-A (WE1-A)	43.7	Blackhall Beach
Waterford East 2 (WE2)	38.7	Waterford East 2-A (WE2-A)	43.0	The Long Gap
Waterford East 3 (WE3)	35.7	Waterford East 3-A (WE3-A)	40.6	Carnivan Beach

Table 1-2 Cork Cable Routes

Cable Route	Route Length (km)	Landfall
Cork 1	62.6	Ballycrenane Beach
Cork 2	49.4	Ballycroneen Beach

1.1.2 Relevant Legislation

1.1.2.1 EIA Directive

The EIA Directive 2011/92/EU as revised by Directive 2014/52/EU applies to project types listed in Annex I or Annex II (see Articles 2 and 4 of the EIA Directive 2011/92/EU as revised by Directive

2014/52/EU). Proposed projects not listed in Annex I or Annex II of the EIA Directive and/or the corresponding project types listed in Schedule 5, Parts 1 and 2 of the Planning and Development Regulations 2001, as amended, are not subject to the EIA Directive or to the requirement for EIA Screening or EIA.

1.1.2.2 Habitats Directive

The Habitats Directive (Council Directive 92/43/EEC) seeks to promote the maintenance of biodiversity by requiring Member States to introduce measures to maintain or restore natural habitats and wild species listed under the Directive. Annex II species (including bottlenose dolphin and harbour porpoise) and designated habitats (e.g. reefs and vegetated sea cliffs within Hook Head SAC) identified within the project area are subject to strict protection measures. The project must therefore consider potential impacts to these species and habitats through the Appropriate Assessment (AA) process under Article 6 of the Directive.

1.1.2.3 Birds Directive

The Birds Directive (Directive 2009/147/EC) provides protection for all wild bird species naturally occurring in the EU, particularly those listed in Annex I of the Directive. Special Protection Areas (SPAs), such as the Seas off Wexford SPA, have been designated for the protection of internationally important seabird populations that may interact with the cable route options.

1.1.2.4 Marine Strategy Framework Directive

The Marine Strategy Framework Directive (Directive 2008/56/EC) establishes a framework for the protection of the marine environment across Europe, aiming to achieve Good Environmental Status (GES) of EU marine waters. The assessment process must ensure that the project does not compromise the achievement or maintenance of GES for the relevant descriptors.

1.1.2.5 Water Framework Directive

The Water Framework Directive (Directive 2000/60/EC) aims to prevent further deterioration and protect the ecological and chemical status of surface waters, transitional waters, coastal waters, and groundwater. The potential effects of the project activities on coastal water quality must therefore be assessed in accordance with WFD objectives.

1.1.2.6 OSPAR Convention

The OSPAR Convention (1992) requires contracting parties, including Ireland, to take measures to prevent and eliminate pollution and to protect the marine environment of the North-East Atlantic. Sensitive features such as elasmobranchs, which are listed under OSPAR's List of Threatened and/or Declining Species and Habitats, must be appropriately considered in the assessment.

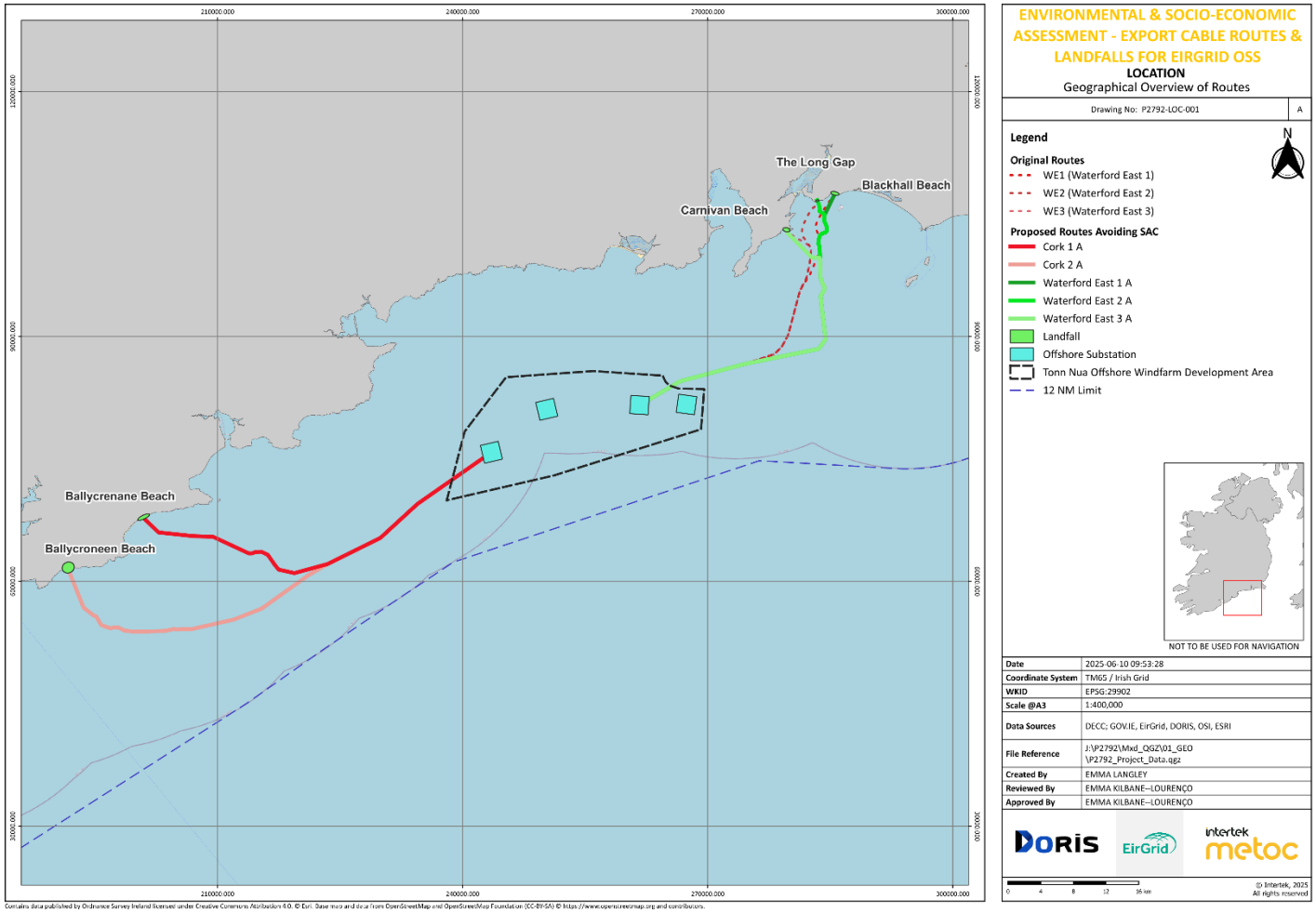
1.1.2.7 National Legislation

In addition to EU legislation, the project is subject to Irish national legislation, including:

- Maritime Area Planning Act 2021 (MAP Act) – This Act establishes a new regulatory framework for Ireland's maritime area and replaces significant parts of the Foreshore Act 1933. The MAP Act governs the planning, licensing, and consent process for developments in Ireland's maritime area, including offshore energy projects, and introduces the role of the Maritime Area Regulatory Authority (MARA).
- Planning and Development Act 2000 (as amended) – Governs the onshore planning process and may apply to onshore components of the development, such as landfalls and substations.
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) – Transposes the EU Habitats and Birds Directives into national law and governs the assessment and protection of Natura 2000 sites.

- Wildlife Acts 1976 to 2018 – Provides for the protection of wildlife (flora and fauna) and their habitats within the State.
- Foreshore Act 1933 (as amended) – While largely superseded by the MAP Act for new offshore developments, the Foreshore Act may still apply in limited circumstances, particularly where transitional or legacy \consents are involved.

Figure 1-1 Project Area Location Overview (Drawing Reference: P2792-LOC-001)



2. APPROACH AND METHODOLOGY

A multi-stage methodology was applied to identify and evaluate potential environmental and socio-economic constraints associated with the proposed offshore substations, cable routes, and landfalls. The stages involved; data collation, spatial analysis (supported by Geographic Information System (GIS) mapping using ArcMAP 10.7.1 and QGIS version 3.34.7-Prizren), constraint identification, and classification. This approach allows for the systematic comparison of route and landfall options and informs the subsequent Multi-Criteria Analysis (MCA).

2.1 Data Information and Gathering

To inform the assessment, key publicly available datasets and reports were identified. Datasets were imported into a Geographical Information System to display the key information in relation to the cable routes and landfalls and mapping creating to visualise datasets. Table 2-1 highlights all datasets and sources that were utilised for the report.

Table 2-1 Data Sources used to Inform Assessment

Data Source	Accessed Date	Data Contents
Biodiversity Maps (NBDC)	09/06/2025	Historic data on various protected species / Point data from the National Invasive Species Database
Data.gov.ie	09/06/2025	Multiple datasets - National boundaries,
EIA Portal	09/06/2025	EIAR planning website
EPA Maps	09/06/2025	Bathing waters and Shellfish waters data
EMODnet	09/06/2025	Bathymetry and geophysical data, Annex I habitat data, Human Activities data, Shipping densities, benthic habitats
National Monuments Service	09/06/2025	Wrecks data

Data Source	Accessed Date	Data Contents
Marine Atlas	09/06/2025	Multiple datasets - fishing activities/densities, benthic and reef habitat data, spawning and nursery grounds
NPWS Protected Areas	09/06/2025	Boundary data for SAC, SPA, NHA and pNHA sites
National Parks and Wildlife Service: QI/SCI features	09/06/2025	Shapefiles of QI/SCI features associated with European sites
Surveying Open Data Portal	09/06/2025	Environmental data and infrastructure data
NPWS 2024 Reef Inventory	12/06/2025	Reef data
Reef habitat Data	12/06/2025	Reef data
Centre for Environment, Fisheries and Aquaculture Science (CEFAS)	12/06/2025	Fish Spawning and Nursery areas.
Department of Energy & Climate Change (DECC)	12/06/2025	Offshore infrastructure datasets and location data.
ESRI	12/06/2025	Basemap overlay for all map visualisations

2.1.1.2 Limitations

The methodology described uses information from external sources and Intertek cannot guarantee the completeness or accuracy of the external sourced information relied upon. Nonetheless, Intertek

has used publicly available sources to verify relied upon information where possible and ensure that the information used is the most up-to-date available.

The preferred route(s) will undergo a multidisciplinary survey which will identify site specific constraints, which will be avoided through micro-routeing, where applicable. Where identified constraints can't be avoided, these will be discussed with the regulator and their marine advisors.

2.2 Constraint Identification and Classification

2.2.1 Constraint identification

Compiled data will be classified according to whether it will be a socio-economic or environmental constraint. Examples of these constraints are provided below.

- **Socio-Economic constraints**: e.g. shipping and navigation, aggregate dredging areas (active, licensed and proposed); disposal sites; fishing activity; shipping activity; vessel navigation channels; anchoring areas (including non-designated); ports and harbours; wrecks ; marine archaeology; military exercise area ; existing marine infrastructure (e.g. cables; pipelines; offshore wind farms; rigs; platforms other installations etc.); areas identified for offshore renewable energy installations (OREIs; flood defence structures; Carbon Capture and Storage (CCS) areas; mining areas; and offshore energy test areas.
- **Environmental constraints:** e.g., national, and locally designated marine and intertidal conservation sites. These include Special Areas of Conservation (SAC); Special Protection Areas (SPA); Ramsar sites; World Heritage Sites; Natural Heritage Areas; Nature Reserves; protected sandbanks; Annex I Reef; Annex I Protected Submarine Structure (e.g., pockmarks); fishing spawning and nursery areas; OSPAR benthic habitats; and protected geological features.

2.2.2 Constraint categories

Constraints that are identified in the available data are categorised according to their potential for impact on the development of the cable routes and landfalls. Constraints are categorised in accordance with Risk Ranking outlined in the Step 3 Powering Up Offshore South Coast (Doc Reference: 229101330 | 229101330-307 | D). Table 2-2 highlights the risk ranking.

Table 2-2 Risk Ranking

Ranking	Risk Level	Classification	Examples of Constraints
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.	**Constraints to be Avoided** These are subjects or areas where installation of cables or platforms is not feasible due to physical immovability or significant financial and legal consequences.	Routing through an Annex I biogenic Reef habitat within a designated site. Route through protected historic wreck. Conflict with other marine infrastructure such as currently installed cables.
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.	**Significant Impacts Requiring Complex or Unproven Mitigation** These areas present challenges that may require extensive consultation, regulatory exemptions, or the development of complex or untested mitigation measures. Such impacts could lead to project delays or legal challenges. Note: For marine protected areas classified as moderate-high risk, it is assumed initially that no rock protection will be required within the protected site (aside from known crossings). If rock protection becomes necessary in locations where burial is not possible, the project must demonstrate, that no feasible alternative routes or installation methods are available; and that effective mitigation measures can be implemented to prevent adverse effects on the site's conservation interests.	Crossing military zones- Proximity to active aggregate dredging areas- Conflicts with OREI exclusion zones- Adjacent to strategically sensitive infrastructure. Cable intersecting an SAC or marine SPA with no viable alternative, avoiding designated features where possible.
Dark Green	**Moderate**: Identified but manageable risk requiring bespoke mitigation measures.	**Areas Requiring Negotiation or Further Assessment** These areas would be located outside protected sites but may necessitate additional information gathering, surveys, or consultations, and could impact project timelines, costs, or risks during the development and construction phases. The significance of these areas arises from their potential legal, financial, or physical constraints on cable routing and platform placement.	Routing through non-designated fouling areas- Passing through spawning/nursery grounds with timing constraints- Proximity to sensitive benthic habitats (e.g., Annex I habitats)

DRAFT

Ranking	Risk Level	Classification	Examples of Constraints
Light Green	**Low Moderate**: Identified risk, but manageable with appropriate and standard mitigation measures	**Lower Significance Areas** These areas pose minimal legal, financial, or physical constraints on cable routing or platform siting. While additional surveys, data collection, or consultations may be beneficial, impacts are expected to be addressed during detailed micro-routing after marine surveys. Routing through these areas is permissible if no practical alternatives exist, as they do not present fundamental barriers to cable installation.	Cable near third-party assets (pipelines, telecoms)- Minor disposal sites with baseline data- Adjacent to non-designated conservation areas. Intersecting marine mammal migration routes.
Yellow	**Low**: An opportunity or a limited risk, assuming that accepted best practice is followed.	There are **no feasible or practical constraints** that would prevent cable installation.	Following pre-disturbed corridors- Adjacent to industrial landfall zones- Within areas designated for future infrastructure.

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3. ENVIRONMENTAL BASELINE

3.1 Introduction

An assessment of the potential environmental effects of an operation relies on a thorough understanding of the existing environmental conditions. This section outlines the current baseline of environmental receptors in the region that may be subject to influence from any of the proposed cable routes.

The environmental baseline has been established using publicly available data sources, which are referenced accordingly within the text. The following receptors have been considered:

- Marine Designated Areas
- Seabed communities and sensitive features
- Fish and crustacean spawning grounds and nursery areas
- Local and migratory bird populations
- Marine mammals

3.2 Marine Designated Areas

As presented in Figure 3-1 (Drawing Reference: P2792-ENV-001), there are two marine designated areas that overlap with the cable route options.

3.2.1 Hook Head SAC

Hook Head SAC is crossed by four of the route options, WE1, WE2, WE3 and WE3A. The route length for each option through the SAC is presented in Table 3-1 This SAC is designated for three types of habitat (large shallow inlets and bays, reefs and vegetated sea cliffs of the Atlantic and Baltic coasts) and two mobile species, common bottlenose dolphin (*Tursiops truncatus*) and harbour porpoise (*Phocoena phocoena*).

Table 3-1 Route Lengths through the Hook Head SAC

Route name	Length in SAC (km)	Percentage of route length in SAC
WE1	11	28%
WE2	18.4	48%
WE3	16.5	46%
WE1-A	0.0	0%
WE2-A	0.0	0%
WE3-A	5.1	13%

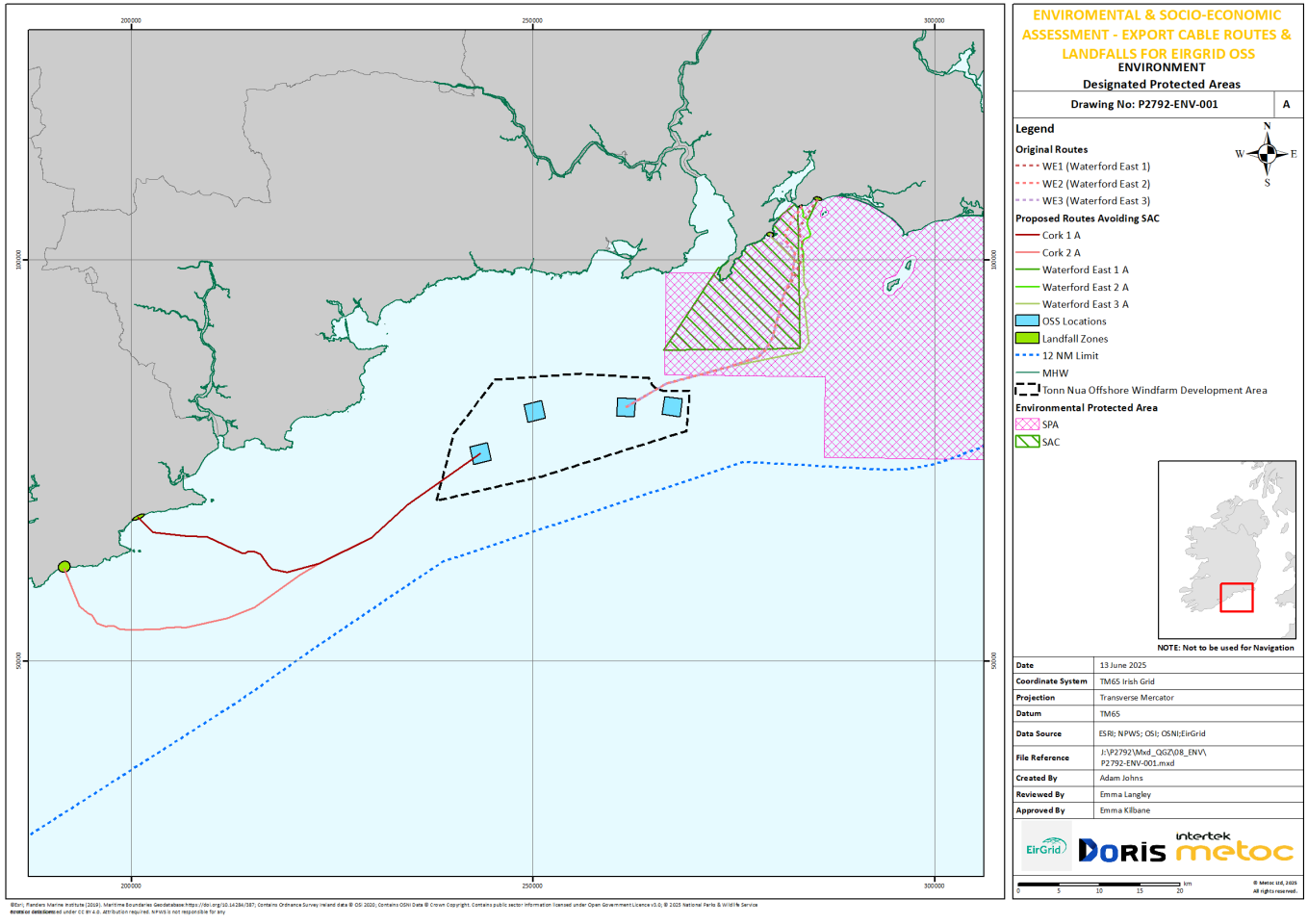
The reef community is located around Hook Head, crossed specifically by WE3 and WE3A, and comprises of exposed to moderately exposed intertidal reef and subtidal reefs in areas containing boulders, cobbles and sand and gravel patches. The reefs are also noted to have high species richness across both the intertidal and subtidal communities (DHLGH, 2024).

3.2.2 Seas off Wexford SPA

The Seas off Wexford SPA is Ireland's largest SPA and was announced in 2024. The SPA designates a wide variety of seabird species, showing the diversity of the area and its importance to seabirds who breed on islands and in coastal areas and utilise the shallow waters for overwintering or passage. The SPA contains an estimated 28,611 individuals and includes significant national populations of species including guillemot (47.2%) and Manx shearwater (28.9%) (NPWS, 2024). All Waterford cable routes are completely located in the SPA, as shown in Table 3-1. All Cork routes are located outside of the SPA. The species listed under the designation include:

- Red-throated Diver (*Gavia stellata*),
- Fulmar (*Fulmarus glacialis*),
- Manx Shearwater (*Puffinus puffinus*),
- Gannet (*Morus bassanus*),
- Cormorant (*Phalacrocorax carbo*),
- Shag (*Phalacrocorax aristotelis*),
- Common Scoter (*Melanitta nigra*),
- Mediterranean Gull (*Larus melanocephalus*),
- Black-headed Gull (*Chroicocephalus ridibundus*),
- Lesser Black-backed Gull (*Larus fuscus*),
- Herring Gull (*Larus argentatus*),
- Kittiwake (*Rissa tridactyla*),
- Roseate Tern (*Sterna dougallii*),
- Common Tern (*Sterna hirundo*),
- Arctic Tern (*Sterna paradisaea*),
- Guillemot (*Uria aalge*),
- Razorbill (*Alca torda*),
- Puffin (*Fratercula arctica*),
- Sandwich Tern (*Thalasseus sandvicensis*), and
- Little Tern (*Sternula albifrons*).

Figure 3-1 Designated Sites that Interact with the Proposed Cable Routes (Drawing Reference: P2792-ENV-001)



3.3 Seabed Communities and Sensitive Features

Benthic ecology comprises the habitats and species (flora and fauna) present in, on or closely associated with the seabed. An assessment of the key sensitive benthic habitats and species overlapping with the cable routes has been undertaken through a review of data presented in the EUSeaMap Broad-Scale Predictive Habitat Map (EMODnet, 2025). While this data provides an indication into the types of benthic habitat that may be found within the area, it is acknowledged that the information presented within this source is predictive rather than definitive.

As illustrated in Table 3-2 and Figure 3-2 (Drawing Reference: P2792-HAB-001), the benthic habitats that intersect with each cable route option comprise largely of rock, coarse sediment and sands.

Table 3-2 Habitats that Overlap with the Proposed Cable Route Options

Overlapping cable route	EUNIS code	EUNIS name	Typical fauna
WE1, WE2, WE3, WE1A, WE3A, Cork 2A	A3	A3: Infralittoral rock and other hard substrata	Infralittoral rock includes habitats of bedrock, boulders and cobbles which occur in the shallow subtidal zone and typically support seaweed communities. The upper limit is marked by the top of the kelp zone whilst the lower limit is marked by the lower limit of kelp growth or the lower limit of dense seaweed growth. Infralittoral rock typically has an upper zone of dense kelp (forest) and a lower zone of sparse kelp (park), both with an understorey of erect seaweeds. In exposed conditions the kelp is *Laminaria hyperborea* whilst in more sheltered habitats it is usually Laminaria saccharina; other kelp species may dominate under certain conditions. On the extreme lower shore and in the very shallow subtidal (sublittoral fringe) there is usually a narrow band of dabberlocks *Alaria esculenta* (exposed coasts) or the kelps *Laminaria digitata* (moderately exposed) *or L. saccharina* (very sheltered). Areas of mixed ground, lacking stable rock, may lack kelps but support seaweed communities. In estuaries and other turbid-water areas the shallow subtidal may be dominated by animal communities, with only poorly developed seaweed communities.
WE1, WE2, WE3, WE1A, Cork 1A, Cork 2A	A3.1	A3.1: Atlantic and Mediterranean high energy infralittoral rock	Rocky habitats in the infralittoral zone subject to exposed to extremely exposed wave action or strong tidal streams. Typically the rock supports a community of kelp *Laminaria hyperborea* with foliose seaweeds and animals, the latter tending to become more prominent in areas of strongest water movement. The depth to which the kelp extends varies according to water clarity, exceptionally (e.g. St Kilda) reaching 45 m. The sublittoral fringe is characterised by dabberlocks *Alaria esculenta*.

Overlapping cable route	EUNIS code	EUNIS name	Typical fauna
WE3, WE3A	A4	A4: Circalittoral rock and other hard substrata	Circalittoral rock is characterised by animal dominated communities (a departure from the algae dominated communities in the infralittoral zone). The circalittoral zone can itself be split into two sub-zones; upper circalittoral (foliose red algae present but not dominant) and lower circalittoral (foliose red algae absent). The depth at which the circalittoral zone begins is directly dependent on the intensity of light reaching the seabed; in highly turbid conditions, the circalittoral zone may begin just below water level at mean low water springs (MLWS). The biotopes identified in the field can be broadly assigned to one of three energy level categories: high, moderate and low energy circalittoral rock (used to define the habitat complex level). The character of the fauna varies enormously and is affected mainly by wave action, tidal stream strength, salinity, turbidity, the degree of scouring and rock topography. It is typical for the community not to be dominated by single species, as is common in shore and infralittoral habitats, but rather comprise a mosaic of species. This, coupled with the range of influencing factors, makes circalittoral rock a difficult area to satisfactorily classify; particular care should therefore be taken in matching species and habitat data to the classification.
WE2, WE3, WE1A, WE3A, Cork 1A, Cork 2A	A4.1	A4.1: Atlantic and Mediterranean high energy circalittoral rock	Occurs on extremely wave-exposed to exposed circalittoral bedrock and boulders subject to tidal streams ranging from strong to very strong. Typically found in tidal straits and narrows. The high energy levels found within this habitat complex are reflected in the fauna recorded. Sponges such as *Pachymatisma johnstonia*, *Halichondria panicea*, *Esperiopsis fucorum* and *Myxilla incrustans* may all be recorded. Characteristic of this habitat complex is the dense 'carpet' of the hydroid *Tubularia indivisa*. The barnacle *Balanus crenatus* is recorded in high abundance on the rocky substrata. On rocky outcrops, *Alcyonium digitatum* is often present.
Cork 1A, Cork 2A	A4.2	A4.2: Atlantic and Mediterranean moderate energy circalittoral rock	Mainly occurs on exposed to moderately wave-exposed circalittoral bedrock and boulders, subject to moderately strong and weak tidal streams. This habitat type contains a broad range of biological subtypes, from echinoderms and crustose communities (A4.21) to *Sabellaria* reefs (A4.22) and circalittoral mussel beds (A4.24).

Overlapping cable route	EUNIS code	EUNIS name	Typical fauna
WE1, WE2, WE3, WE1A, WE2A, WE3A, Cork 1A, Cork 2A	A4.27	A4.27: Faunal communities on deep moderate energy circalittoral rock	These communities populate hard substrata with low hydrodynamics and strong sedimentation.
WE2, WE2A	A5.13	A5.13: Infralittoral coarse sediment	Moderately exposed habitats with coarse sand, gravelly sand, shingle and gravel in the infralittoral, are subject to disturbance by tidal steams and wave action. Such habitats found on the open coast or in tide-swept marine inlets are characterised by a robust fauna of infaunal polychaetes such as *Chaetozone setosa* and *Lanice conchilega*, *cumacean crustacea* such as *Iphinoe trispinosa* and *Diastylis bradyi*, and venerid bivalves. Habitats with the lancelet *Branchiostoma lanceolatum* may also occur.
WE1,WE2, WE3, WE1A, WE2A, WE3A, Cork 1A	A5.14	A5.14: Circalittoral coarse sediment	Tide-swept circalittoral coarse sands, gravel and shingle generally in depths of over 15-20m. This habitat may be found in tidal channels of marine inlets, along exposed coasts and offshore. This habitat, as with shallower coarse sediments, may be characterised by robust infaunal polychaetes, mobile crustacea and bivalves. Certain species of sea cucumber (e.g. *Neopentadactyla*) may also be prevalent in these areas along with the lancelet *Branchiostoma lanceolatum*.
WE1,WE2, WE3, WE2A, WE3A, Cork 1A, Cork 2A	A5.15	A5.15: Deep circalittoral coarse sediment	Offshore (deep) circalittoral habitats with coarse sands and gravel or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little quantitative data available. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore mixed sediments and in some areas settlement of *Modiolus modiolus* larvae may occur and consequently these habitats may occasionally have large numbers of juvenile M. modiolus. In areas where the mussels reach maturity their byssus threads bind the sediment together, increasing stability and allowing an increased deposition of silt leading to the development of the biotope A5.622.
WE1, WE2, WE3, WE1A, WE2A, WE3A, Cork 1A	A5.25 or A5.26	A5.25 or A5.26: Circalittoral fine sand or Circalittoral muddy sand	Clean fine sands with less than 5% silt/clay in deeper water, either on the open coast or in tide-swept channels of marine inlets in depths of over 15-20 m. The habitat may also extend offshore and is characterised by a wide range of echinoderms (in some areas including the pea

Overlapping cable route	EUNIS code	EUNIS name	Typical fauna
			urchin (*Echinocyamus pusillus*), polychaetes and bivalves. This habitat is generally more stable than shallower, infralittoral sands and consequently supports a more diverse community. Circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5% to 20%. This habitat is generally found in water depths of over 15-20 m and supports animal-dominated communities characterised by a wide variety of polychaetes, bivalves such as *Abra alba* and *Nucula nitidosa*, and echinoderms such as *Amphiura spp* and *Ophiura spp*., and *Astropecten irregularis*. These circalittoral habitats tend to be more stable than their infralittoral counterparts and as such support a richer infaunal community.
WE1, WE2, WE3, WE1A, WE2A, WE3A, Cork 1A, Cork 2A	A5.27	A5.27: Deep circalittoral sand	Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms.
Cork 1A, Cork 2A	A5.37	A5.37: Deep circalittoral mud	In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50-70 m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as *Thyasira spp.*, echinoderms and foraminifera.

Source: EMODNet, 2023 and EUNIS, 2025

3.3.2 Reefs

Both biogenic and geogenic reef have been identified in this region. Annex I reefs are located to the east and south of Hook Head, and are protected within the Hook Head SAC. The patch of reef is expansive, stretching from the coastline to 16km offshore in a solid patch, with smaller discrete areas located to the east. The WE3 and WE3A routes cross areas of Annex I reef as shown in Figure 3-3 and 3-4 (Drawing Reference: P2792-HAB-002 and P2792-HAB-003) for approximately 2.8km and 3.4km respectively. WE2 also crosses the corner of an Annex I reef for approximately 200m.

Both *Sabellaria spinulosa* and *Sabellaria alveolata* biogenic reefs have been identified in this region. Where identified as reef, they can constitute an Annex 1 habitat, *S. spinulosa* is a subtidal species and *S. alveolata* is an intertidal species.

Another small patch of reef is located within close proximity (approximately 87m) to the Long Gap landfall for the WE2 and WE2A routes, but no cable route interacts with this area.

Figure 3-2 EMODnet Seabed Habitats (Drawing Reference: P2792-HAB-001)

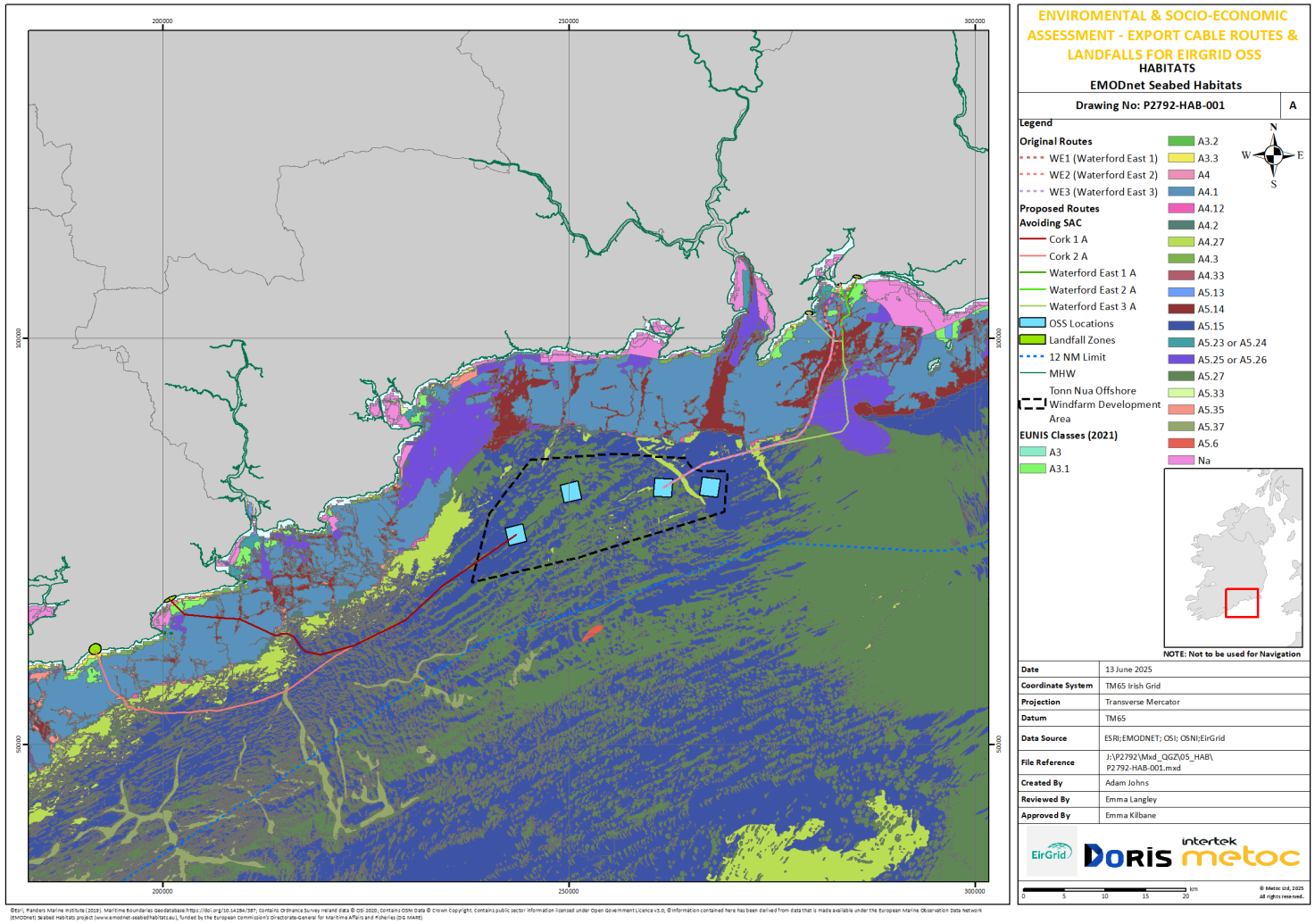


Figure 3-3 Annex I Reef Habitats EMODNet Data (Drawing Reference: P2792-HAB-002)

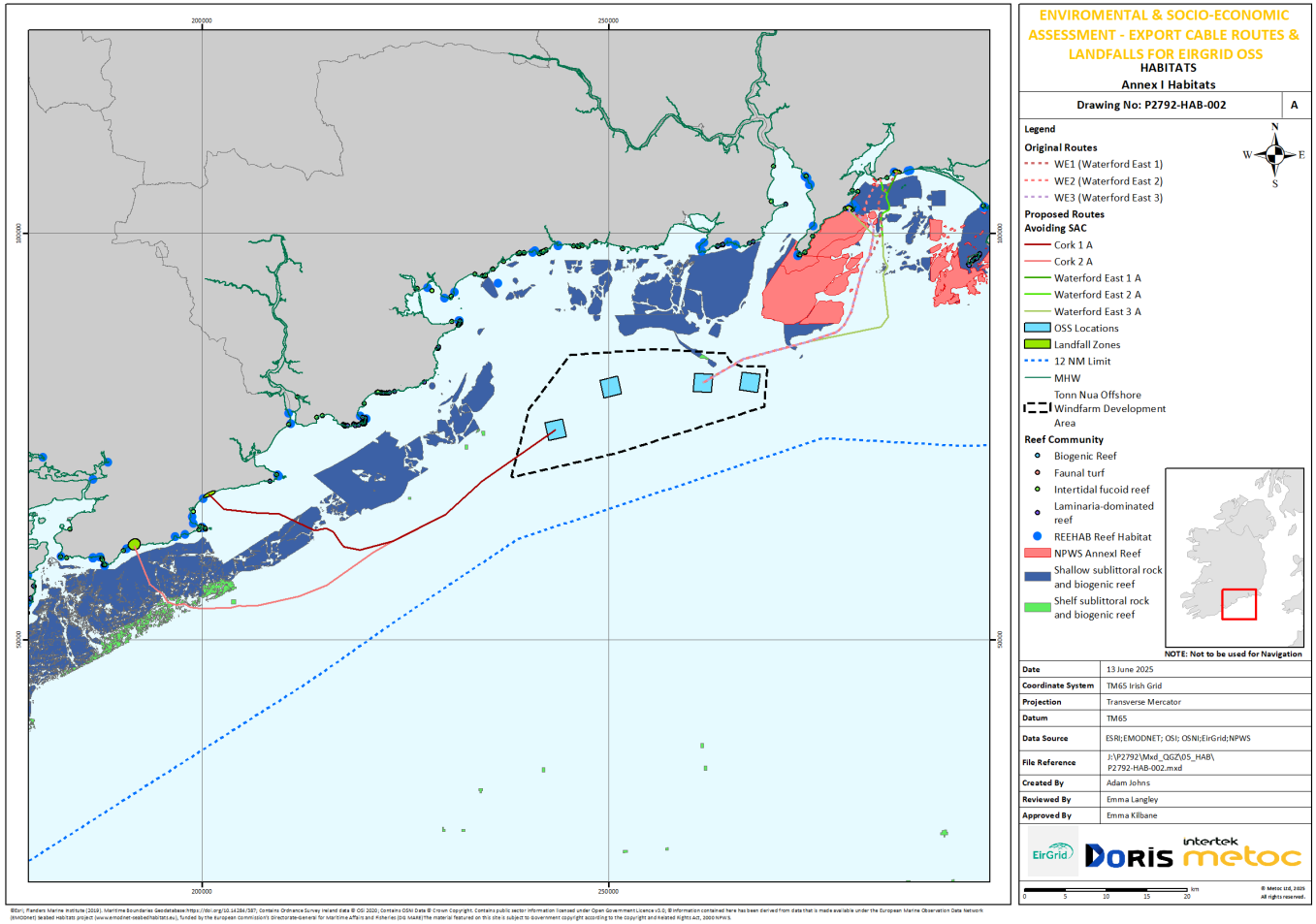
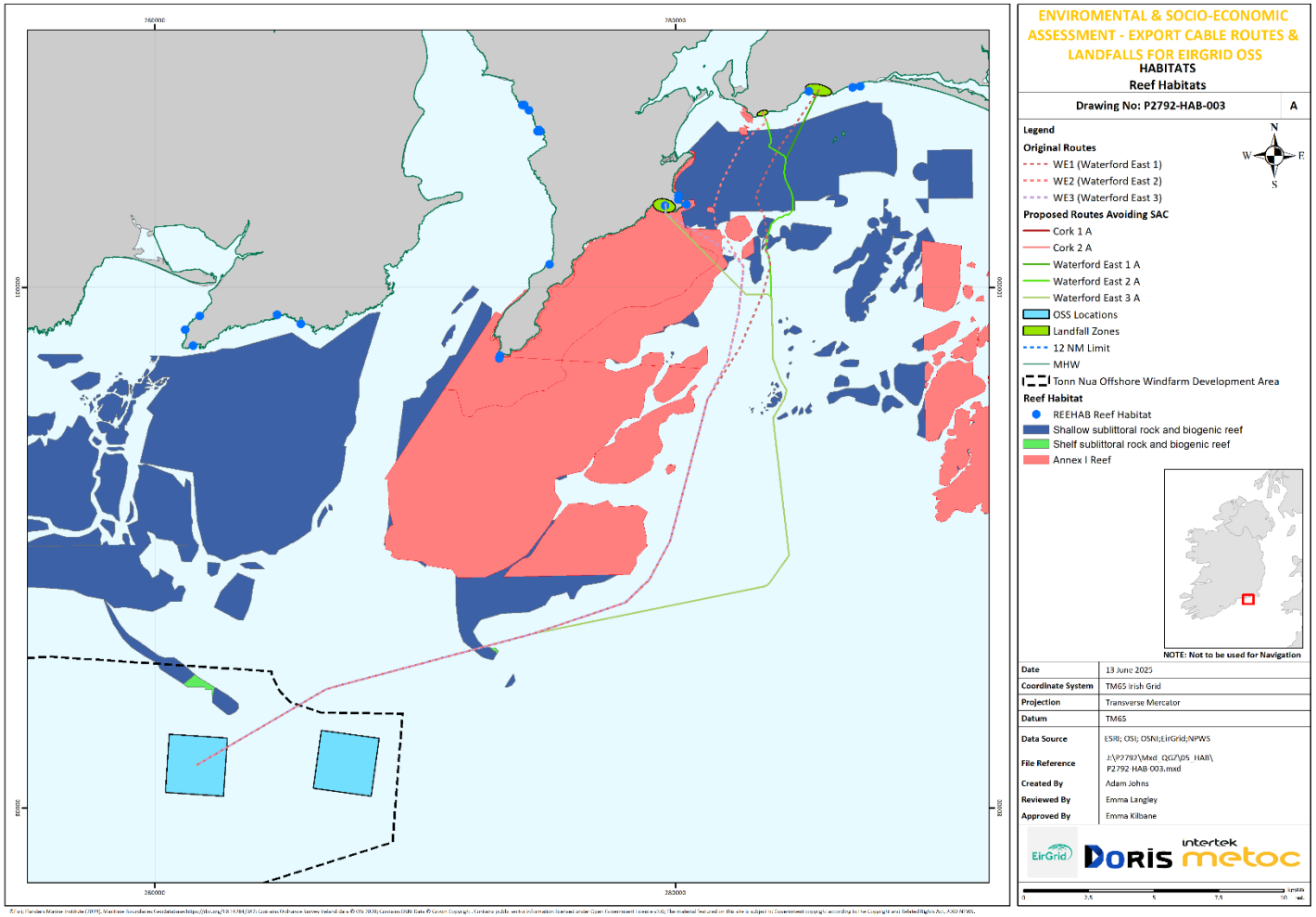


Figure 3-4 Annex I Reef Habitats NPWS Data in relation to Waterford Cables (Drawing Reference: P2792-HAB-003)



3.4 Fish and Crustacean Spawning Grounds and Nursery Areas

3.4.1 Fish

The Irish Sea is known to support a variety of demersal fish species, including sandeels, blennies, gobies, wrasses, and a wide range of flatfish. As well as this, pelagic species such as herring, mackerel, sprat, European anchovy, European sardine and garfish also inhabit the area (DCCAE, 2015). These species utilise the area for important life history periods such as spawning and nursing.

Locations where commercially significant fish species are known to deposit eggs for fertilisation are known as spawning areas, grounds and beds. Alternatively, marine nursery areas are defined as habitats that support the survival of juvenile commercially important fish species. These environments play a vital role in both species reproduction and the study of their geographical distribution.

The proposed cable route options overlap with spawning and nursery grounds for eight different species all together (Figure 3-5 and Figure 3-6; Drawing Reference: P2792-FISH-005 and P2792-FISH-006). This includes spawning grounds as well as nursery grounds for anglerfish, cod (2 data sources), hake, mackerel and whiting. Known nursery grounds for blue whiting and ling cover all Cork routes but only overlap with the southern section of all Waterford routes for approximately 3.7km. Sandeel nursery grounds overlap with all Waterford routes only and do not cover any of the proposed Cork routes. Detail on the time of year spawning takes place for each species is presented in Table 3-3.

Table 3-3 Summary of Spawning and Nursery Periods for Commercially Important Fish Species in the Vicinity of the Proposed Cable Routes

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cod (*Gadus morhua*)	S	S*	S*	S								
European hake (*Merluccius merluccius*)	S	S*	S*	S	S	S						
Ling (*Molva molva*)		S	S	S	S							
Mackerel (*Scomber scombrus*)			S	S	S	S	S	S				
Anglerfish (*Lophius piscatorius*)	SN	SN	SN	SN	SN	SN						
Blue whiting (*Micromesistius poutassou*)				S*	S*	S						
Whiting (*Merlangius merlangus*)		SN	SN	SN	SN	SN						
Sandeel (*Ammodytidae*)	S	S										
Haddock (*Melanogrammus aeglefinus*)		S*	S*	S*	S							

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nephrops	S	S	S	S*	*S*	S	S	S	S	S	S	S
Megrim (*Lepidorhombus whiffiagonis*)	S	S	S	S								
Herring (*Clupea harengus*)	S	S	S									
Sprat (*Sprattus sprattus*)					S*	*S	S	S				

S = Spawning, Blank = No Data, *peak spawning.

Source: Ellis *et al*., 2012, Coull *et al*., 1998

It should also be noted that herring (*Clupea harengus*) have been recorded to spawn particularly along the southern Irish coastline. Specifically, this has been identified as being in the vicinity of the Carnivan Beach landfall for the WE3 and WE3A routes, in an area 11.83km^2 in size (known as Baginbun I, Figure 3-8; Drawing Reference: P2792-FISH-007). Spawning activity is believed to occur in October in this location (O'Sullivan *et al.*, 2013).

All routes travel through a herring spawning ground as identified in O'Sullivan et al. (2013) and are shown in Figure 3-7 (Drawing reference: P2792-FISH-007). The total distance travelled through each spawning ground and/or bed by each route is presented in Table 3-. It should also be noted that all Waterford routes travel in close proximity to the Hook Head spawning bed, with Routes WE1, WE2 and WE3 located approximately 306m south whilst WE1A, WE2A and WE3A are located approximately 67m south.

Table 3-4 Distance of Each Route through Herring Spawning Grounds and Beds

Cable route	Ballycotton Spawning Ground	Tramore Spawning Ground	Baginbun Spawning Ground	Baginbun Spawning Bed
WE1	-	2.9km	19.9km	-
WE2	-	2.9km	19.5km	3.4km
WE3	-	2.9km	15.8km	3.8km
WE1A	-	2.9km	14.9km	-
WE2A	-	2.9km	14.4km	-
WE3A	-	2.9km	11.5km	3.4km
Cork 1	17.1km	-	-	-
Cork 2	10.5km	-	-	-

3.4.2 Crustaceans

The Norway lobster, also known as the Dublin Bay Prawn (*Nephrops norvegicus*), is frequently found along the Irish coastline, inhabiting distinct sandy and muddy areas where this habitat allows them to create burrows (Doyle *et al.,* 2014). Brown crabs are widespread in the rocky region of the Irish and

Celtic seas. Fisheries data from the Marine Management Organisation and the Scientific, Technical, and Economic Committee for Fisheries (STECF) indicate that the Irish Sea plays a significant role in supporting populations of lobster, Nephrops, shrimp, crabs, scallops, razor clams, and whelks (STECF, 2018; Elliott and Holden, 2018).

There are no aquaculture or designated shellfish water sites interacting with any of the cable routes. As such these receptors have not been considered further.

Figure 3-5 Fish Spawning and Nursery Areas (Sheet 1 of 2) (Drawing Reference: P2792-FISH-005)

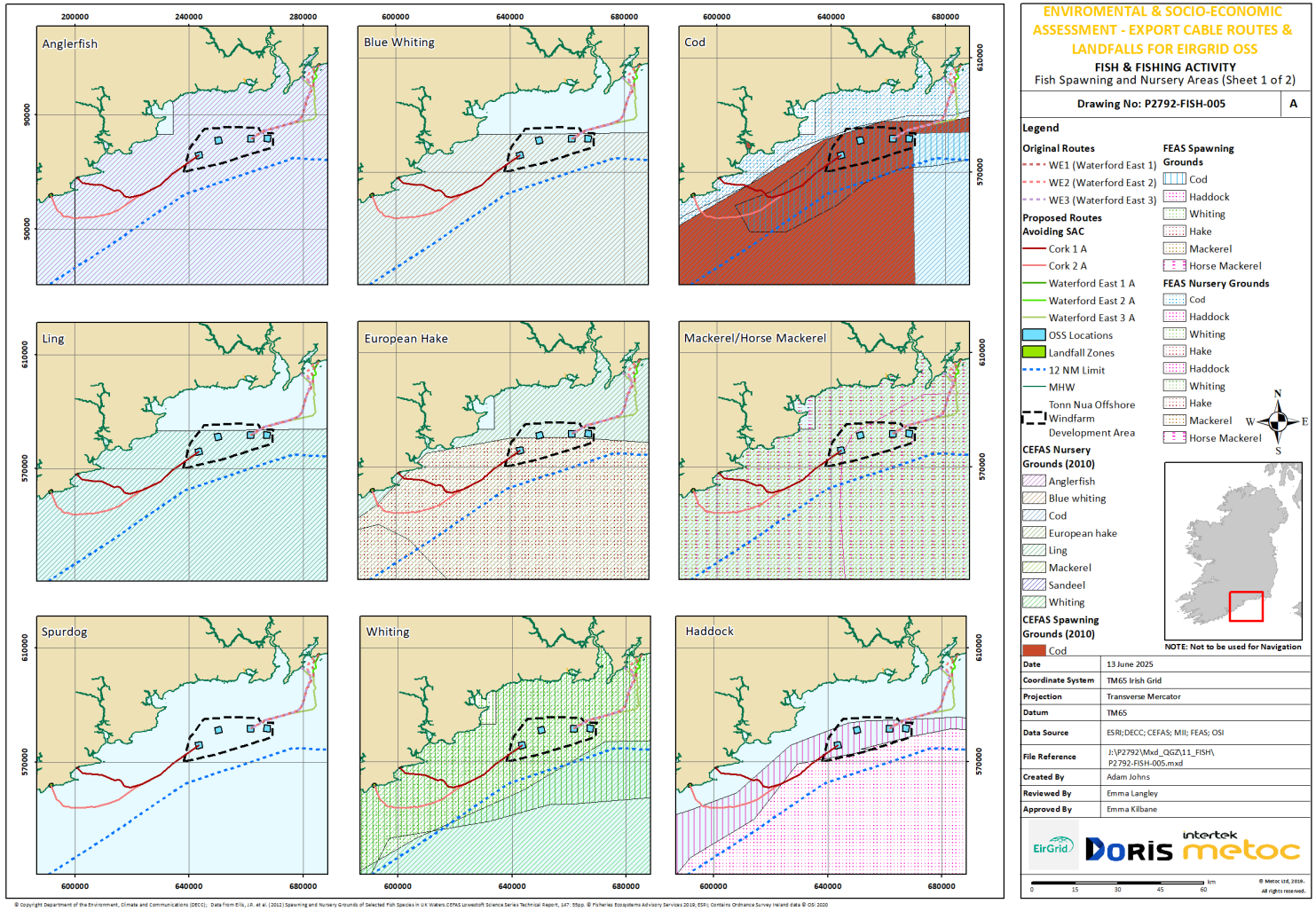


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Figure 3-6 Fish Spawning and Nursery Areas (Sheet 2 of 2) (Drawing Reference: P2792-FISH-006)

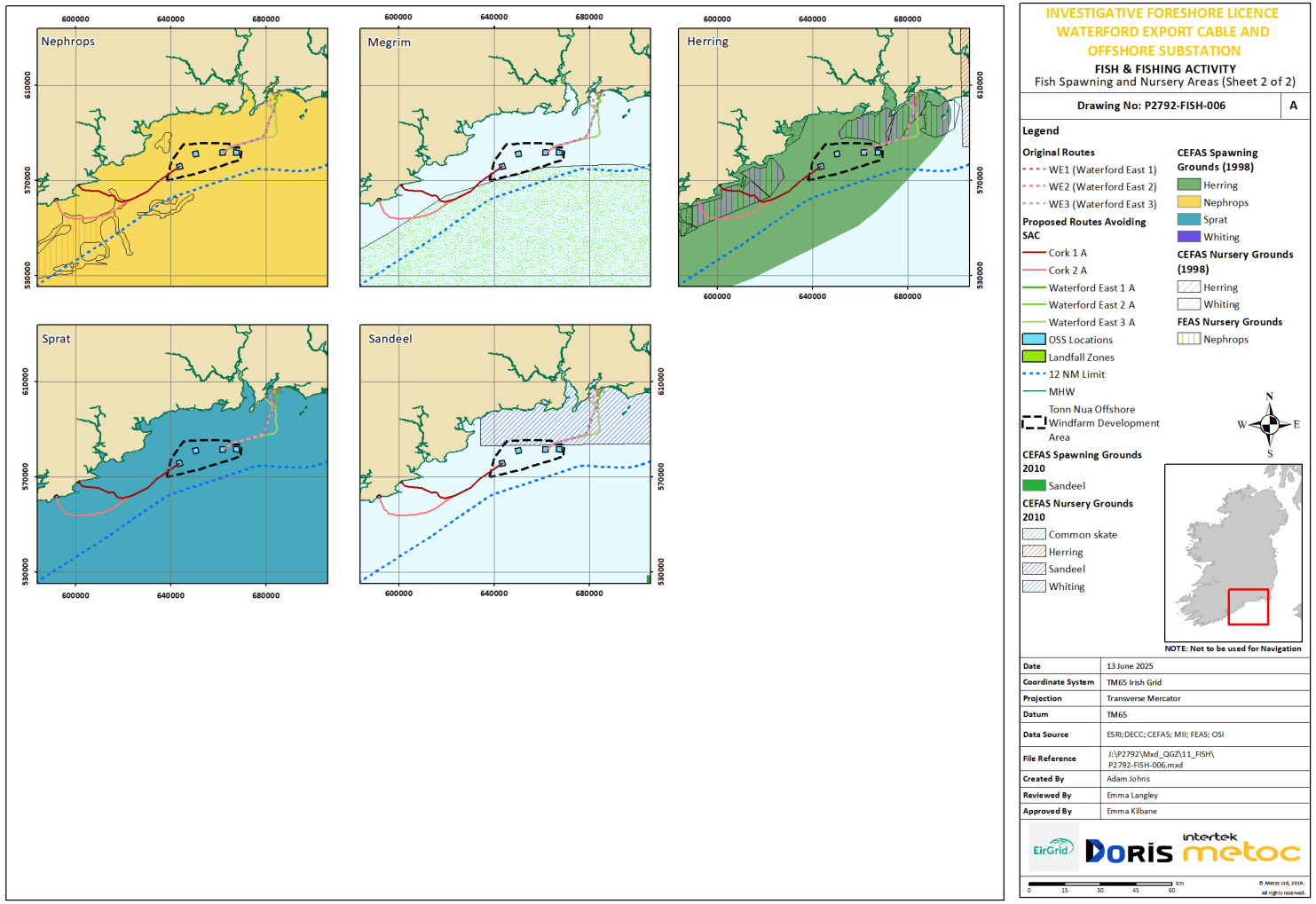

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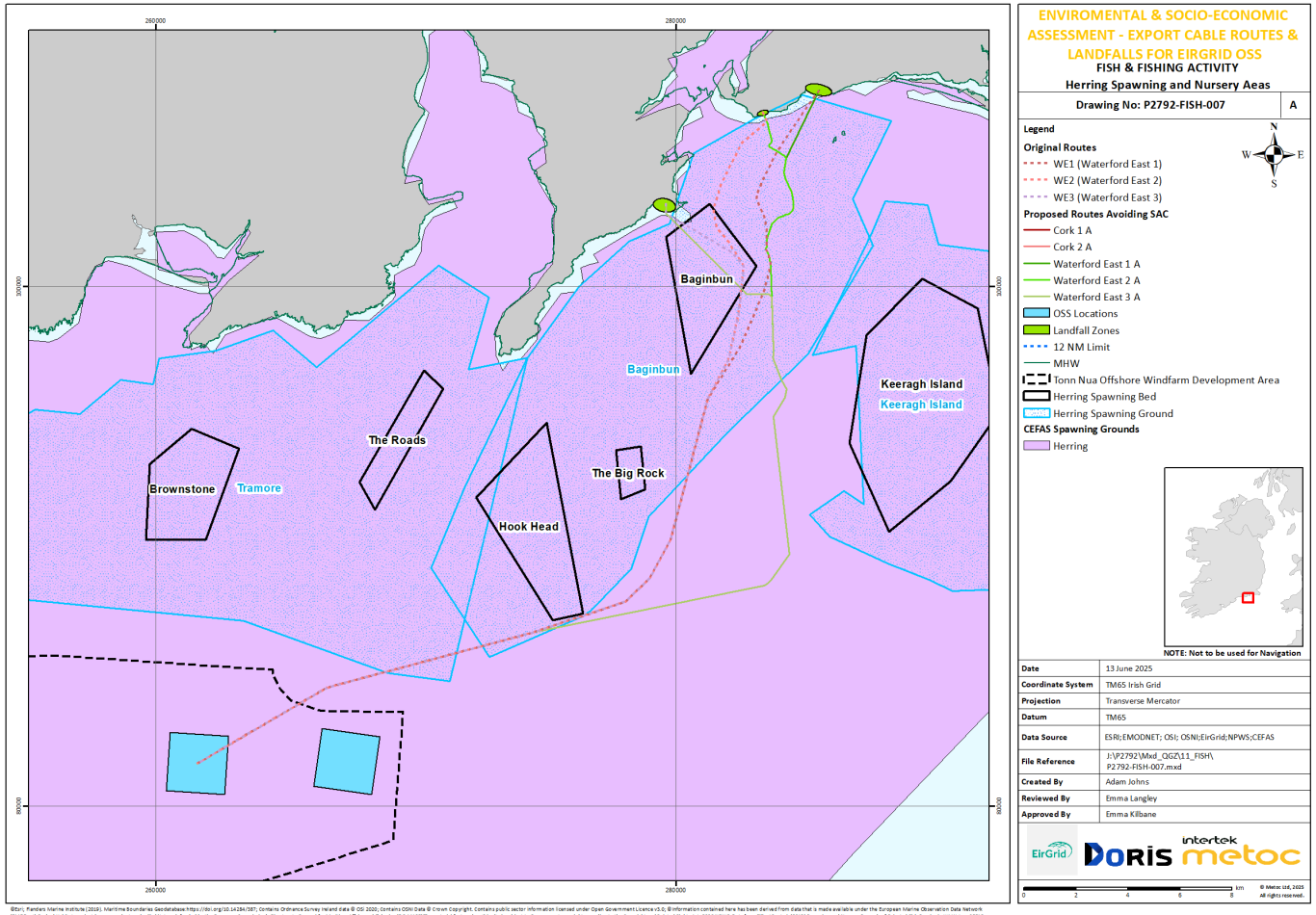
Figure 3-7 Herring Spawning Areas (O'Sullivan *et al.*, 2013 and Cefas 1998) in Relation to Waterford Cables (Drawing Reference: P2792-FISH-007)



3.5 Local and Migratory Bird Populations

Aerial surveys completed by Rogan *et al.* (2018) across summer and winter in 2015 and 2017 identified a total of 24 seabird species utilising the Irish coastline. Some species were sighted infrequently, including great skua (*Stercorarius skua*), black guillemot (*Cepphus grille*) and scoter (*Melanitta* spp.), whilst Auk species (comprising razorbill, *Alca torda*, common guillemot, *Uria aalge*, guillemots, and Atlantic puffin, *Fratercula arctica*), northern fulmar (*Fulmarus glacialis*), northern gannet (*Morus bassanus*), and black-legged kittiwake (*Rissa tridactyla*) were frequently sights and observed in high abundance across all surveys. Seasonal variation in the species sighted was also observed with Shearwaters, terns, and petrel species most commonly observed during summer surveys, and scoters, divers, and gull species common in winter. Whilst the surveys did not cover inshore waters in the vicinity of the proposed cable routes, species observed along the south coast include northern gannet, black-legged kittiwake, Manx shearwater, black guillemot, black-backed gull and northern fulmar.

Important bird populations are protected within designated SPAs. As discussed in Section 3.2, the Seas off Wexford pSPA is the only SPA that overlaps with the proposed Waterford cable routes. It is, however, not possible to differentiate whether species protected within this site are more likely to be present in any specific cable route option due to their close proximity. Designated features of the site cover both the breeding and non-breeding season, and use of the site is both coastal and offshore dependent on time of year. The Wexford cable routes are therefore more likely to encounter designated species in both seasons, as the Seas off Wexford SPA is designated for both breeding (such as guillemot, Manx shearwater and razorbill) and non-breeding species (such as common scoter, red-throated diver and cormorant). However, as birds are mobile species any individual could be encountered across any of the proposed cable routes undertaking any activity including foraging, rafting or nesting at the landfall and this cannot be differentiated between routes.

3.6 Marine Megafuana

Multiple marine megafauna use the area both over and surrounding the cable route options, and those present offshore off the southern Irish coastline are likely to consist of cetaceans (whales, dolphins, and porpoises), pinnipeds (seals) and elasmobranchs (sharks, skates, rays, basking shark). All cetaceans are European Protected Species (EPS) and are protected under Annex IV of the EC Habitats Directive (Directive 92/43/EEC). It is an offence under the Habitats Regulations to deliberately capture, kill, injure, or disturb animals classed as EPS. Harbour porpoise, bottlenose dolphin, grey seal and common/harbour seal are listed under Annex II of the Habitats Directive, which lists species of community interest and whose protection required the designation of SAC's. There is one SAC, Hook Head (designated for bottlenose dolphin and harbour porpoise), that is crossed by four of the cable routes (WE1, WE2, WE3 and WE3A). As a result, it is considered more likely to observe or encounter these two species across both these four routes and the remaining Waterford routes (WE1A and WE2A) due to their close proximity to the SAC. It is considered less likely to encounter either of these species along either Cork route as they do not cross an SAC designated for marine mammals. However, all marine mammals are highly mobile and the likelihood of encountering a marine mammals across either route is neither guaranteed nor completely ruled out.

3.6.1 Cetaceans

Of the 25 species of cetacean recorded in Irish waters, approximately six of these have been recorded off the south coast of Ireland and may be present in the area at least on a seasonal basis. These species are listed in Table 3-5. The most commonly sighted species are short-beaked common dolphin (*Delphinus delphis*), common bottlenose dolphin, harbour porpoise, and fin whale (*Balaenoptera physalus*), with other species rare, or occasional visitors. It is unlikely that deep water species such as the sperm whale (*Physeter macrocephalus*) and long-fined pilot whale (*Globicephala melas*) will be present in the inshore waters the cable routes are proposed within (Reid et al. 2003).

The Irish Whale and Dolphin Group (IWDG) website (IWDG, 2025) was used to determine the number of marine megafauna sightings within Waterford using the interactive mapper. There are relatively low observations reported, with a total of 164 sighting records submitted to the IWDG between the period 10th June 2024 and 10th June 2025 (Table 3-5). The most frequently observed species in the Waterford area is common dolphin, with a total observed during this period being 1,509 individuals.

Most cetaceans are wide-ranging, and individuals encountered within the Celtic Sea form part of much larger biological populations whose range extend into adjacent jurisdictions. As a result, management units (MUs) have been outlined for seven of the common regularly occurring species. These provide an indication of the spatial scales at which impacts of anthropogenic activities should be taken into consideration.

Table 3-5 Megafauna Species Located within the Vicinity of the Proposed Cable Routes

Species	Frequency of sightings*	IWDG sightings (approx.) (June 2024 – June 2025)**	Estimation of density within MU (animals/km^2) ***	Applicable MU****	Abundance of animals in MU****
Basking shark	Sightings are frequent during spring and early summer, with peak activity typically occurring between April and July	97	N/A	N/A	N/A
Bottlenose dolphin	Common year round but most frequent in summer.	59	0.033 – 0.087	Offshore Channel and SW England	10,947
Common dolphin	Peak period is spring and summer and winter peak on the south coast associated with prey items.	1,509	0.038 – 0.115	Celtic & Greater North Seas	102,656
Fin whale	Unclear, contradictory evidence with sightings during summer months, and acoustic monitoring data suggest a peak in November – December.	70	No data available	N/A	No data available
Harbour porpoise	Common from June through the autumn/winter.	27	0.094 – 0.157	Celtic and Irish Seas	62,517

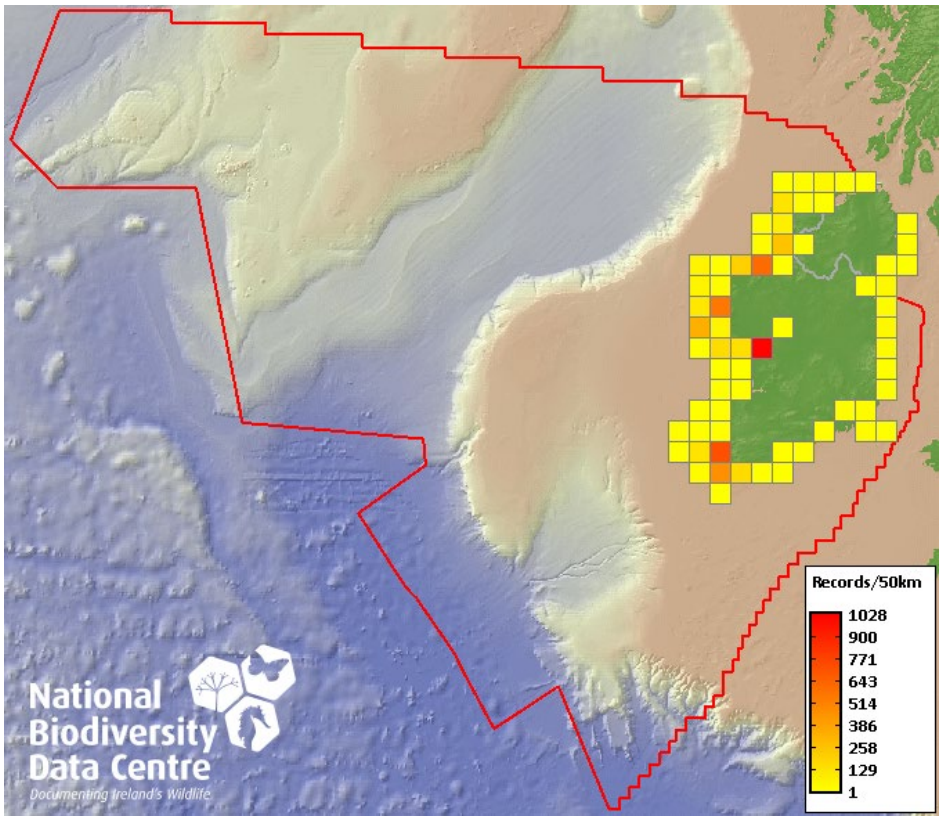
Species	Frequency of sightings*	IWDG sightings (approx.) (June 2024 – June 2025)**	Estimation of density within MU (animals/km^2) ***	Applicable MU****	Abundance of animals in MU****
	Peak period in August.				
Humpback whale	Occasional sightings in Irish Sea waters.	4	No data available	N/A	No data available
Minke whale	Peak period July and August	3	0.009 – 0.018	Celtic & Greater North Seas	20,118

Source: IWDG, 2025

3.6.2 Pinnipeds

Two species of seal are known to inhabit Irish waters, the harbour (or common) seal (*Phoca vitulina*) and the grey seal (*Halichoerus grypus*). In Ireland, grey seal typically breeds on remote uninhabited islands or coasts and in small numbers in caves between September and December, with moulting occurring approximately 3-5 months after the breeding season. Harbour seal often haul out onto tidally exposed sandbanks to rest, moult and suckle their young. Pupping tends to occur between June and July, followed by moulting for 4-5 weeks following this. A known haul out location is Saltee Islands, located approximately 10km east of WE2 at its closest point. Numbers at this site range from between 121 to 500 individuals for grey seals during the moulting season (O Cadhla and Strong, 2007) Both seal species have been sighted in the vicinity of the Cork 1 and Cork 2 routes with up to 129 individuals recorded, but are shown in Figure 3-8 as absent from the location of the Waterford routes (NPWS, 2025).

Figure 3-8 NPWS Seal Database for Ireland



3.6.3 Elasmobranchs

Due to the slow growth rates, late maturity and low fecundity of elasmobranchs, they are considered one of the most vulnerable marine fish to anthropogenic impacts. All sharks and rays are on the Oslo and Paris Conventions (OSPAR) List of Threatened and/or Declining Species and Habitats (Agreement 2008-06) (OSPAR, 2008).

Reports from the Irish Bottom Trawl Survey (IBTS) indicate that in Irish waters the spotted dogfish (*Scyliorhinus canicular*), cuckoo ray, (*Leucoraja naevus*), spurdog (*Squalus acanthias*), angel shark (*Squatina squatina*), tope (*Galeorhinus galeus*), smooth hound (*Mustelus mustelus*), thornback ray (*Raja clavate*), spotted ray (*Raja montagui*) and nurse hound (*Scyliorhinus stellaris*) have all been observed (ICES, 2018). A report by Clarke *et al.* (2016) indicates that basking shark are observed regularly along the Irish south coast. Due to their mobile nature and the close proximity of the cable routes at Waterford and Cork respectively, it is not possible to differentiate elasmobranch encounter rates between each cable route.

4. SOCIO-ECONOMIC BASELINE

4.1 Introduction

This section presents the current socio-economic baseline, and provides a clear understanding of the existing human and economic activities along each proposed cable route option. The baseline has been developed using a range of publicly available datasets and studies, all of which are cited appropriately within the text.

The following socio-economic receptors have been considered:

- Recreation and Tourism
- Commercial Fisheries
- Landscape and Seascape
- Marine Cultural Heritage
- Shipping and Navigation
- Other Infrastructure

4.2 Recreation and Tourism

A bathing water designated beach, Garryvore, is located approximately 1.2km north-east of the Cork 1 landfall. Both are located on the same beach. Besides this, there is no overlap between any of the landfall areas and a designated bathing water area. For the cables routing into Wexford there are no overlapping bathing waters at any of the landfalls the nearest bathing water, Counsellors Strand, Dunmore East are approximately 11km away from Carnivan Beach however, these bathing waters are located across the Wexford/Waterford estuary and over Slade Head, indicating there would be no direct impact from the landfall to these bathing waters. Blackhall beach landfall is located approximately 12km from Kilmore Quay bathing water.

Common recreational activities in the offshore environment include kayaking and sailing. These activities are predominantly concentrated around coastal areas, particularly in the entrance to the Waterford Estuary and around Bannow Bay. As presented in Figure 4-10 (Drawing Reference: P2792-AIS-005), sailing activity is at a low density and concentrated around the coast. Vessels tend to travel parallel to the coastline and therefore slight increases in activity are seen across all proposed cable routes. The Dungarvan Sailing Club (approximately 16km from Cork 1 and 2) and Ardmore Adventures (approximately 22km from Cork 1 and 2) also operate sailing and sea-kayaking tours out of Dungarvan Harbour. However, any disturbance to recreational activities would be temporary.

No ferry routes are crossed by any of the proposed cables.

4.3 Commercial Fisheries

Commercial fisheries are active within Irish waters, with over 2000 registered fishing vessels and an estimated number of 1318 active vessel. The majority of these are under 12m in length, so are not captured within vessel monitoring system (VMS) data (Perry *et al.,* 2024). The Irish fishing fleet is engaged in a variety of fisheries and targets a wide range of commercial species. Of the fisheries active in the country, the most important are for demersal and shellfish including blue whiting, Atlantic mackerel, anglerfish, European hake, edible crab and Norway lobster (SFPA, 2024). The cable routes are located within the International Council for the Exploration of the Sea (ICES) Celtic Sea Ecoregion, division 7.a (Irish Sea).

Multiple fishing ports are also located within the area. In 2023, Ballycotton landed 986 tonnes of fish and Kilmore Quay landed 4,315 tonnes. Dunmore East (the largest fishing port located within the vicinity of the Waterford cable routes) landed 6,566 tonnes of fish (SFPA, 2024).

An Bord Iascaigh Mhara (BIM) publishes the Annual Fisheries Report, with the most recent edition providing an overview of Ireland's fishing sector between 2020 and 2022 (Perry, Jackson and Rihan, 2022). Within this period, the Irish fleet consisted of approximately 1,391 vessels, representing 60,328 gross tonnes (GT) and 183,958 kilowatts (kW) in engine power – an 8% reduction since 2019. A majority of the vessels within this fleet were small scale coastal vessels under 12m in length and predominantly operating in inshore waters (Perry, Jackson and Rihan, 2022).

Gear types used varied in intensity across the proposed cable routes, as shown in Figure 4-1 to Figure 4-4 (Drawing References: P2792-FISH-001 to 004). Beam trawling had higher effort across the Cork routes and continued to trawl along the Cork 2A route on its approach to landfall, whilst use of beam trawls across the Waterford routes was low. Bottom trawling effort was generally low, with a slightly higher area of activity located south of the Cork routes within the Tonn Nua boundary. Dredging was concentrated along the western section of the Waterford routes but did not occur on the Cork routes. Gill netting effort was low and only occurred in the nearshore area of both Cork routes. No long lines were recorded as being used across any of the cable routes. Pelagic trawls, however, had a high level of effort recorded in the nearshore areas of all routes, particularly along the Cork 1A and all Waterford routes. This high effort is largely due to Irish vessels, however some international vessels also utilise the area in the approach to the Waterford landfalls. Low effort was recorded in isolated areas in the nearshore areas of the Waterford routes, with none taking place along either Cork route. Seine effort was concentrated along the Cork routes exit from the Tonn Nua boundary, and occurred sporadically along the Waterford routes upon their exit from the boundary also.

Within the Hook Head SAC (routes WE1, WE2 and WE3), commercial fishing effort of the >12m fleet was generally higher, with pelagic trawlers and dredgers more concentrated in this area. However bottom otter trawling was slightly elevated at routes WE1-A, WE2-A and WE3-A. On balance from an asset integrity and temporary displacement of commercial fisheries perspective routes Cork 1A, WE1-A, WE2-A and WE3-A are preferred.

Figure 4-1 Fishing Activity and Fishing Effort by Gear Type (Sheet 1 of 4) (Drawing Reference: P2792-FISH-001)

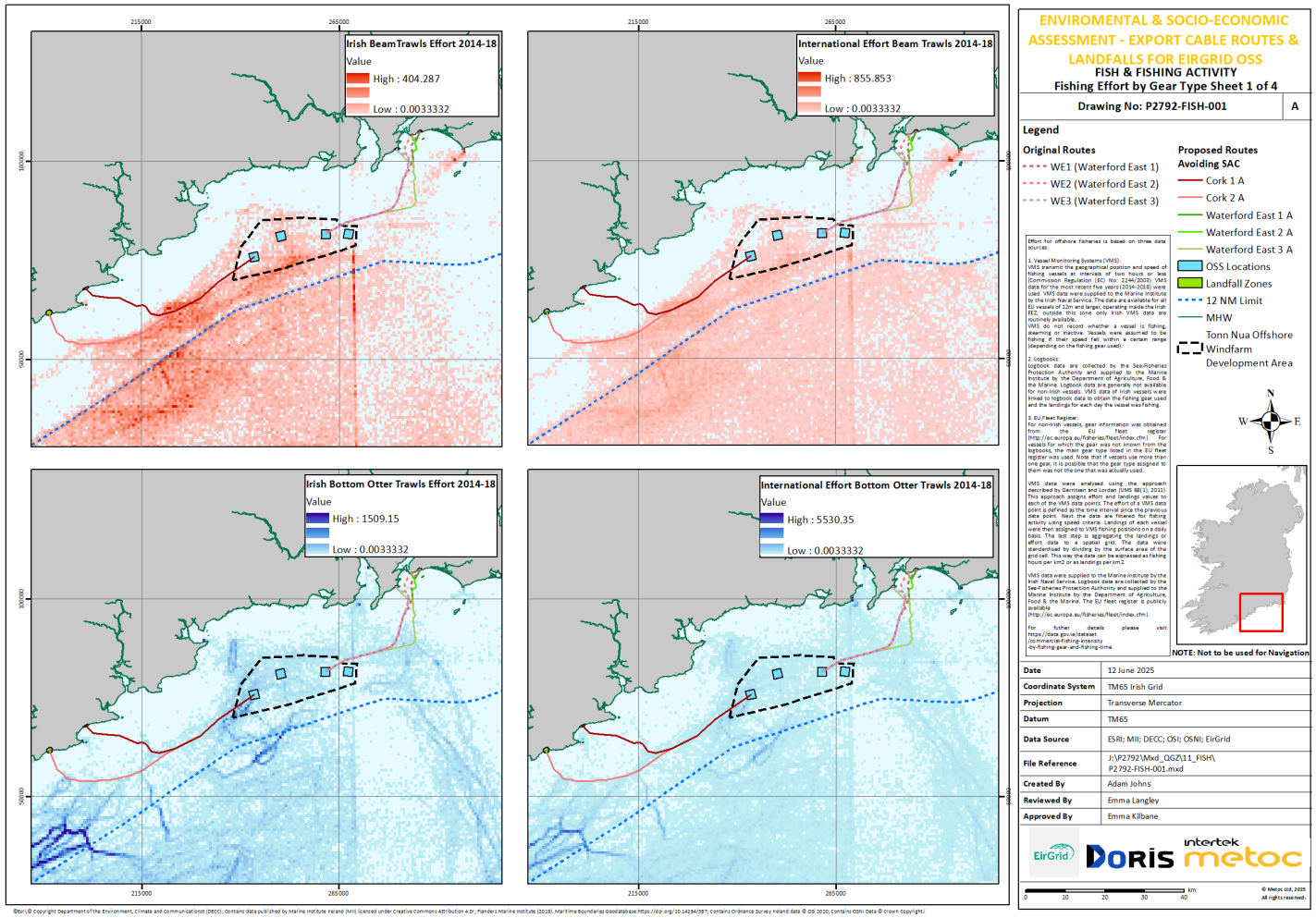


Figure 4-2 Fishing Activity and Fishing Effort by Gear Type (Sheet 2 of 4) (Drawing Reference: P2792-FISH-002)

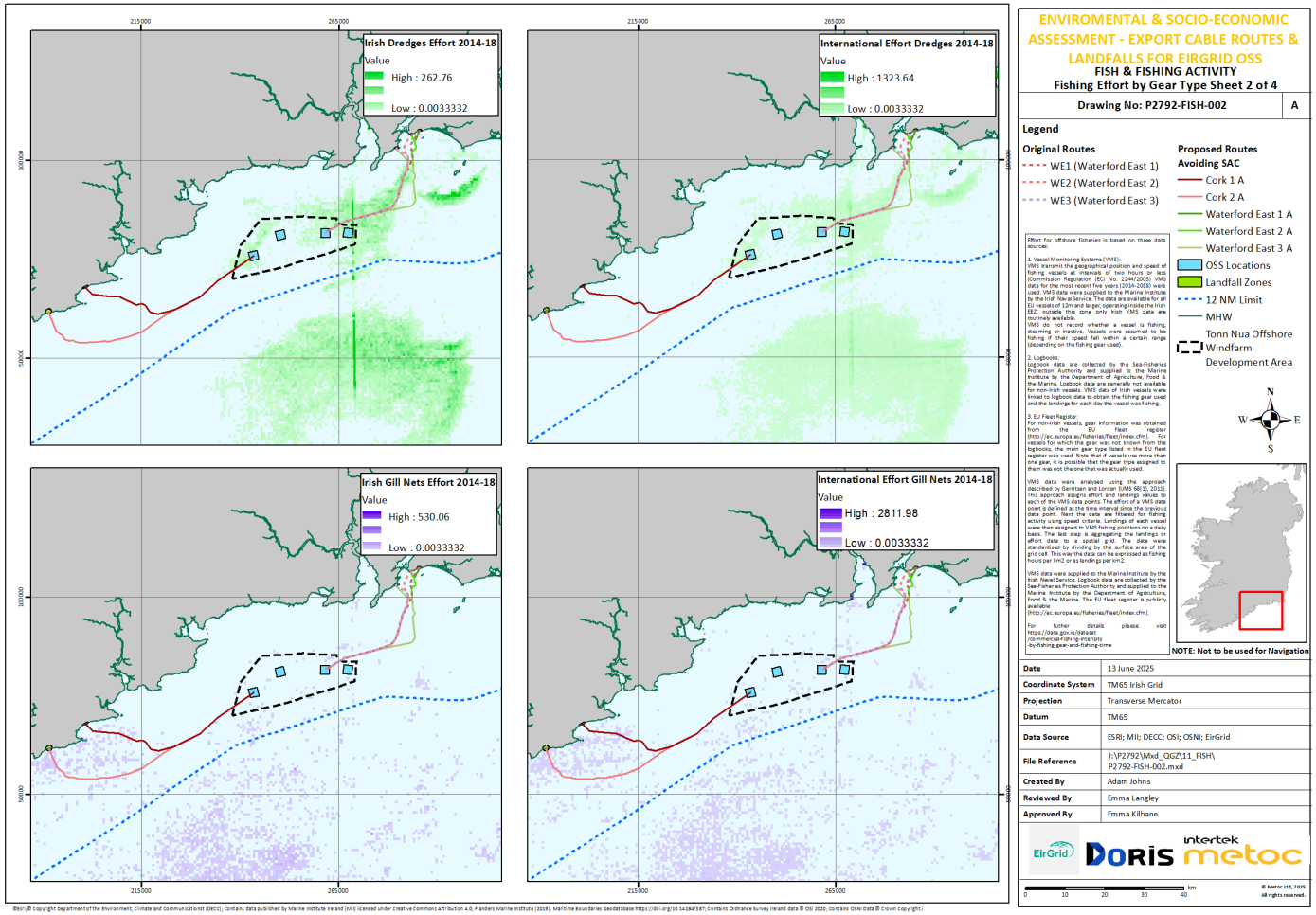
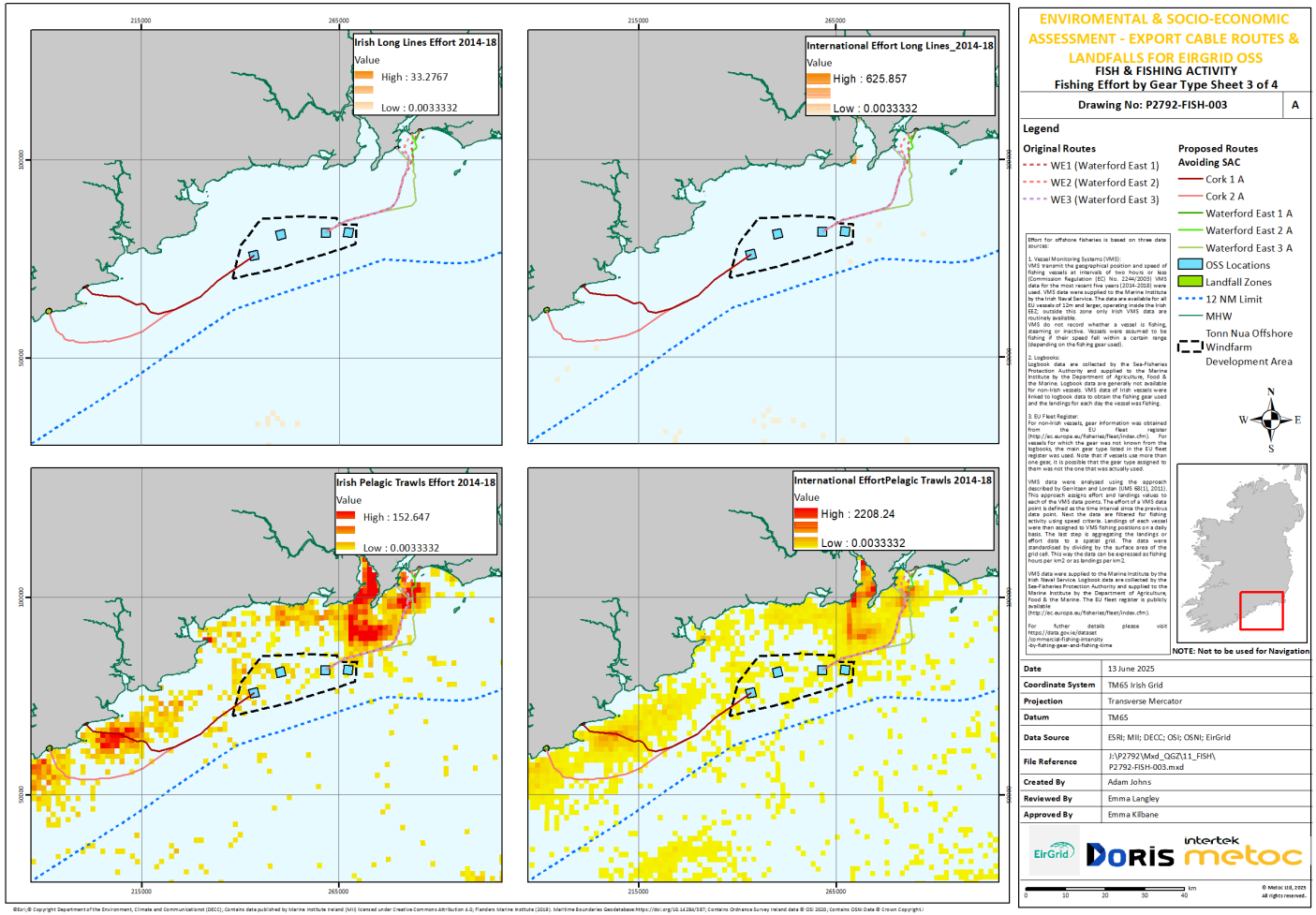


Figure 4-3 Fishing Activity and Fishing Effort by Gear Type (Sheet 3 of 4) (Drawing Reference: P2792-FISH-003)



ENVIROMENTAL & SOCIO-ECONOMIC ASSESSMENT - EXPORT CABLE ROUTES & LANDFALLS FOR EIRGRID OSS

FISH & FISHING ACTIVITY

Fishing Effort by Gear Type Sheet 3 of 4

Drawing No: P2792-FISH-003 | **A**

Legend

Original Routes
- WE1 (Waterford East 1)
- WE2 (Waterford East 2)
- WE3 (Waterford East 3)

Proposed Routes Avoiding SAC
- Cork 1 A
- Cork 2 A
- Waterford East 1 A
- Waterford East 2 A
- Waterford East 3 A
- OSS Locations
- Landfall Zones
- 12 NM Limit
- MHW
- Tonn Nua Offshore Windfarm Development Area

Effort for offshore fisheries is based on three data sources:

1. Vessel Monitoring Systems (VMS):
VMS transmit the geographical position and speed of fishing vessels at intervals of two hours or less (Commission Regulation (EC) No. 2244/2003). VMS data for the most recent five years (2014-2018) were used. VMS data were supplied to the Marine Institute by the Irish Naval Service. The data are available for all EU vessels of 12m and larger, operating inside the Irish EEZ; outside this zone only Irish VMS data are routinely available.
VMS do not record whether a vessel is fishing, steaming or inactive. Vessels were assumed to be fishing if their speed fell within a certain range (depending on the fishing gear used).

2. Logbooks:
Logbook data are collected by the Sea-Fisheries Protection Authority and supplied to the Marine Institute by the Department of Agriculture, Food & the Marine. Logbook data are generally not available for non-Irish vessels. VMS data of Irish vessels were linked to logbook data to obtain the fishing gear used and the landings for each day the vessel was fishing.

3. EU Fleet Register:
For non-Irish vessels, gear information was obtained from the EU fleet register (http://ec.europa.eu/fisheries/fleet/index.cfm). For vessels for which the gear was not known from the logbooks, the main gear type listed in the EU fleet register was used. Note that if vessels use more than one gear, it is possible that the gear type assigned to them was not the one that was actually used.

VMS data were analysed using the approach described by Gerritsen and Lordan (IJMS 68(1), 2011). This approach assigns effort and landings values to each of the VMS data points. The effort of a VMS data point is defined as the time interval since the previous data point. Next the data are filtered for fishing activity using speed criteria. Landings of each vessel were then assigned to VMS fishing positions on a daily basis. The last step is aggregating the landings or effort data to a spatial grid. The data were standardised by dividing by the surface area of the grid cell. This way the data can be expressed as fishing hours per km2 or as landings per km2.

VMS data were supplied to the Marine Institute by the Irish Naval Service. Logbook data are collected by the Sea-Fisheries Protection Authority and supplied to the Marine Institute by the Department of Agriculture, Food & the Marine. The EU fleet register is publicly available
(http://ec.europa.eu/fisheries/fleet/index.cfm).

For further details please visit https://data.gov.ie/dataset/commercial-fishing-intensity-by-fishing-gear-and-fishing-time

NOTE: Not to be used for Navigation

Date	13 June 2025
Coordinate System	TM65 Irish Grid
Projection	Transverse Mercator
Datum	TM65
Data Source	ESRI; MII; DECC; OSI; OSNI; EirGrid
File Reference	J:\P2792\Mxd_QGZ\11_FISH\P2792-FISH-003.mxd
Created By	Adam Johns
Reviewed By	Emma Langley
Approved By	Emma Kilbane

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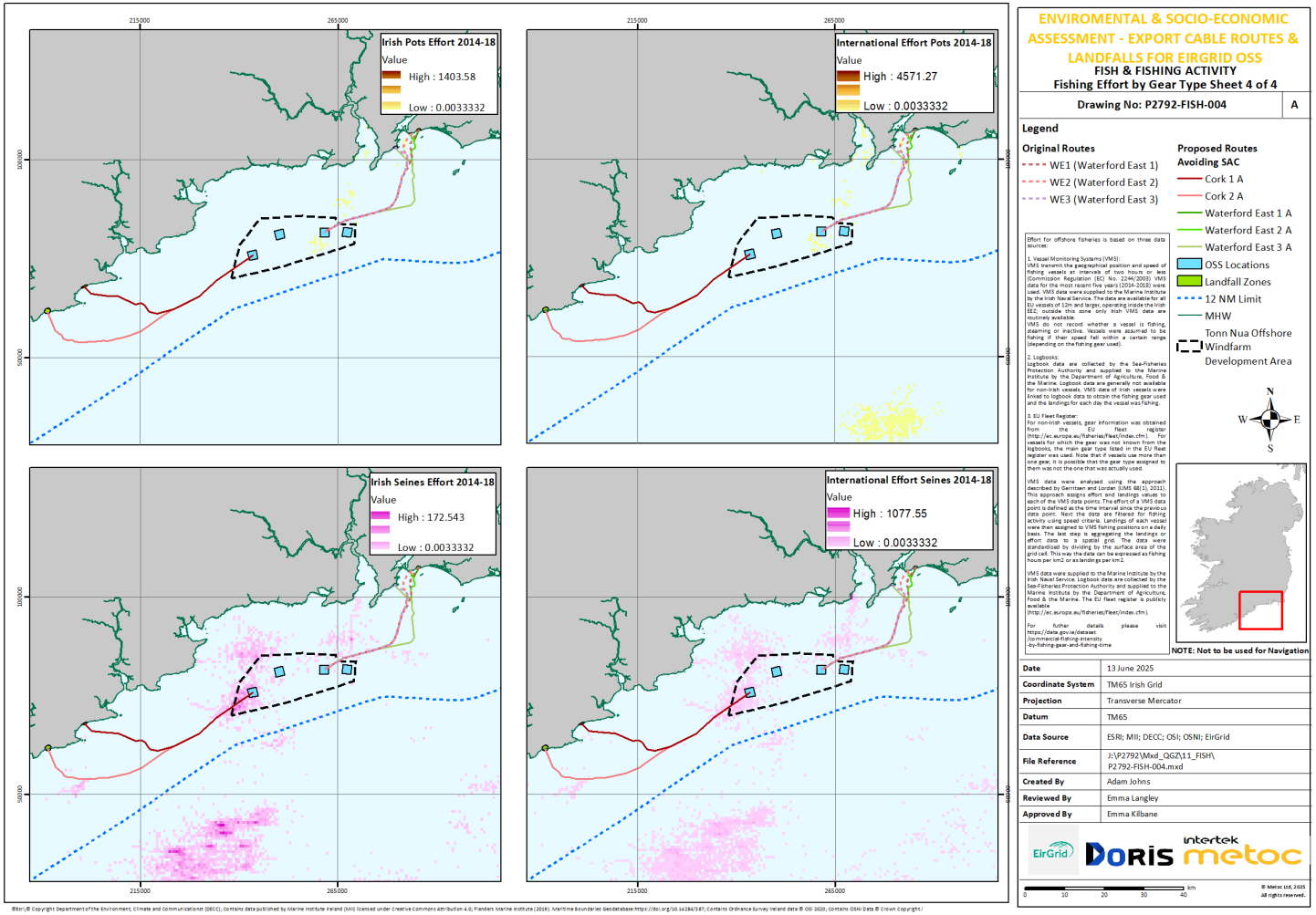
Figure 4-4 Fishing Activity and Fishing Effort by Gear Type (Sheet 4 of 4) (Drawing Reference: P2792-FISH-004)



4.4 Landscape and Seascape

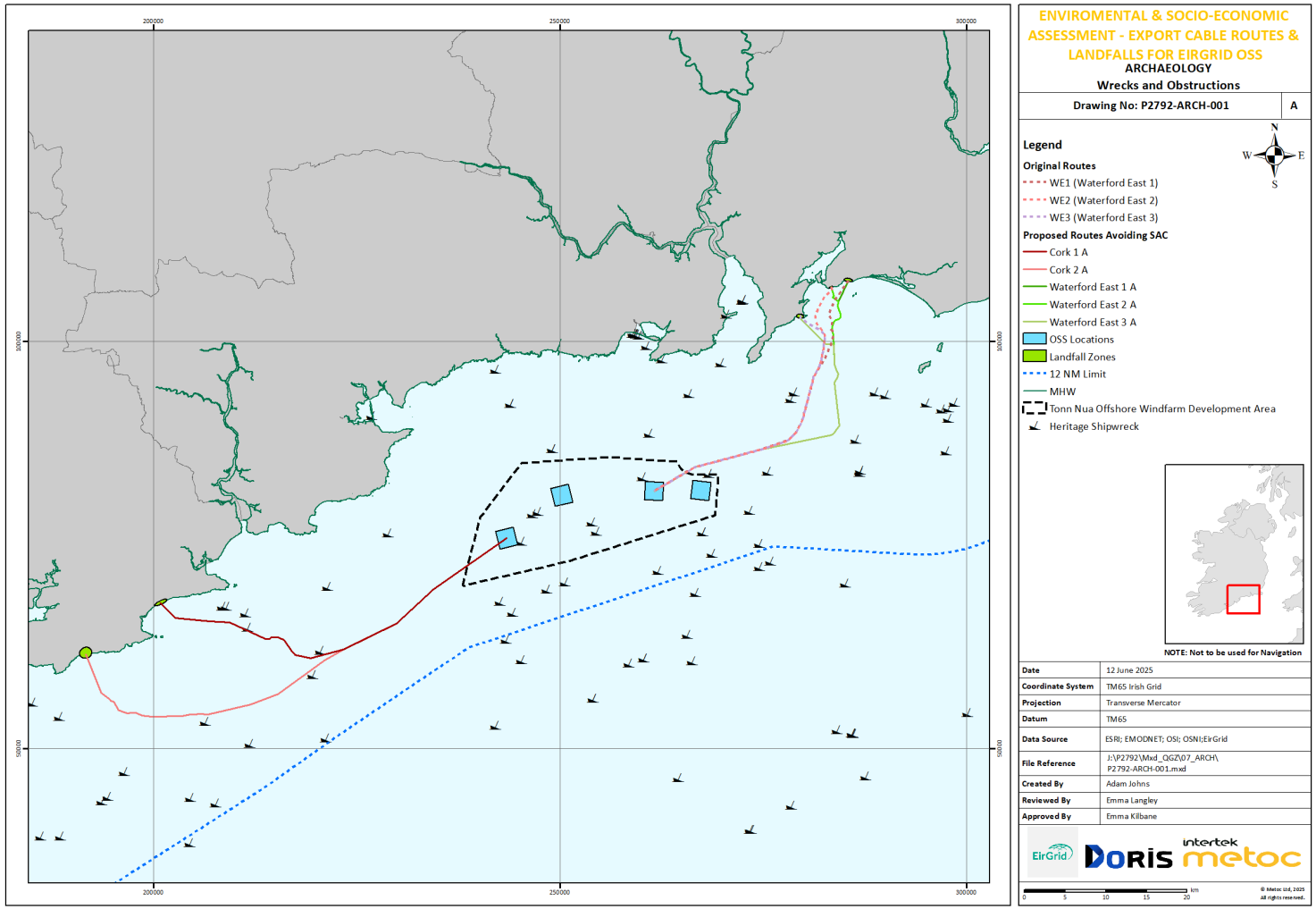
The submarine cable, whichever route is selected, will not be visible above shore so will not impact on landscape or seascape after the temporary installation phase has concluded. As a result, this will not be considered further.

4.5 Marine Cultural Heritage

All planned cable routes avoid all known and charted wrecks. There are multiple wrecks within the vicinity of the planned routes, particularly around the Cork 1A and Cork 2A routes, with vessels including a steam trawler (named SS Exeter) and a steel steamship (named SS Gracia) two examples located within 1km of the Cork 2A and Cork 1A routes respectively. A map of known wrecks is presented in Figure 4-5 (Drawing Reference: P2792-ARCH-001).

All routes will be laid 250m from any known wreck.

Figure 4-5 Wrecks within the Vicinity of the Planned Cable Routes (Drawing Reference: P2792-ARCH-001)



4.6 Shipping and Navigation

Vessel traffic (as shown in Figure 4-6; Drawing Reference: P2792-AIS-001) is relatively low across all proposed cable routes, with the exception of a small hotspot between the WE2 and WE3 routes close to shore. Another hotspot is noted to the east of the Cork 1A landfall, which is associated with Ballycotton Harbour.

A route to enter the River Barrow is seen crossing all Waterford routes in a perpendicular orientation, however the vessel density is still low with between 2-5 vessel hours per km^2 per year shown in the vicinity of the cable routes. This is made up largely of Cargo vessels, as seen in Figure 4-7. Another increase in vessel traffic to the same level is shown parallel to the Cork routes, running in a west to east direction. This is made up primarily of tanker vessels, as shown in Figure 4-8 (Drawing Reference: P2792-AIS-002).

There are two nearby Royal National Lifeboat Institution (RNLI) Lifeboat stations located in the vicinity of the Waterford Cables, with the nearest station, Fethard Station, to Carnivan Beach landfall (approximately 2km). Blackhall Beach landfall is located approximately 12km from the Kilmore Quay RNLI station. For the Cork routes the Ballycotton RNLI station is location approximately 4km from Ballycrenane Beach landfall and 9km from Ballycroneen Beach.

Fishing activity (as shown in Figure 4-9; Drawing Reference: P2792-AIS-004) is more sporadic, with activity concentrated outside of the 12nm limit and within bays close to the shore. An increase in activity is observed close to all Waterford landfalls, however this is still considered low level of activity at 2-5 vessel hours per km^2 per year. A similar hotspot is seen to the east of the Cork 1A landfall, associated with Ballycotton Harbour.

Sailing activity (as shown in Figure 4-10; Drawing Reference: P2792-AIS-005) is low density and concentrated around the coast. Vessels tend to travel parallel to the coastline and therefore slight increases in activity are seen across all proposed cable routes.

Figure 4-6 Average Monthly Vessel Hours All Vessels (Drawing Reference: P2792-AIS-001)

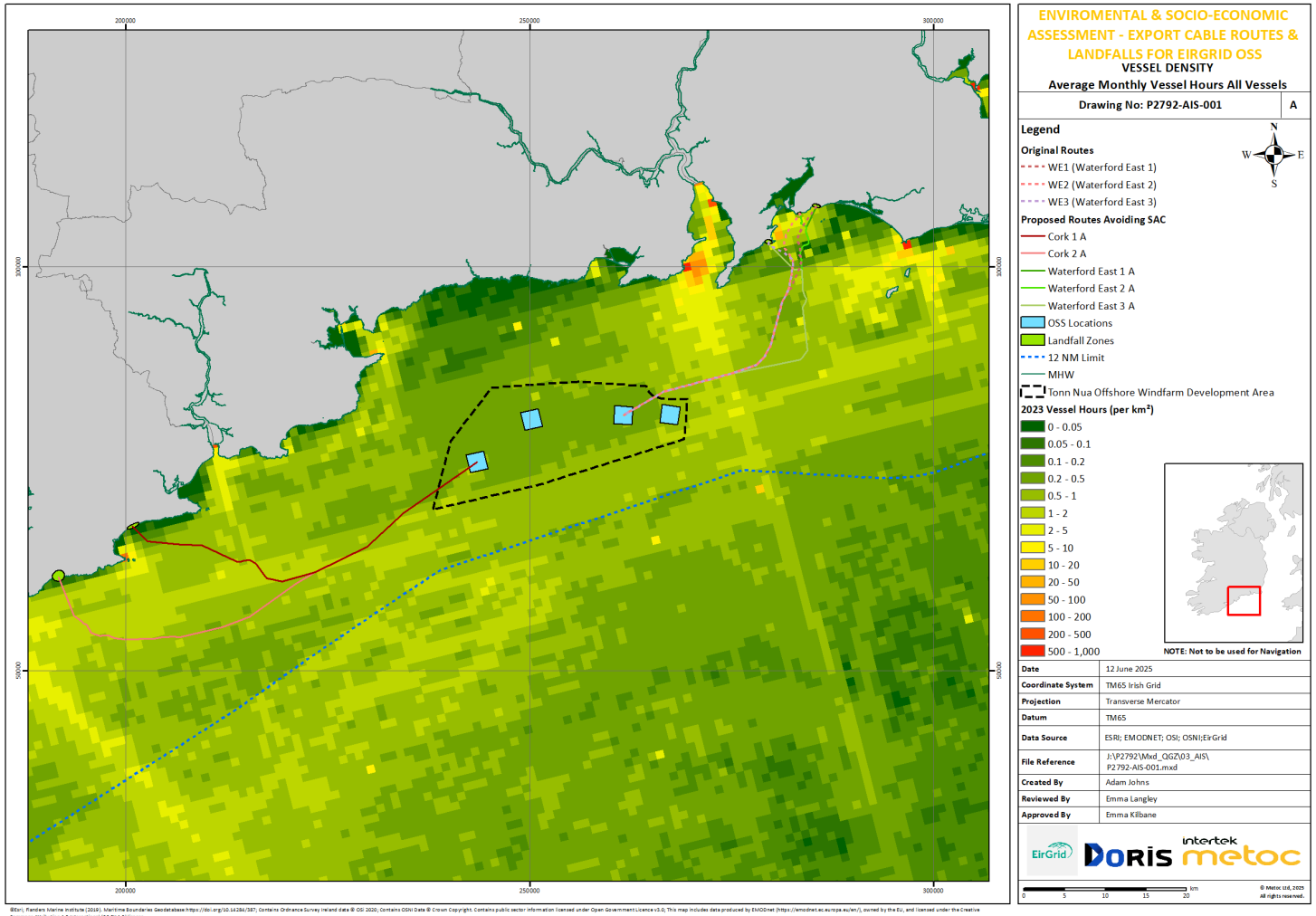


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Figure 4-7 AIS Cargo Vessel Density (Drawing Reference: P2792-AIS-002)

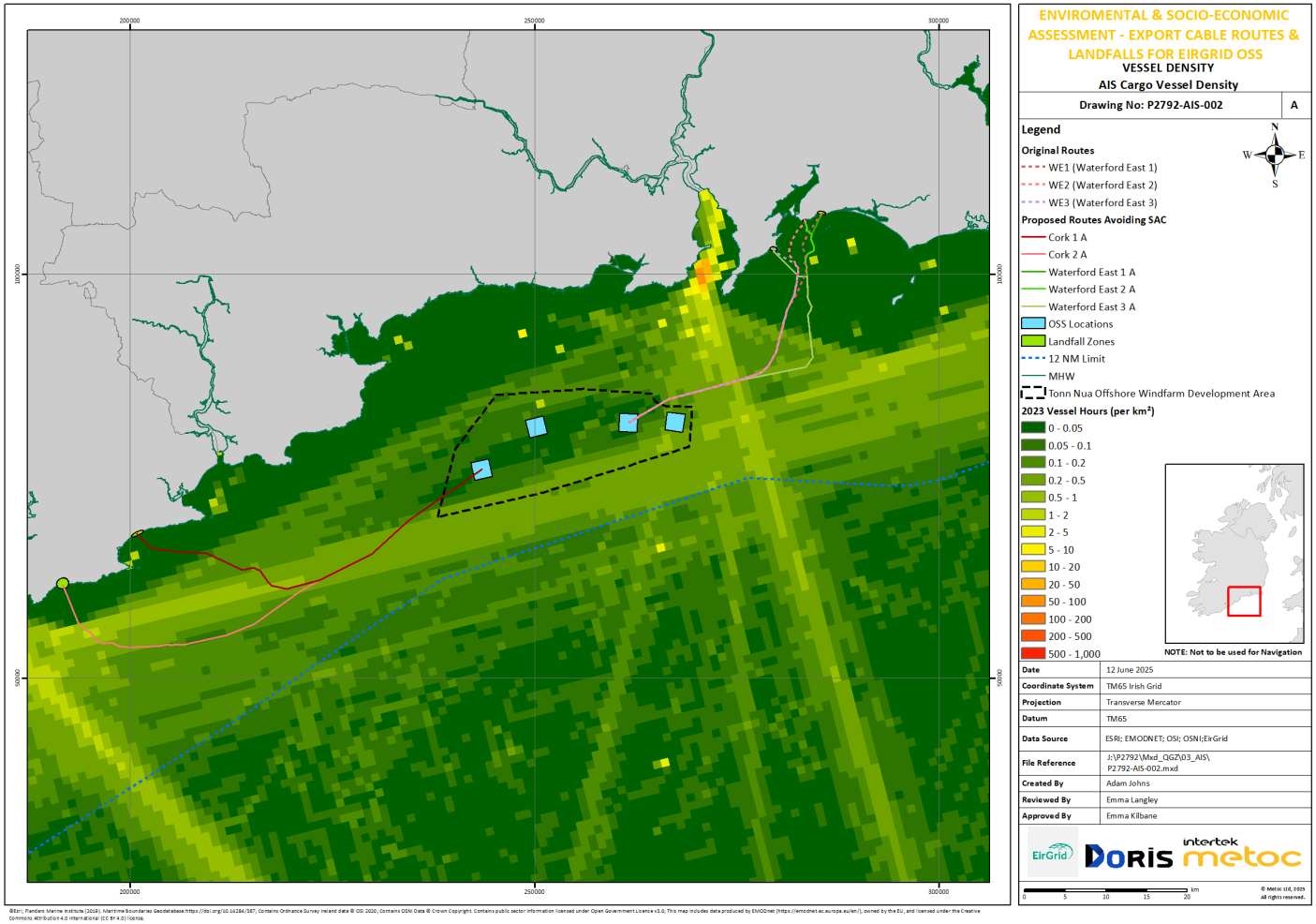

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Figure 4-8 Tanker Vessels (Drawing Reference: P2792-AIS-003)

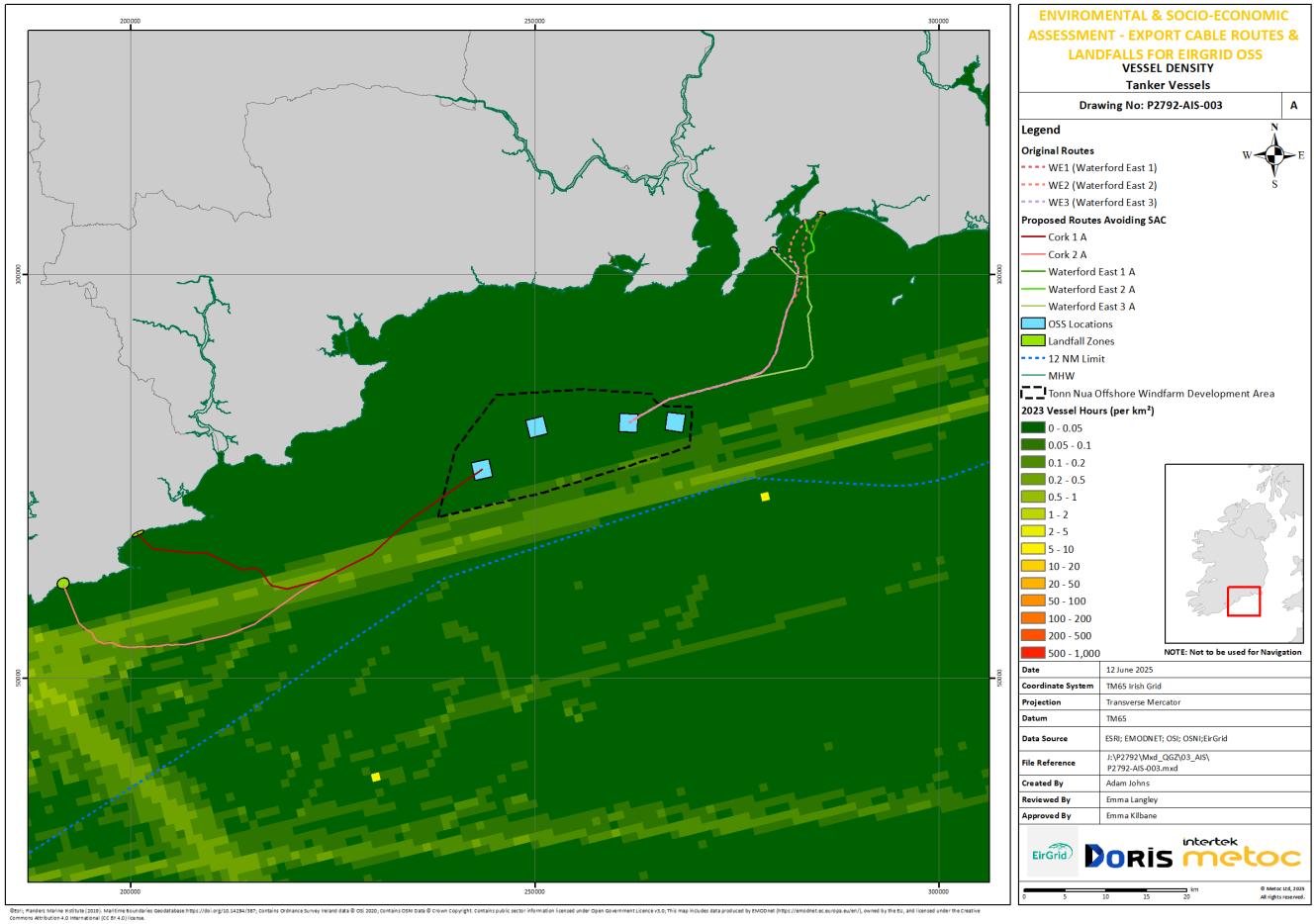

Figure 4-9 Fishing Vessels (Drawing Reference: P2792-AIS-004)

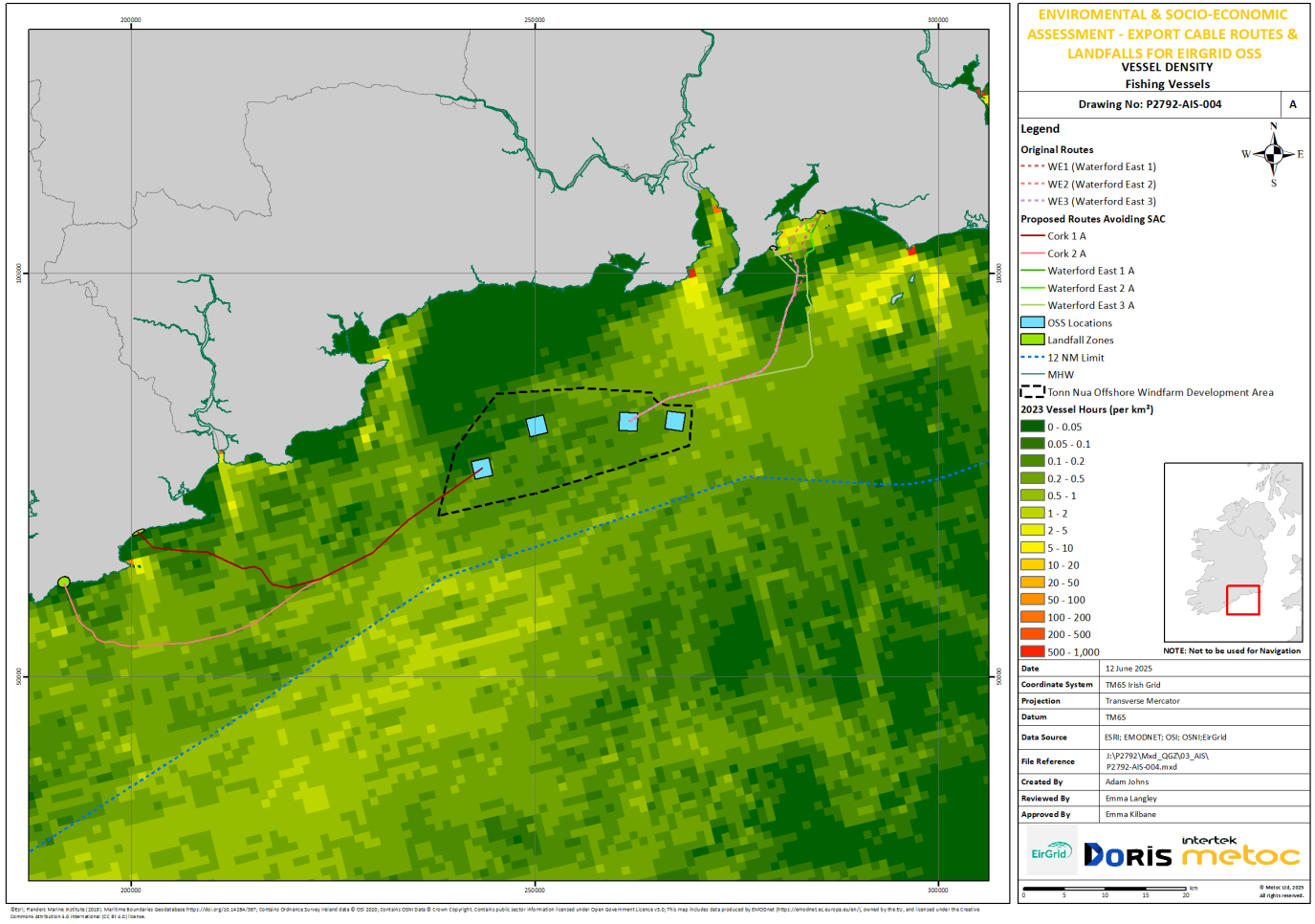

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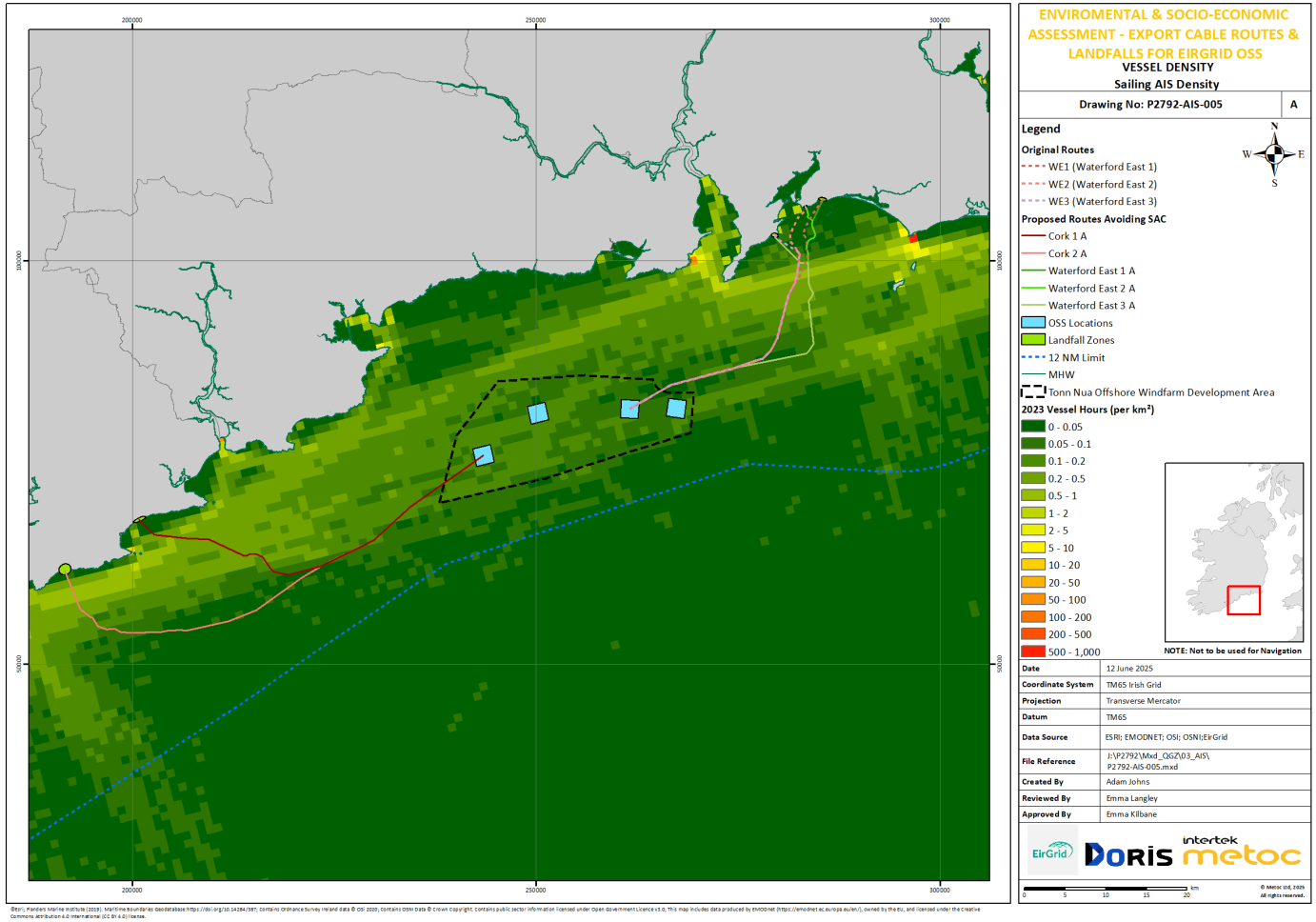
Figure 4-10 AIS Vessel Density – Sailing AIS Density (Drawing Reference: P2792-AIS-005)



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4.7 Other Infrastructure

There are no pipeline crossings along any of the planned routes, or any oil and gas activity, aggregate extraction sites, aquaculture sites, carbon capture sites, agreements or applications or operational renewable energy sites within the vicinity of any of the planned routes. One disposal site, Eastern Celtic Sea, is located approximately 2.3km east of WE1 (EMODNet, 2025). WE1, WE2, WE3, WE2A and WE3A all cross the Greenlink Interconnector at various points. Cable WE3A crosses the Greenlink Interconnector within the Hook Head SAC and on potential reef habitat which may require cable protection. WE1A does not cross the interconnector and Cork Routes 1 and 2 do not cross any currently installed cables.

There are currently no installed offshore wind farms in the vicinity of the offshore cable routes. The Tonn Nua DMAP site is designated for fixed bottom turbines and the Offshore Renewable Electricity Support Scheme (ORESS) 2.1 auction to take place in June 2025. These windfarms will be collocated within Tonn Nua and the purpose of the OSS infrastructure will be to aid development of these windfarms and therefore will not be conflicting with the OSS sites.

5. MULTI-CRITERIA ASSESSMENT

5.1 Introduction

This section presents the MCA undertaken to assess the potential environmental and socio-economic constraints which are associated with each of the cable and landfall locations. The desktop study carried out to inform the baseline presented in the previous section has been collated with publicly available data, spatial analysis to allow constraints identification. Each cable route and associated landfall has been assessed using the identified key constraints and the risk ranking outlined in Section 2. This assessment supports the identification of preferred locations and highlights potential individual constraints or no differentiators.

5.2 Multi-Criteria Analysis

Tables 5-1 and 5-2 display the identified environmental and socio-economic constraints and the assessment of risk to the alternative cables and landfalls based on the Step 3 Powering Up Offshore Risk Ranking.

Table 5-1 Risk Ranking for Environmental Considerations for the Proposed Cable Routes and Landfalls

Environmental Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Marine Designated Areas	Crosses Hook Head SAC (28% of route); fully within Seas off Wexford SPA. Crosses Greenlink Interconnector within SAC on reef habitat.	Crosses Hook Head SAC (48% of route); fully within Seas off Wexford SPA	Crosses Hook Head SAC (46%); fully within Seas off Wexford SPA. Cable specifically crosses protected reef community.	Avoids SAC; fully within Seas off Wexford SPA	Avoids SAC; fully within Seas off Wexford SPA	Crosses SAC (13%); fully within Seas off Wexford SPA. Cable specifically crosses protected reef community. Crosses Greenlink Interconnector within SAC on reef habitat.	Does not overlap with any SAC/SPA designations	Does not overlap with any SAC/SPA designations

Environmental Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Seabed Communities and Sensitive Features	EUNIS A5.27, A5.15 and A4.27 habitats (Vulnerable and Endangered per EU Red List). No Annex I habitats present. Impacts manageable with mitigation. Landfall is in the vicinity (~400m) of Intertidal reef. Crosses Greenlink Interconnector within reef habitat.	Same habitat types as WE1; Also crosses Annex I for 200m. Management through site-specific mitigation feasible.	Same habitat types as WE1; Also crosses Annex I for 2.8 km. Management through site-specific mitigation feasible. Landfall is in the vicinity (~30m) of Intertidal reef.	Same habitat types as WE1; Management through site-specific mitigation feasible. Landfall is in the vicinity (~400m) of Intertidal reef.	Same habitat types as WE2; Management through site-specific mitigation feasible.	Same as WE3. Also crosses Annex I reef for 3.4 km. Management through site-specific mitigation feasible. Landfall is in the vicinity (~30m) of Intertidal reef. Crosses Greenlink Interconnector within reef habitat.	A4.2, A4.27, A5.14, A5.37 (diverse but does not overlap with Annex I reef)	Same as Cork 1-A

Environmental Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Fish and Crustacean Spawning/Nursery Areas	Overlaps spawning/nursery for cod, hake, whiting, anglerfish, blue whiting, ling, herring (Baginbun), sandeel	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Same as WE1. However, route and landfall are approximately 3km from the herring spawning grounds at Tramore. Management may be required with seasonal restrictions	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Same as WE1; no differentiation in species presence; managed by seasonal timing.	Overlaps spawning/nursery for cod, hake, whiting, anglerfish, blue whiting, ling (no sandeel or herring)	Same as Cork 1-A
Local and Migratory Birds	Fully within Seas off Wexford SPA. SPA designated for both breeding and non-breeding species and therefore could come under both seasonal restrictions.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Same as WE1; within SPA boundary; but no other unique sensitivity.	Within range of seabird foraging zones; no direct overlap with SPAs. Effects manageable with standard measures.	Same as Cork 1-A; within SPA boundary; but no other unique sensitivity.

Environmental Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Marine Mammals	No SAC overlap; occasional presence of marine mammals (cetaceans, seals). Standard exclusion zones and soft-start protocols mitigate impacts.	WE2 route is the closest in proximity to the known haul out site at Saltee Islands (approximately 10km east)	Same as WE1; similar risk profile; management feasible.	Same as WE1; similar risk profile; management feasible.	Same as WE1; similar risk profile; management feasible.	Same as WE1; similar risk profile; management feasible.	No SAC overlap; occasional presence of marine mammals (cetaceans, seals). Standard exclusion zones and soft-start protocols mitigate impacts.	Same as Cork 1-A; similar risk profile; management feasible.

Environmental Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
MCA Ranking (Environmental)	Moderate High: Environmental risks identified, mainly due to overlap with Hook Head SAC and full overlap with Seas off Wexford SPA. Overlaps with Annex I habitat (reef habitat present nearby but not directly intersected). Overlaps with Greenlink Interconnector within SAC and on potential reef habitat. This may be subject to a potential Appropriate Assessment and will require more engagement with key stakeholders. Also overlaps several	Moderate High: Similar to WE1 (no cable crossing within SAC) but with greater SAC overlap (48% of route length), increasing exposure to potential habitat sensitivities. Crosses the corner of Annex I reef habitat (200 m). Requires complex mitigation for designated features but remains deliverable.	Moderate High: Crosses Hook Head SAC (46% of route length), fully within SPA, and intersects 2.8 km of Annex I reef habitat, increasing environmental complexity. Greater potential for adverse effect on reef features compared to WE1/WE2. Additional mitigation likely but not prohibitive.	Moderate: Avoids Hook Head SAC entirely and reduces reef interaction to zero; still fully within Seas off Wexford SPA but reduces exposure to designated benthic habitats. Significantly lowers potential for adverse effects on SAC qualifying features. Requires standard bird and marine mammal mitigation.	Moderate: Same as WE1-A. Fully avoids SAC and reef features, but remains within SPA, requiring similar mitigation for avian species. No differentiating constraints identified.	Moderate High: Crosses Hook Head SAC for 13% of route length and intersects 3.4 km of Annex I reef, representing a higher environmental risk than WE1-A/WE2-A. Crosses the Greenlink Interconnector within Hook Head SAC and potential reef habitat which may require more cable protection. This may be subject to a potential Appropriate Assessment and will require more	Moderate: No overlap with SAC, SPA, and Annex I reef habitats. Crosses a more diverse range of benthic habitats, but none are designated or highly sensitive. Environmental risk remains low and manageable with standard mitigation	Moderate: Same as Cork 1-A. No SAC, SPA or Annex I habitat interactions; benthic habitats similar to Cork 1-A. No additional environmental sensitivities identified.

Environmental Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
	spawning/nursery grounds. Considered deliverable with detailed site-specific mitigation, but significant regulatory sensitivities remain due to multiple protected sites.					engagement with key stakeholders. Similar constraints to WE3 but reduced SAC exposure. Requires more bespoke mitigation for reef and SAC habitats.		

Table 5-2 Risk Ranking for the Socio-Economic Considerations for the Proposed Cable Routes and Landfalls

Socio-Economic Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Recreation and Tourism	No overlaps with designated bathing waters or major recreational sites. Recreational boating present but low intensity.	Same as WE1; no designated bathing areas crossed. Low recreational activity.	Same as WE1/WE2; some increase in nearshore recreational vessel density but still low impact.	Same as WE1; no overlap with bathing (nearest 12km away) or tourism sites; recreational usage minimal.	Same as WE1-A; low recreation/tourism pressure.	Same as WE1-A; slight increase in recreational sailing nearshore but no material difference. No overlap with bathing waters (nearest 11km away, located on other side of landhead)	Landfall 1.2 km from Garryvoe designated bathing beach; potential temporary impact during cable installation. Otherwise, no conflicts with major recreation/tourism use.	Same as Cork 1-A; slightly further from bathing beach; same recreational sensitivity applies.

Commercial Fisheries	Overlaps demersal and pelagic fisheries; pelagic trawling prominent nearshore; Dredging and Pelagic fishing is a higher concentration on this route; Dunmore East port nearby (6566 tonnes annual landings). Consultation required to manage timing.	Same as WE1; slightly longer overlap with similar fishery activity; pelagic and demersal species targeted. Dredging and Pelagic fishing is a higher concentration on this route;	Same as WE1/WE2; similar fishing activity; slight variation in gear effort but no change in risk level. Dredging and Pelagic fishing is a higher concentratio n on this route;	Same fishing effort as WE1; same overlap with pelagic nearshore activity. Engagement with fishing industry still required. Dredging and Pelagic fishing activity is lower in this route. Bottom otter trawling is slightly elevated on this route.	Same as WE1-A; fisheries active but manageable with consultation. Dredging and Pelagic fishing activity is lower in this route. Bottom otter trawling is slightly elevated on this route.	Same as WE1-A; fisheries presence maintained but no additional conflicts. Dredging and Pelagic fishing activity is lower in this route. Bottom otter trawling is slightly elevated on this route.	Higher beam trawl, seine, and pelagic effort nearshore; Ballycotton port nearby (986 tonnes). Requires engagement with local fishermen during installation.	Same as Cork 1-A; similar fisheries pressure and port proximity.

Socio-Economic Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Landscape and Seascape	No long-term visual impact; cable buried subsea. Minor temporary construction presence at landfall only.	Same as WE1.	Same as WE1.	Same as WE1.	Same as WE1.	Same as WE1.	Same as WE1; no visual impact after construction, temporary works only.	Same as Cork 1-A.
Marine Cultural Heritage	Avoids all known wrecks; nearest wrecks over 1 km from cable route.	Same as WE1.	Same as WE1.	Same as WE1.	Same as WE1.	Same as WE1.	Multiple wrecks present in area (e.g. SS Exeter, SS Gracia) but micro-routing can avoid; no direct conflicts.	Same as Cork 1-A; wrecks nearby but route avoids them.

Socio-Economic Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Shipping and Navigation	Low vessel density; Barrow River crossing but very low traffic volumes (2-5 vessel hours/km²).	Same as WE1; similar vessel activity throughout route.	Same as WE1/WE2; slight nearshore sailing hotspot but still low risk. Closest landfall to RNLI station (Fethard Station located 2km away).	Same as WE1; very low vessel activity levels throughout route.	Same as WE1-A.	Same as WE1-A.	Low vessel density; minor hotspot east of Ballycotton Harbour, but manageable with navigation risk assessment. Closest Cork landfall to RNLI station (Ballycotton Station located 4km away).	Same as Cork 1-A; low density traffic maintained.

Socio-Economic Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
Other Infrastructure	No existing, pipelines, or offshore infrastructure crossings. Crosses the Greenlink Interconnectowithin SAC and potential area of reef habitat. ECS disposal site 2.3 km east of route.	Same as WE1.	Same as WE1.	Same as WE1. However, does not cross the Greenlink Interconnector.	Same as WE1.	Same as WE1. However, crosses Greenlink Interconnector within SAC and potential area of reef habitat.	No overlaps with cables or offshore infrastructure; no disposal sites in vicinity.	Same as Cork 1-A.

Socio-Economic Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
MCA Ranking (Socio-Economic)	Moderate: No overlaps with designated bathing waters or major recreational areas. Commercial fishing activity present, primarily pelagic nearshore and demersal offshore. Located close to Dunmore East port but no unique operational constraints. Avoids known wrecks and located within low vessel traffic area. Crosses the Greenlink Interconnector within Hook Head SAC and potential reef habitat which may require more cable protection, and may require more engagement with key stakeholders. Risks manageable	Moderate: Similar to WE1; no additional socio-economic constraints identified. Slightly longer route length but comparable fishing effort and vessel activity levels. No significant differentiators.	Moderate: Same as WE1 and WE2. Slight increase in proximity to recreational boating nearshore but remains low intensity. Same level of commercial fishing and vessel traffic. No wrecks or infrastructure overlaps.	Low - Moderate: Commercial fisheries, shipping, and recreation all remain at low levels. No socio-economic differentiators.	Low - Moderate: Same as WE1-A. No additional socio-economic constraints identified. Fisheries and navigation risks remain low and manageable.	Moderate: Same fishing and vessel density profiles as WE1-A and WE2-A. Crosses the Greenlink Interconnect or within Hook Head SAC and potential reef habitat which may require more cable protection, and may require more engagement with key stakeholders. Slight increase in proximity to recreational boating nearshore but still low. Managed by	Low - Moderate: Close proximity (1.2 km) to Garryvoe designated bathing beach but no direct conflict with recreational use. Fisheries more active (beam trawl, seine, pelagic) nearshore; Ballycotton port nearby. Minor increase in vessel traffic east of landfall but remains manageable. Known wrecks in wider area but avoided by routing	Same as Cork 1-A. No differentiators in terms of fisheries, shipping or cultural heritage. Risks remain low and manageable through standard consultation and routing processes.

Socio-Economic Criteria	WE1	WE2	WE3	WE1-A	WE2-A	WE3-A	Cork 1-A	Cork 2-A
	Blackhall Beach	The Long Gap	Carnivan Beach	Blackhall Beach	The Long Gap	Carnivan Beach	Ballycrenane Beach	Ballycroneen Beach
	through consultation and micro-routing.					standard engagement measures.		

6. CONCLUSION

The MCA carried out for environmental and socio-economic constraints for the proposed cable routes and landfalls identified a range of potential constraints. The Waterford cable routes interact with several sensitive environmental receptors, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Annex I reef habitats, fish spawning and nursery grounds, and marine mammal habitats. Alternative Waterford routes have been identified which avoid many of the most sensitive features, particularly SACs and reef habitats, thereby reducing overall environmental risk. The Cork routes are generally located outside of designated sites and interact primarily with a range of non-designated benthic habitats, resulting in lower overall environmental constraints. Following the results of environmental survey, best endeavours will be undertaken to micro-route the cables outside of any sensitive feature. Where this may be unavoidable, it will be discussed with the regulator and their marine advisors.

Socio-economic constraints across all routes are broadly similar and include active commercial fisheries, minor recreational activities, low-density vessel traffic, and the presence of isolated marine cultural heritage features, all of which can be managed through standard mitigation measures, micro-routing, and stakeholder engagement. No significant constraints have been identified that would prevent development of any of the proposed cable routes or landfalls. All routes remain viable for progression to the next stages of detailed site selection, environmental assessment, permitting, and project development.

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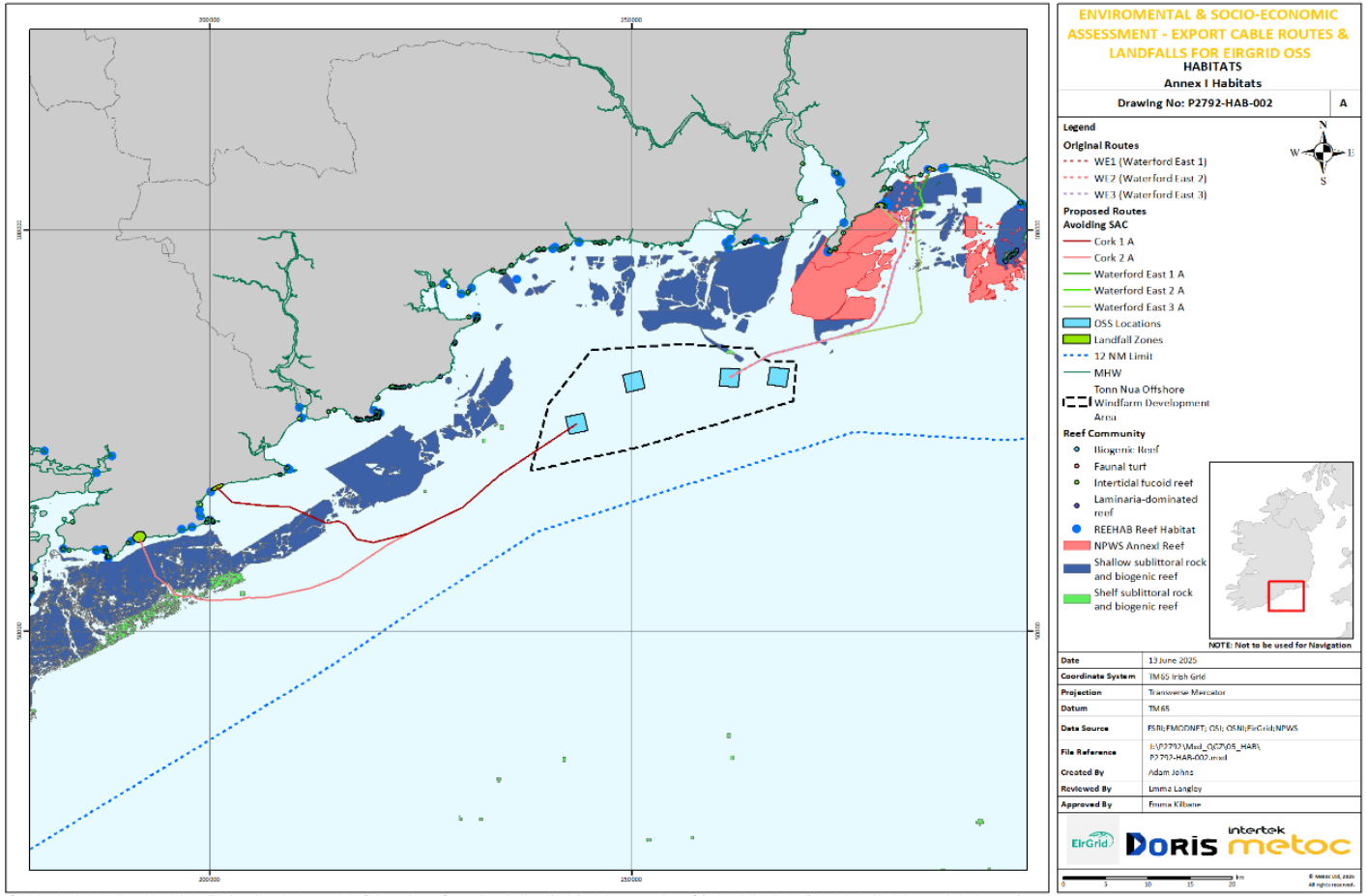
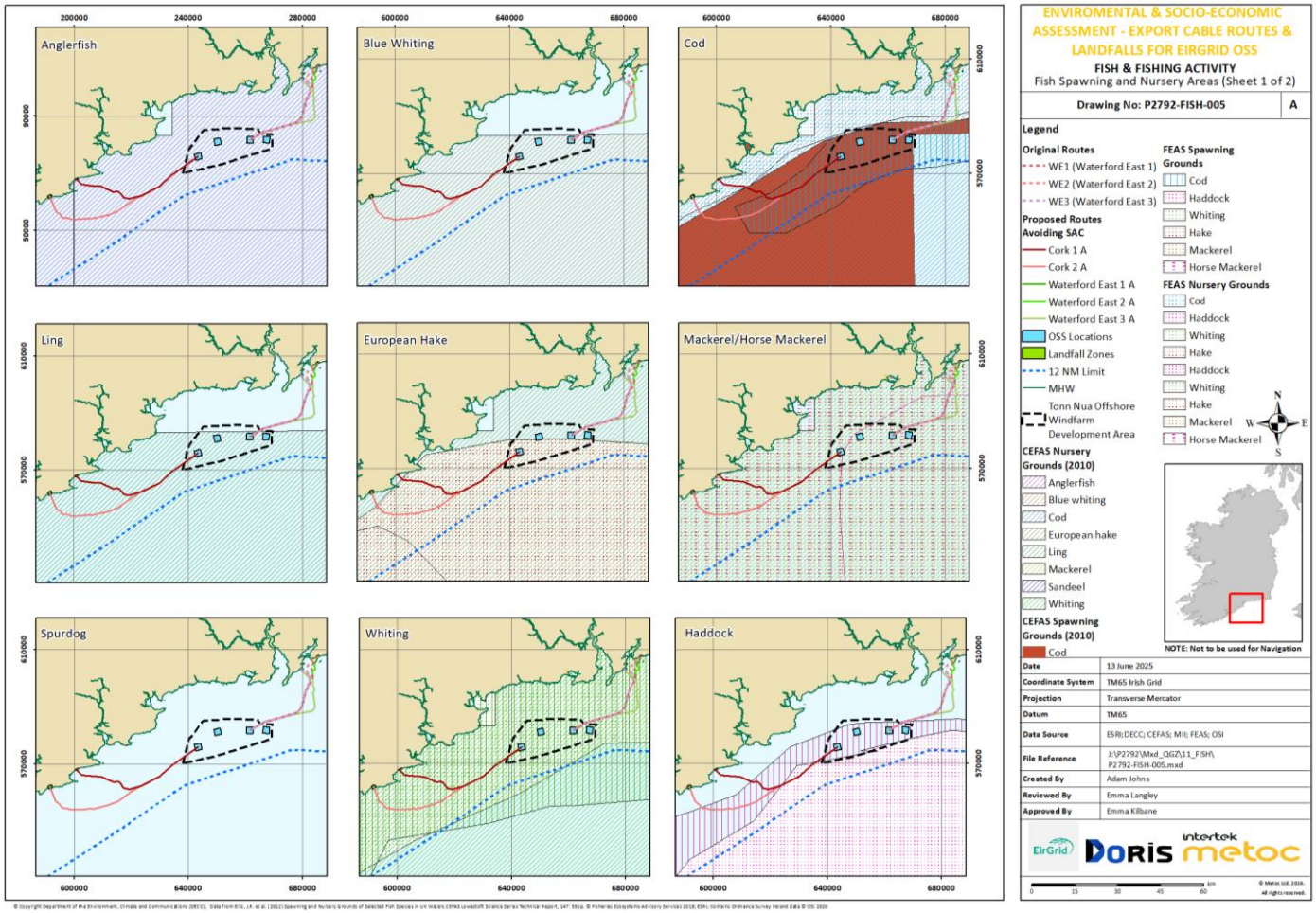
APPENDIX F ANNEX 1 REEF EMODNET DATA

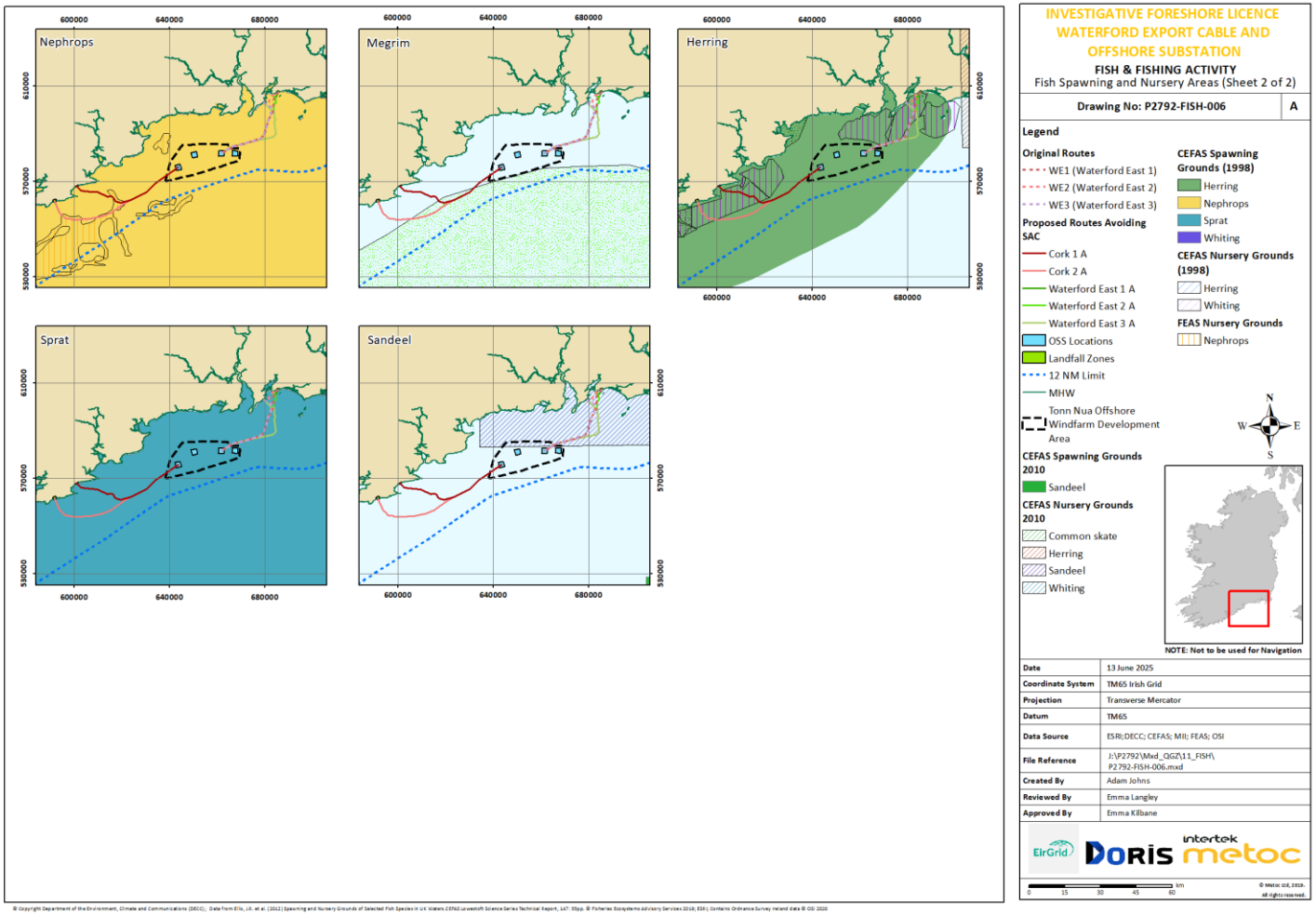


Annex 1 Reef EMODNet Data

APPENDIX G FISH SPAWNING AND NURSERY AREAS



Fish spawning and nursery areas (Sheet 1 of 2)



Fish spawning and nursery areas (Sheet 2 of 2)

APPENDIX H SPAWNING AND NURSERY PERIODS OF COMMERCIAL FISH SPECIES NEAR PROPOSED CABLE ROUTES

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cod (*Gadus morhua*)	S	S*	S*	S								
European hake (*Merluccius merluccius*)	S	S*	S*	S	S	S						
Ling (*Molva molva*)		S	S	S	S							
Mackerel (*Scomber scombrus*)			S	S	S	S	S	S				
Anglerfish (*Lophius piscatorius*)	SN	SN	SN	SN	SN	SN						
Blue whiting (*Micromesistius poutassou*)				S*	S*	S						
Whiting (*Merlangius merlangus*)		SN	SN	SN	SN	SN						
Haddock (*Melanogrammus aeglefinus*)	S	S										
Nephrops (*Nephrops norvegicus*)		S*	S*	S*	S							
Herring (*Clupea harengus*)	S	S	S	S*	*S*	S	S	S	S	S	S	S
Sprat (*Sprattus sprattus*)	S	S	S	S								

S = Spawning, N = Nursery, SN = Spawning and Nursery, Blank = No Data, *peak spawning, - =unavailable.
Source: Coull *et al*. 1998

APPENDIX I REPORT OCDP-EIR-P03-ST-MD-0001 IN SUPPORT OF ALTERNATIVE CORK AND WEXFORD CABLE ROUTES ON RECORD

Export Cable Route Study

Offshore Phase 2 South Coast Programme

31/05/2024

The Oval, 160 Shelbourne Road, Ballsbridge, Dublin D04 FW28
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Revision History						
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Reviewed by:	Mike Wiseman	Technical Lead		31/05/2024
Approved by:	Mike Wiseman	Technical Lead		31/05/2024

1. Offshore Cable Route Assessment

1.1. Introduction

The Department of the Environment, Climate and Communications (DECC) issued the Draft South Coast Designated Maritime Area Plan (DMAP) for Offshore Renewable Energy[1] on 3rd May 2024 identifying AREA A – Tonn Nua (Figure 1-1) as the the area of interest for the future development of the Offshore Renewable Electricity Supply Scheme (ORESS) 2.1 with the aim to deploy by 2030 or as soon as feasible after.

This study assesses preliminary offhsore cable routes to inform any future survey work that might be needed and to ensure the surveys allocated covers the best cable route options. The assessments and evaluations have been undertaken to refine the routes based on technical, economic, and commercial, deliverability, environmental and other anthropogenic criteria. For this study a location close to the centre Area A was chosen as the assumed location of the Offshore Substation (OSS) and two individual landfalls were identified, The Long Gap landfall (LF13 TLG1) in the Wexford area and to the Ballycroneen Beach Landfall (LF5-BOB1) (Figure 1-2).

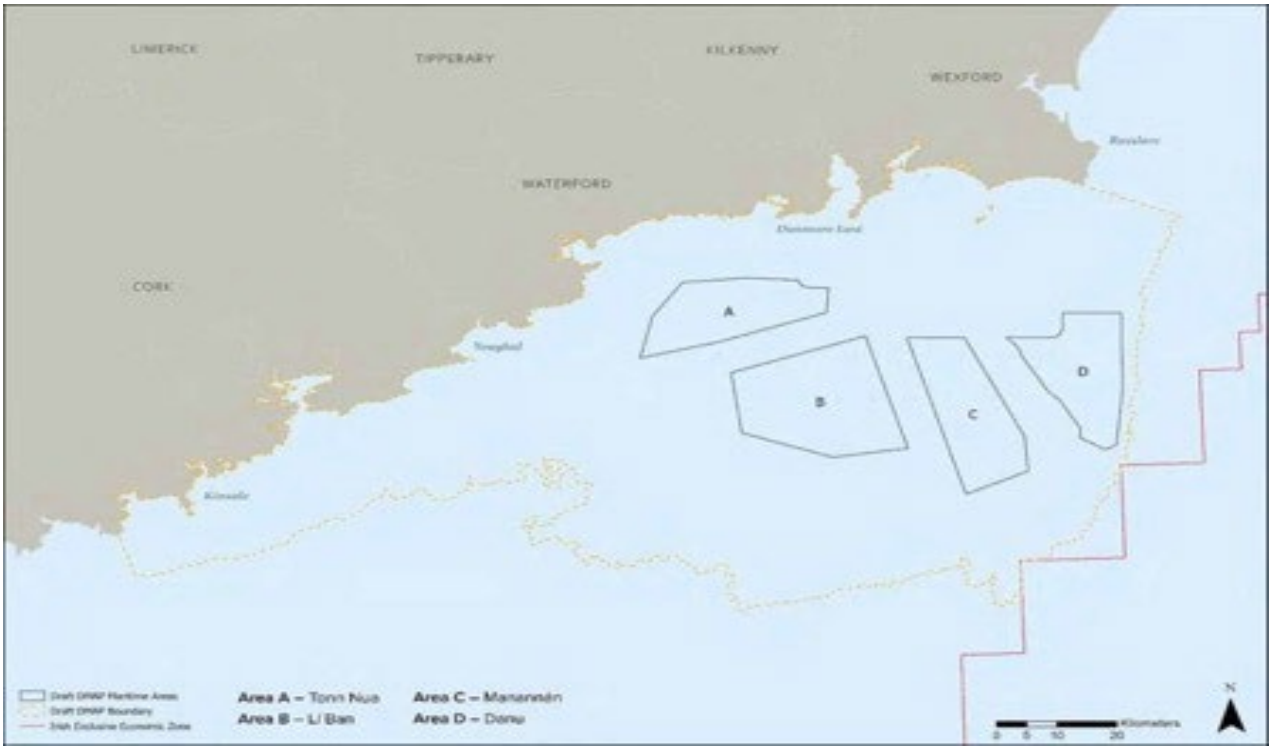


Figure 1-1 : Proposed South Coast Designated Maritime Area (SC-DMAP)

1.2. Purpose of the Study

The purpose of the cable route study is to identify two preliminary offshore cable routes from an assumed Offshore Substation (OSS) location close to the centre of Area A (Figure 1-2) of the proposed DMAP to two landfalls, one in the Cork area and one in the Wexford area.

[1] Draft South Coast Designated Maritime Area Plan for Offshore Renewable Energy

The results of the study will be used to develop the scope of work for the marine survey activities. It will also be shared with the Marine Institute, who may add the route survey as part of their work scope when they perform their geophysical survey of Area A.

1.3. Data Sources/References

The following data sources and reports were used for this assessment.

- OSS and Export Cable Geological Desk Study (OCDP-EIR-P1-ST-GT-0001-R00).
- GIS database and preliminary geological model prepared by DORIS – data source used for this model are described in the Geological Desk Study which is acquired from open sources.
- Celtic Interconnector Offshore Constraints Report (400584-PL-TN-004 Rev3).
- Draft South Coast Designated Maritime Area Plan for Offshore Renewable Energy 3 May 2024.

1.4. Data Adequacy and Gaps

There is no survey data available at the time of writing this study so all assessments for export cable routes are based on publicly available data. It is assumed that during future assessments further data will be collected and site-specific geotechnical investigation data shall be gathered for detailed design of the routes.

1.5. Acronym and Definitions

Acronym	Definition
CAPEX	Capital Expenditure
DECC	Department of the Environment, Climate and Communications
DMAP	South Coast Designated Maritime Area Plan
GZA	Geotechnical Zone A
GZB	Geotechnical Zone B
GZC	Geotechnical Zone C
GZD	Geotechnical Zone D
GZE	Geotechnical Zone E
GZF	Geotechnical Zone F
GI	Geotechnical Investigation
HDD	Horizontal Directional Drilling
HVDC	High Voltage Direct Current
MFSD	Marine Strategy Framework Directive
OSS	Offshore Substation

Acronym	Definition
SAC	Special Area of Conservation
SC-DMAP	South Coast Designated Maritime Area Plan
SPA	Special Protected Area

1.6. Performance Criteria for Export Cable Route Selection

The following performance criteria have been used to assess the export cable route from a preliminary proposed substation location to provisional landfalls locations in the Cork and the Wexford areas:

- Technical
- Deliverability
- Environmental
- Socioeconomic
- Economic

The ranking of each criterion parameter is presented along a range from "more significant"/" more difficult"/ "more risk" to "less significant"/" less difficult"/ "less risk". The following scale is used to illustrate each criterion parameter shown in Table 1-1:

Table 1-1 : Risk Scale

In the study this scale is quantified by colour for example low (Cream), low-moderate (Green), mid-level (Dark Green), high-moderate (Blue) or high (Dark Blue).

For this study equal weighting was given the five criteria.

1.7. Scenarios

One Offshore Substation (OSS) location was chosen near to the centre of Area A (Figure 1-1) within the DMAP for the purpose of this study and from that point the export cable routes have been assessed to the Cork landfall and the Wexford landfalls (Figure 1-2). Preliminary landfall locations have been selected for use in this study based on the ongoing landfall assessment, which have highest scoring and are not final, and shall be subject to further analysis. These locations include:

- Cork – Ballycroneen Beach (LF5-BOB1)
- Wexford – The Long Gap (LF13 TLG1)

Area A is a draft area identified for the recent evolving proposed draft SC-DMAP. This may be subject to change prior to approval by the Oireachtas.

For each export cable route, three scenarios have been studied and assessed based on the criteria described in Section 1.6. Route A in both cases is the shortest selected route, Route B is intermediate in length and Route C is the longest route. Despite being the longest route, Route C has been considered potentially the most secure option due to the reduced route length which passes over nearshore rock outcrops.

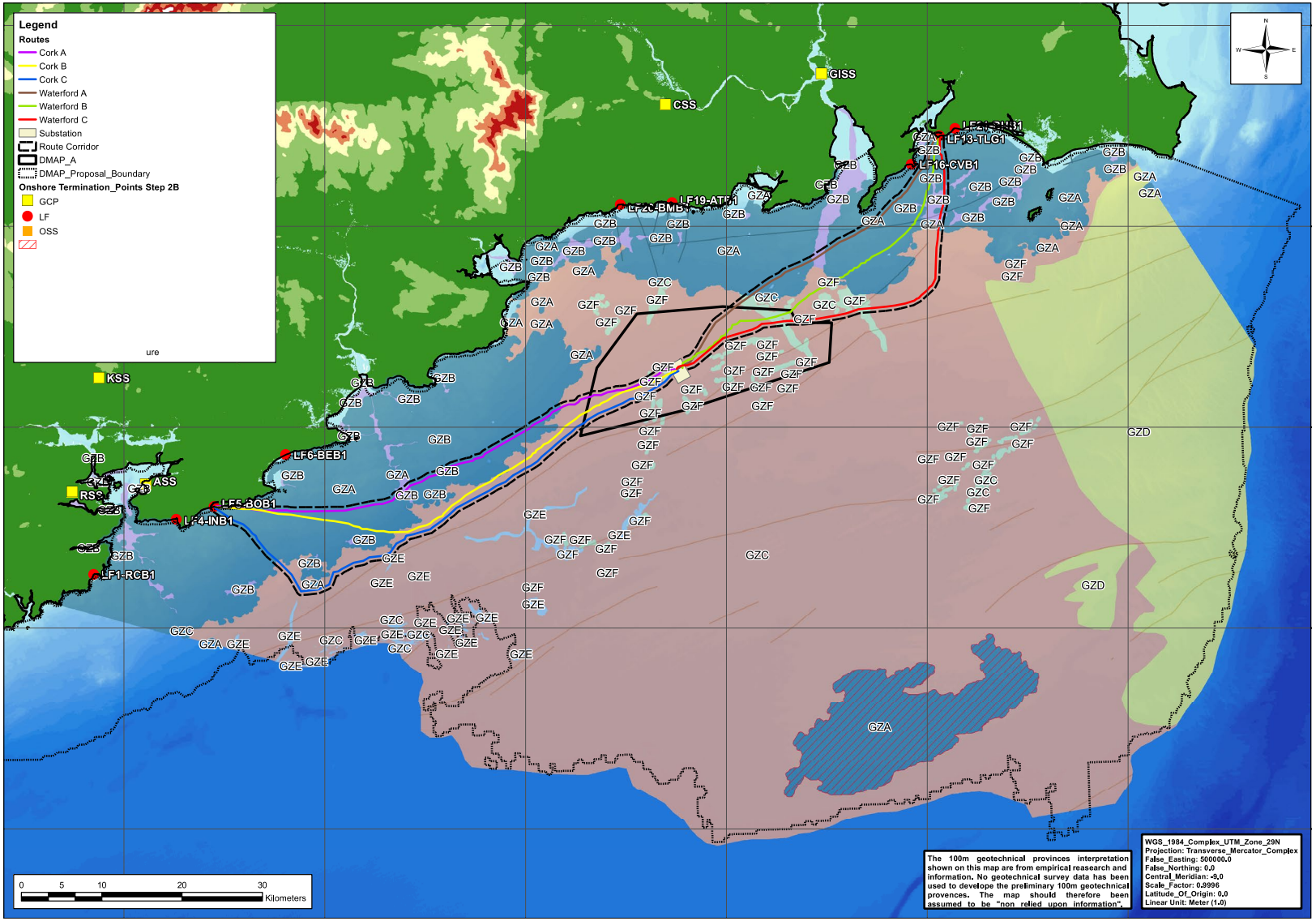


Figure 1-2 : OSS in centre of Area A and Export Cable Routes from Waterford/Wexford and Cork

1.8. Site Description

The proposed study area is situated within the draft DMAP area (Figure 1-1) in the Celtic Sea and extends from the preliminary identified landfalls on the Cork and Waterford/Wexford coastlines to Area A (266.03km^2). An assumed OSS location is central within Area A (Figure 1-3) and is approximately 18 km from the nearest shoreline.

1.9. Shallow Geology and Geotechnical Profile for Export Cable Routes

Six geotechnical zones were defined across the area of interest in the Celtic Sea adjacent to Waterford/Wexford Area and Cork Area. These geotechnical zones from GZA to GZF were determined based on interpreted seabed sediment composition and thickness. Table 1-2 and Figure 1-3 given below show 6 geotechnical zones delineating the type of geological strata likely to be present within 5m depth from seabed.

Table 1-2 : Geotechnical Zones along the proposed export cable route

GZ	Area (km^2)	Description	Uncertainties
A	1822 (22%)	GZA covers areas where bedrock (GU4/5/6/7) is interpreted to be exposed at seafloor or covered by a thin layer (<1m) of Holocene sediments (predominantly sand (GU1a) and gravel (GU1b)). Clayey sand (GU1c) may be present in more localised sheltered locations and in proximity to river mouths.	GU1 may locally be thicker than 1m in some areas, particularly in joints within bedrock.
B	101 (1%)	GZB covers various small areas between exposed bedrock, which contains between 1m and 5m of Holocene sediments (predominantly sand (GU1a) and gravel (GU1b)). Clayey sand (GU1c) may be present in more localised sheltered locations and in proximity to river mouths.	Less than 1m of GU1 may locally be present
C	4902 (59%)	GZC covers the majority of the site and covers areas where up to 1.5m of sandy Holocene sediments (GU1a) overly Pleistocene sediments (GU3). Up to 0.5m of gravelly lag sediments (GU1b) may be present between GU1a and GU3.	GU1 may locally be thicker than 1m in some areas. Composition of GU3 poorly understood. GU1b may locally be absent.
D	1237 (15%)	GZD covers a large portion in the east of the site, where up to 5m or more of Holocene sand (GU1a) may be present in the form of sand waves, overlying Pleistocene sediments (GU3). Up to 0.5m of gravelly lag sediments (GU1b) may be present between GU1a and GU3.	Composition of GU3 poorly understood. GU1b may locally be absent.
E	40 (1%)	GZE covers several small seafloor channel areas in the west of the site, which are interpreted to comprise up to 5m of clayey sand (GU1c), overlying Pleistocene sediments (GU3).	Composition of GU3 poorly understood. GU1c thickness poorly understood.

GZ	Area (km^2)	Description	Uncertainties
F	111 (1%)	GZF covers several sinuous seafloor ridges interpreted to comprise coarse esker deposits (GU2) up to approximately 5m thick at seafloor, overlying Pleistocene sediments (GU3).	Composition of GU3 poorly understood. GU1c thickness poorly understood.

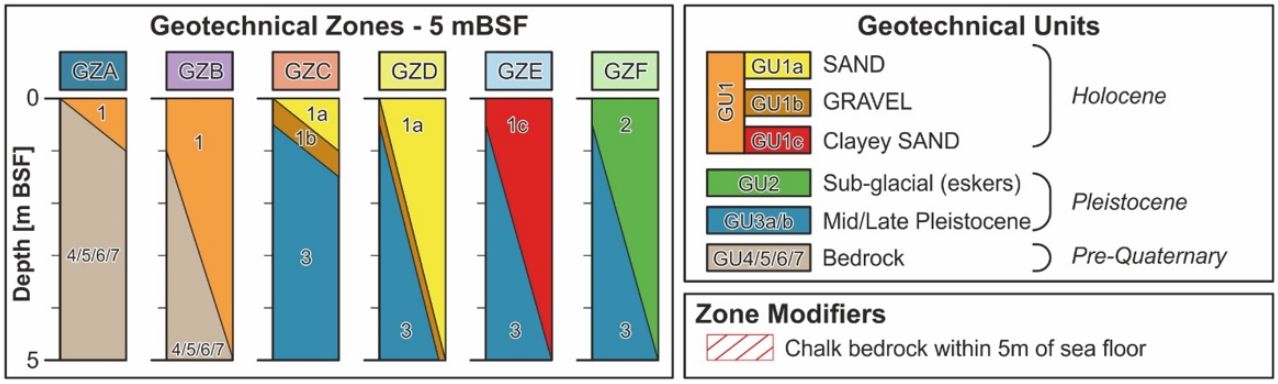


Figure 1-3 : Idealised ground profile for geotechnical zones

The geotechnical zones map Figure 1-4 shows two predominant geotechnical zones (Zone A and Zone C) along the export cable route to the selected landfall areas, The Long Gap (LF13 TLG1) and Ballycroneen Beach (LF5 BOB1). Geotechnical Zones B and Zone F are geographically localised to channels locally present in more sheltered locations and in proximity to river mouths. These zones cover several sinuous seafloor ridges interpreted to comprise coarse esker deposits up to approximately 5m thick at seafloor, overlying Pleistocene sediments, as seen in Figure 1-5. Geotechnical zones B, D and F have up to 5m soil thickness comprised of various lithologies.

Such seabed characteristics result in the use of more conventional tooling for cable installation activities. Figure 3-1 identifies the offshore cable burial tool capabilities for various ground conditions encountered.

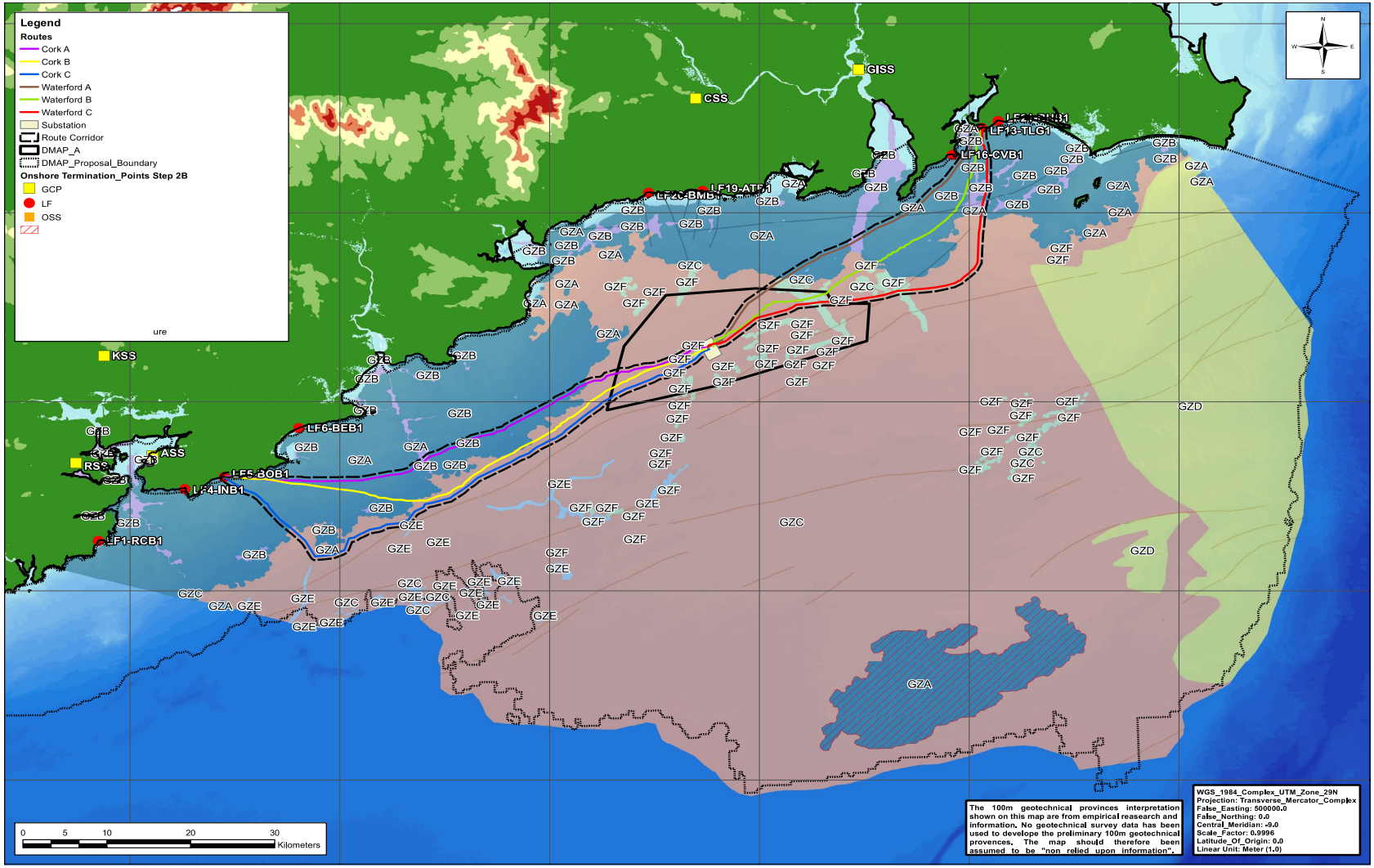


Figure 1-4 : Geological zones map and geological zones with 5m geotechnical data showing bedrock.

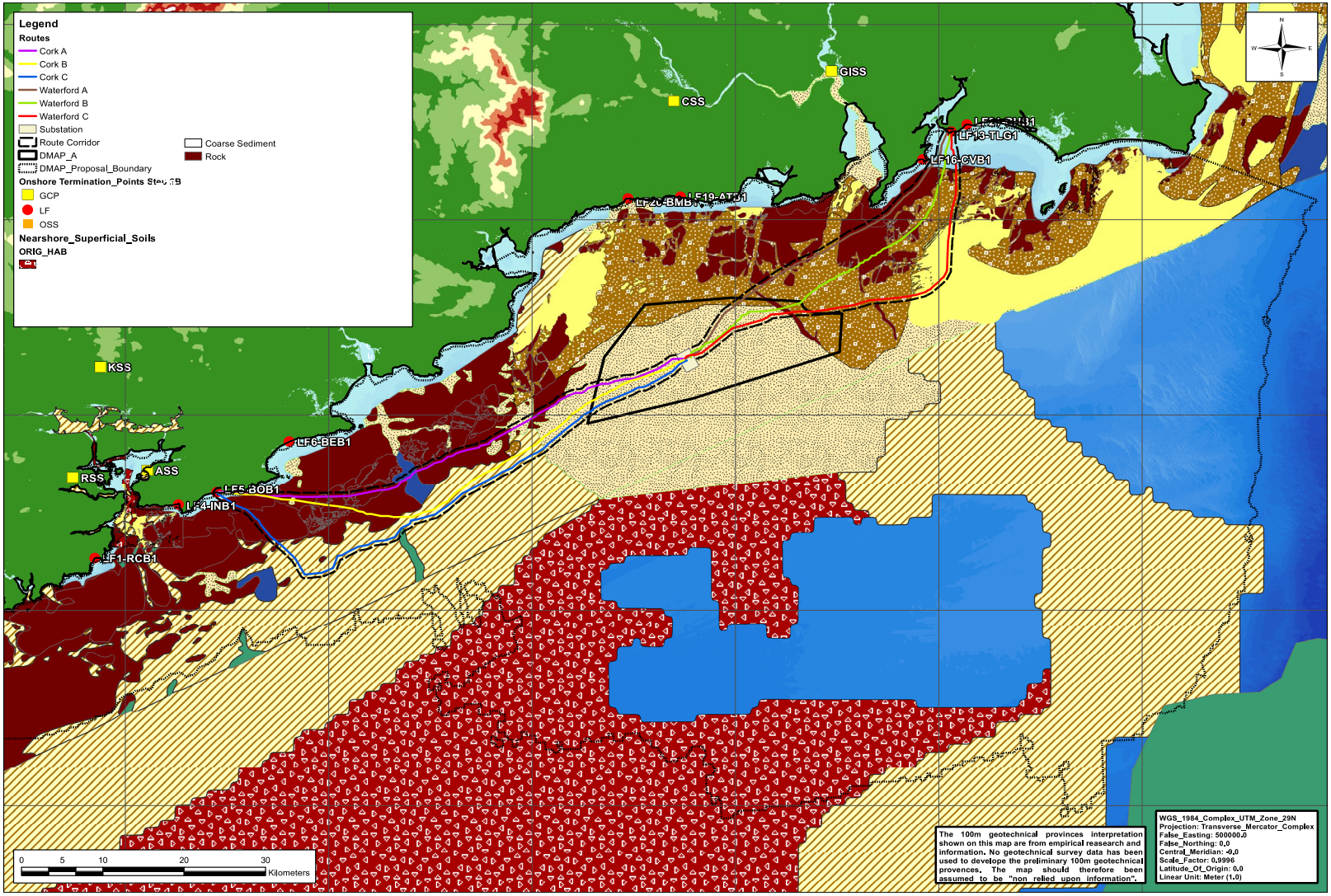


Figure 1-5 : Proposed area of study; map showing seabed substrate and nearshore superficial

1.10. Bathymetry

Water depth varies from the landfall locations towards the study's assumed OSS location, which is situated in a water depth of approximately 60m. Incised soil layers within the seabed are present in the Waterford/Wexford area where infilled thick soil layers are present within exposed bedrocks. Figure 1-6 shows the bathymetry of the proposed area.

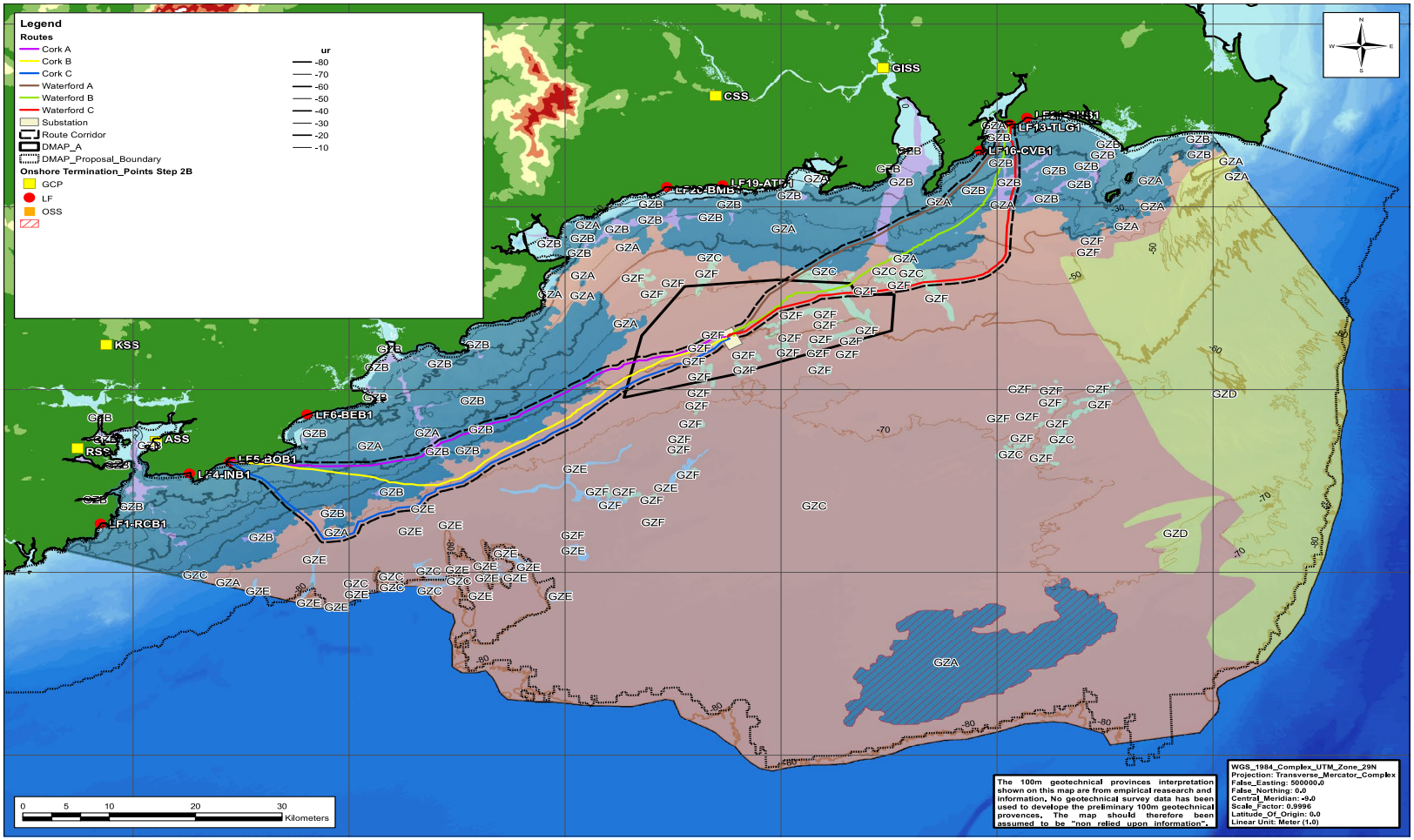


Figure 1-6 : Showing bathymetry of the proposed area.

1.11. Seabed Features and Seabed Mobility

There are no significant landforms known along the proposed export cable routes, as seen in Figure 1-7. Local incised channels and thick soil layers maybe present within exposed rock. The extent and nature of these channels will be investigated during final selection and prior to design. Sand waves are known to be present to the east of The Long Gap which appears to be away from the proposed cable route, and this will be verified during marine surveys.

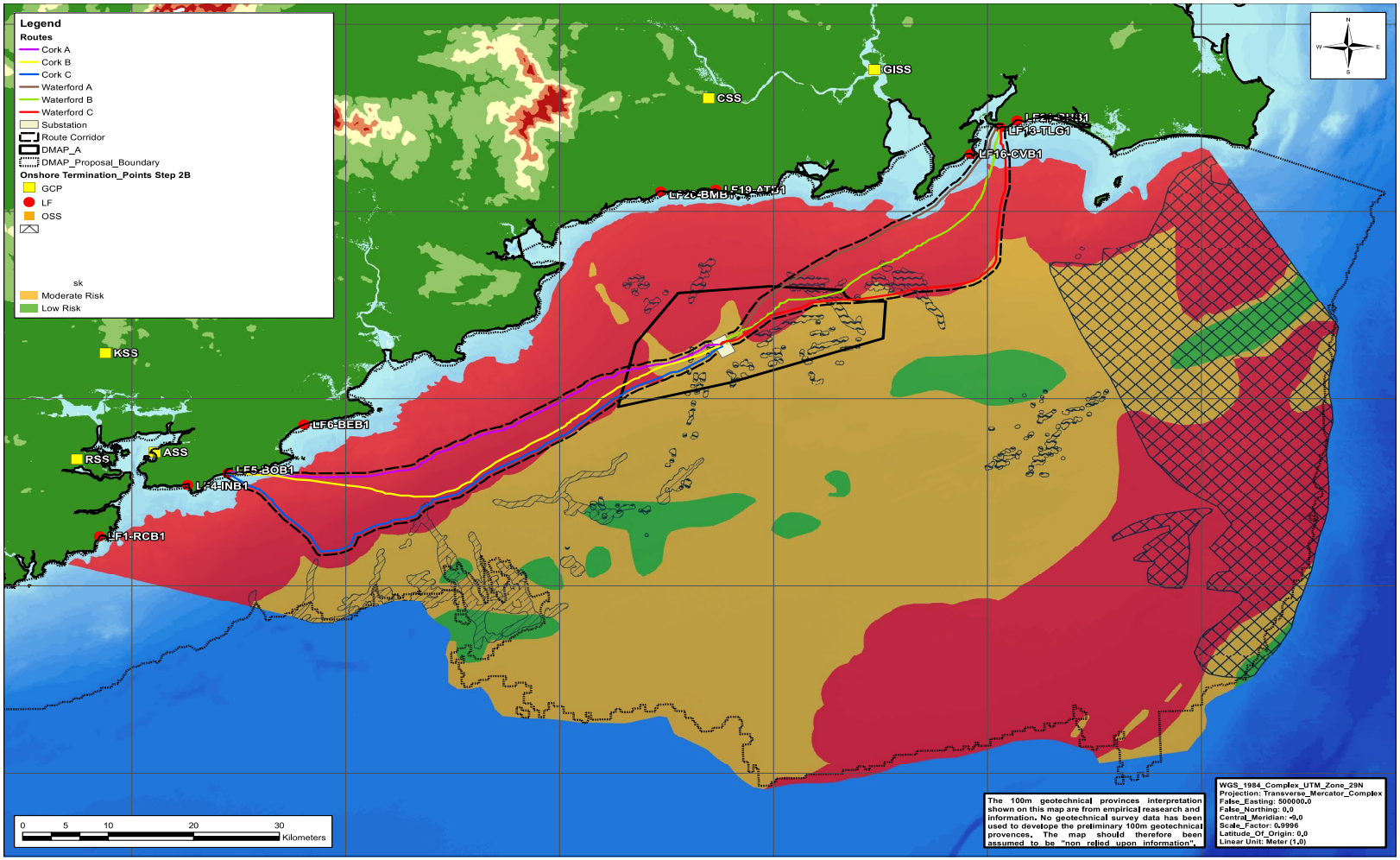


Figure 1-7 : Seafloor features and exposed bedrock showing high risk.

1.12. Seabed Obstructions

Exposed hard rock outcrops were discovered from the landfall locations to approximately 10km offshore. Boulders are also situated on the seabed which will need to be positively identified during the offshore site investigation works.

1.13. Anthropogenic and Natural Constraints

The cable routes identified will need to cross cables installed on the seabed. All cable crossings will be designed as per industry standard as a minimum and ensure vertical separation distance is maintained as per the technical requirements.

One future offshore HVDC interconnector cable (GreenLink) is located to the south of the proposed Long Gap landing at Wexford. Located north-east of the Ballycroneen Beach Landfall is an unknown telecommunications cable and there is a planned HVDC interconnector cable (Celtic Interconnector) yet to be installed.

2. Technical Assessment

2.1. Waterford/Wexford (The Long Gap) Export Cable Route Technical Assessment

An assessment of the geology at this landfall location showed quaternary sediments comprised of Till derived from Cambrian sandstones and shales and localized sand deposit have been noted along the beach, see Figure 2-1. Bedrock is Kiln Bay Formation comprised of Green-grey and occasionally purple, buff, or grey slaty mudstones with thin-bedded turbiditic greywacke sandstones or siltstones. A fault running north-east, and south-west was also noted. No seabed sediments have been noted except localised minor depressions. However, the OSS And Export Cable Geological Desk Study (OCDP-G3-DOR-CEGDT-01-R00-S1) notes nearshore lay is favourable as there is a continuous sandy seabed for the entire route to the -20m bathymetry line, making reinstatement favourable. Further analysis and the geotechnical data are required to fully assess sediment thickness and location. Geotechnical Desk Study findings suggest that the area adjacent to the landfall is comprised of Geotechnical Zone A (GZA) where bedrock is interpreted to be exposed at seafloor or covered by a thin layer (<1m) of Holocene sediments (predominantly sand and gravel). Clayey sand may locally be present in more sheltered locations and in proximity to river mouths.

Figure 1-3, shows the three export cable route options that were assessed from The Long Gap to the assumed OSS location in Area A. The shortest route distance is approximately 43.5km and would result in installing the cable on exposed hard rock for a minimum of approximately 23.5km which would require more complex methodologies for cable protection.

The longest route is approximately 6km longer than shortest route, however it will only have approximately 10km of cable installed on the exposed hard rock, see Figure 2-2. This route would pass through approximately 38km through GZC which covers the majority of the area and is comprised of up to 1.5m of sandy Holocene sediments which in turn overly Pleistocene sediments. This route will pass through approximately 3.5km of GZB which covers various small areas between exposed bedrock, that contain between 1m and 5m of Holocene sediments.

The assumed OSS location and adjoining areas have some patches located across the GZF which covers several sinuous seafloor ridges interpreted to comprise coarse esker deposits up to approximately 5m thick at seafloor, overlying Pleistocene sediments. Geotechnical Zone F may contain some boulders which may pose installation risks where positive identification would be required during marine survey and geotechnical investigation.

Data has showed that rockhead at seabed is exposed within 50m from shoreline. Seabed ruggedness data is limited and of low resolution. Safe workable vessel distance from the landfall to 15m water depth is approximately 2000m. No nearshore seabed restriction appeared during this assessment; however further evaluation maybe required when more data becomes available.

Seabed slope appears to be steep within 5km of the landfall with channels and valleys which require micro-siting during geotechnical investigation. Subject to further evaluation, seabed preparation may be required for cable installation.

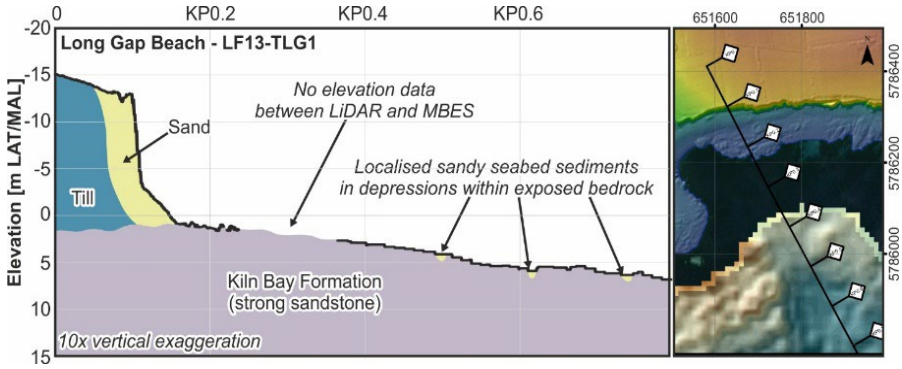


Figure 2-1 : Geological cross section of The Long Gap landfall at Wexford

Waterford/Wexford Route A: This route is 46km long and has a section of approximately 24km traversing through hard rock.

Waterford/Wexford Route B: This route is 47km long and has identical ground conditions and has a section of approximately 23km traversing through hard rock.

Waterford/Wexford Route C: This route is 51.5km and has a section of approximately 10km traversing through hard rock. This route is assumed to have some channel fills within hard rock and is expected to have some incised sections. Figure 2-3 shows the seabed profile along the route.

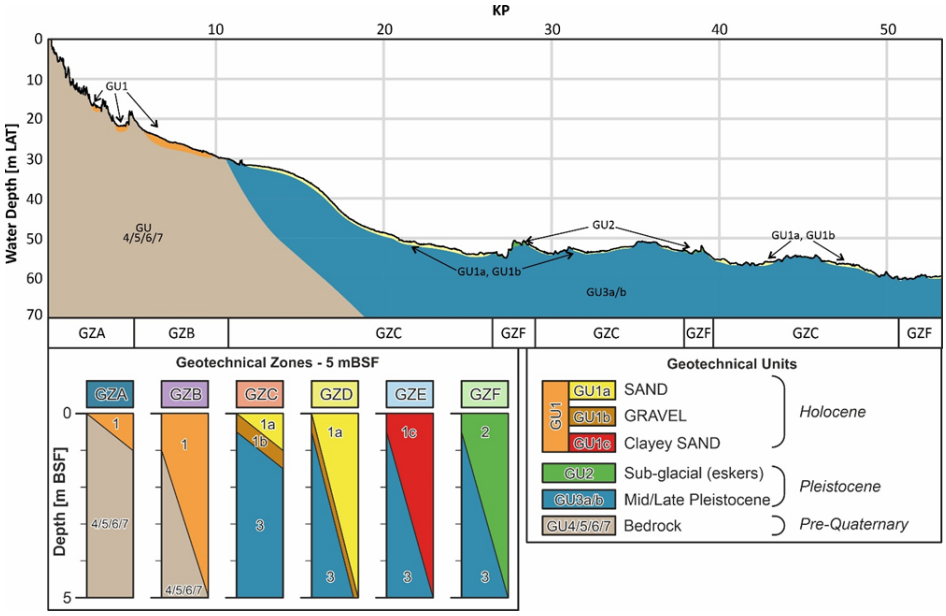


Figure 2-2 : Geological cross section from The Long Gap in Wexford to Area A (Route C)

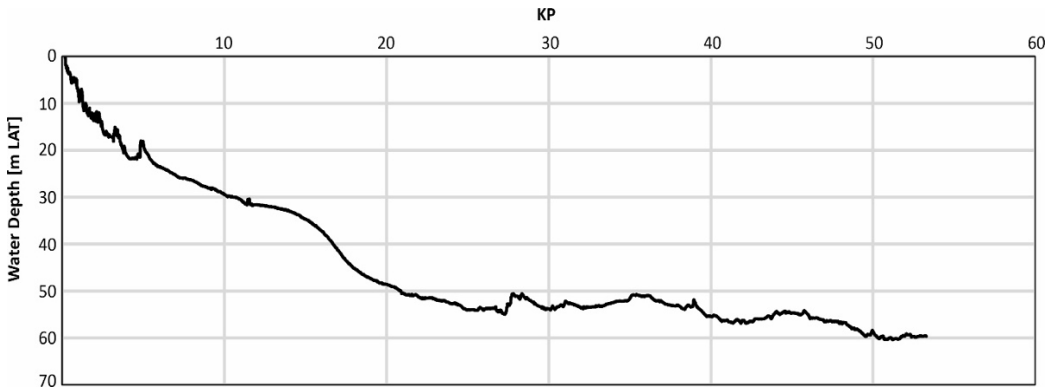


Figure 2-3 : Seabed profile from the Long Gap in Wexford to Area A (Route C)

2.2. Cork Area (Ballycroneen Beach) Export Cable Route Technical Assessment

An analysis of this landfall showed the presence of Till derived from Devonian sandstones (sandy gravelly clay) underlain by Sandstone with mudstone and siltstone, see Figure 2-4. A fault running north-south was also noted. The beach comprises of sand and gravel with rock outcrops on either side. The area has locally important aquifer bedrock which is moderately productive only in local zones. The groundwater recharge map shows a poor average recharge rate.

Figure 1-3, shows the three export cable route options that were assessed from Ballycroneen Beach to the assumed OSS location in Area A. Route A is the shortest route distance between the OSS and the landfall is approximately 61km and would result in installing the cable on exposed hard rock for a minimum of approximately 45.5km which would require more complex methodologies for cable protection.

Route C is the longest route is approximately 8.5km longer than shortest route, however it will only have approximately 10.5km of cable installed on the exposed hard rock, see Figure 2-5.

The assumed OSS and adjoining areas have some patches located across the GZF which covers several sinuous seafloor ridges interpreted to comprise coarse esker deposits up to approximately 5m thick at seafloor, overlying Pleistocene sediments. Geotechnical Zone F may contain some boulders which may pose installation risks where positive identification would be required during marine survey and geotechnical investigation.

The seafloor appears to have steep slopes with an exposed bedrock. Seabed channels maybe present which may consist of fine-grained sandy clay or clayey sand sediments. These channels may be locally infilled, with variable consolidation profile laterally, and vertically.

Cork Area Route A: This route is 61km long and has a 45.5km section passing through a rugged seabed which is expected to be Devonian Sandstone and Conglomerate; making this option complex as it would require bespoke tools and extra time for deliverability. Steep slopes are also noted in the rugged seabed area.

Cork Area Route B: This route is 63km long and has a 22.5km section passing through a rugged seabed which is expected to be Devonian Sandstone and Conglomerate.

Cork Area Route C: This route is 69.5km and has a section of approximately 10.5km traversing through hard rock. Figure 2-6 shows the seabed profile along the route.

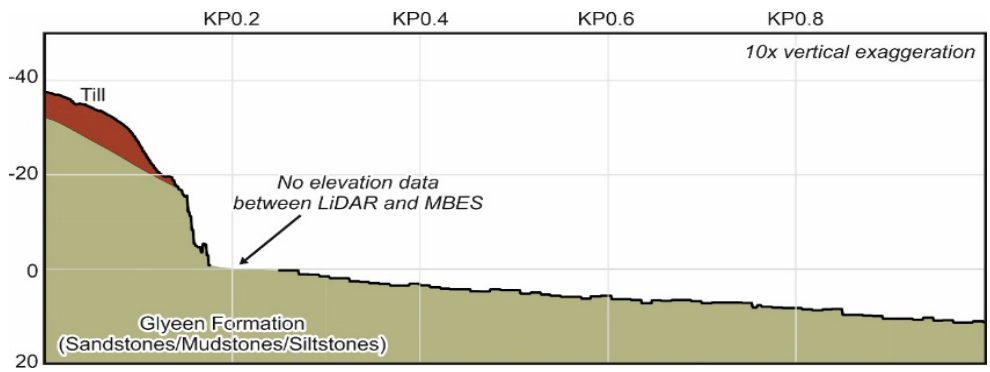


Figure 2-4 : Geological cross section for Ballycroneen Beach landfall in Cork Area

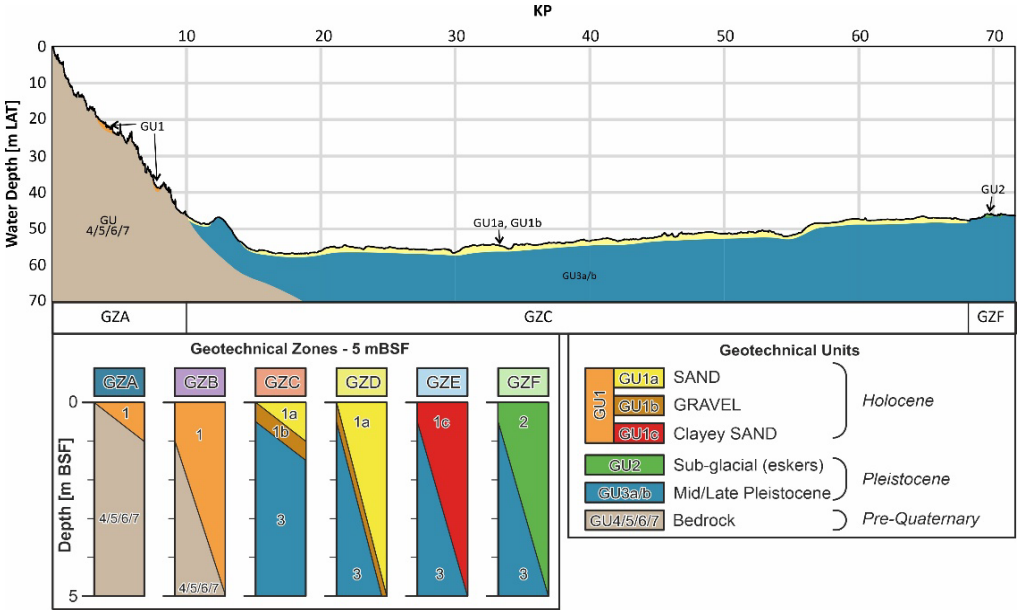


Figure 2-5 : Geological Cross section from Ballycroneen Beach in Cork to Area A (Route C)

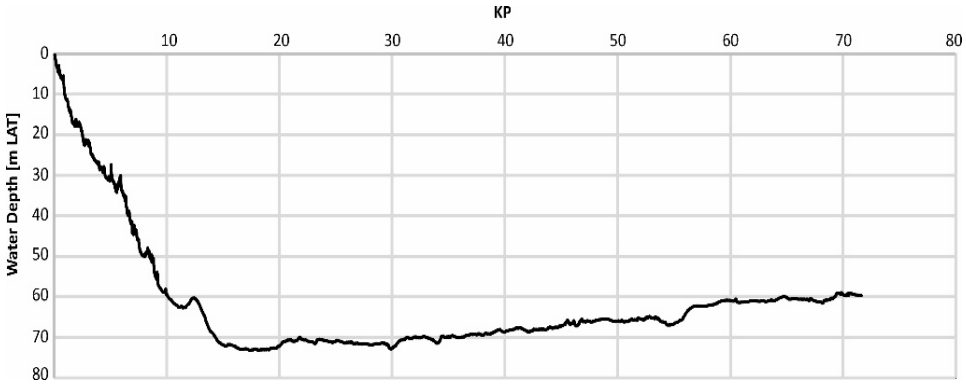


Figure 2-6 : Seabed profile from Ballycroneen Beach in Cork to Area A (Route C)

3. Deliverability Assessment

3.1. Waterford/Wexford (The Long Gap) Export Cable Route Deliverability Assessment

Geological analysis shows open cut method as the preferred installation solution however HDD installation solutions are also feasible where geological conditions require a more complex solution. Elevation height drop between proposed Transition Joint Bay and the seabed is approximately 6m and nearshore descends to 5m WL within 300m with a 9m cliff inshore from the beach. The absence of a seawall, sand channels and offshore navigation restrictions provides further favourable conditions with respect to installation and deliverability.

The Long Gap beach is a long beach accessible by road and surrounded by agricultural farmland. There is a 4m wide road to the west side with an area that may be suitable for the Transition Joint Bay and construction compound with approximately 6m elevation drop between farm fields to beach.

The OSS and Export Cable Geological Desk Study (OCDP-EIR-P1-ST-GT-0001-R00) noted a nearshore sand/gravel route through the biogenic reef which will require further evaluation based on factual investigation data.

The nearshore lay is favourable as there is a continuous sandy seabed for the entire route to the -20m bathymetry line, however this route has an HVDC cable in the proximity.

Whilst Route A is the shortest route, it also contains the longest stretch of exposed bedrock of approximately 24km which will result in longer installation time, complex deliverability and require bespoke equipment.

Route B presents an intermediate option with the total length of approximately 23km of exposed bedrock along the route thus making it less difficult and complex in terms of deliverability when compared with Route A.

Route C is the longest export cable route with approximately 10km of exposed bedrock which would require bespoke equipment for trenching. This route, though longer, will have less ground obstructions and could be delivered earlier than the shorter routes.

One HVDC cable will need to be crossed which will be designed as per industry accepted standards and a cable crossing agreement will be required before installation.

Cable installation through hard rock may require rock placement and/or other forms of cable protection which will have environmental implications.

Route A and Route B will have longer footprints within the Hook Head Special Area of Conservation.

3.2. Cork (Ballycroneen Beach) Export Cable Route Deliverability Assessment

Based on the geological and physiographic set up of the proposed landfall site at Ballycroneen Beach, both open cut and HDD installation methods may be possible. However, open-cut method maybe the optimised installation solution due to being less complex and lower cost.

The proposed landfall location has a 6m wide access road, and vessel access distance from the coastline to 10m bathymetry line is approximately 900m from shoreline. Elevation height drop from entry point assumed to be the Mean High Water Spring mark to 10m water depth shows approximately 47m drop as likely location for TJB is at 37m above Malin Ordnance Datum, which appears to be similar to LAT. There is no apparent presence of a seawall.

Exposed bedrock locally causes steep seafloor slopes which may cause issues in cable trenching operations, jack-up placement, and cable installation. After -3m there is biogenic reef/rock making burial and cable

protection more complex. The -10m bathymetry line is 800m from the beach. There are some wrecks in or near to the route alignment, which would need to be avoided during cable route selection.

Based on the above and technical assessment, Ballycroneen Beach may be classed as a moderate complex/difficult landfall/route option for deliverability.

The cross section and seabed profile of the route show very rugged seabed for 10 kilometres from the landfall location with hard bedrock which will make cable installation challenging and complex.

Assessed routes A, B and C have 45.5km, 22.4km and 10.5km footprints respectively within hard rock and biogenic reef. Total route length for routes A, B and C are 61km, 63km and 69.5km, respectively.

Route C appears to be the longest, however it has less footprints within hard rock and biogenic reef and will have less rock placement and protection requirements.

3.3. Summary of Cable Burial Tools

The assessment and selection of the correct burial tool will be an iterative process as the route designs develop and more site information becomes available. The tools associated with each of the different burial concepts are identified in Figure 3-1 below.

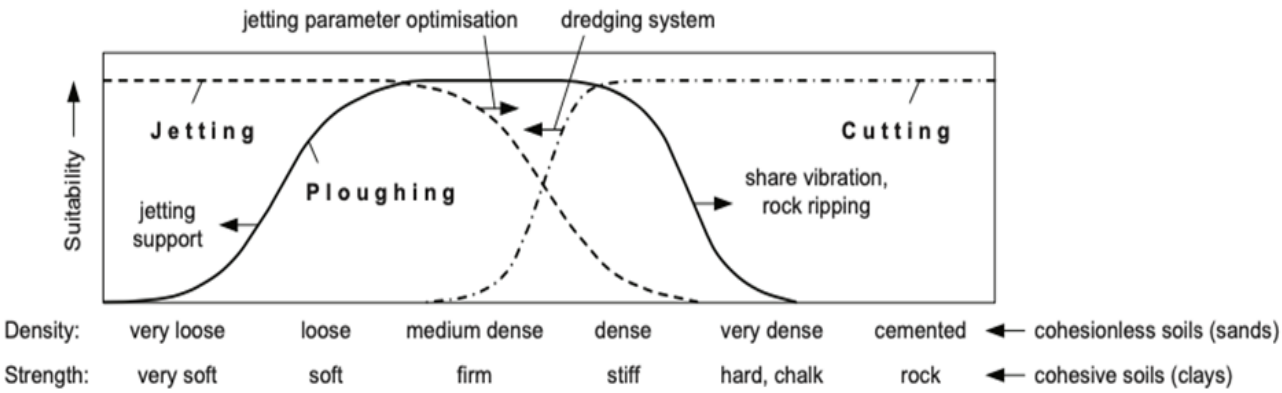


Figure 3-1 : Offshore Cable Burial Tool Capabilities

When the cable cannot be buried using ploughing or mechanical trenching techniques such as chain cutter or rock wheel, alternative methods of cable protection would be required and may include the use of rock placement, tubular products, concrete matressing or rock filter bags.

3.4. Summary of Cable Lengths and Proposed Burial Methods

Table 3-1 shows the cable route lengths and potential cable burial methodology for the various seabed conditions identified in Section 2.

Table 3-1 : Cable route lengths and protection methodology for seabed conditions

Landfall	Total route length (km)	Plough Installation Length (km)	Mechanical Trenching/Alternative cable protection methods Length (km)
Wexford Route A	46	22*	24**
Wexford Route B	47	24*	23**
Wexford Route C	51.5	38*+3.5***	10**
Cork Route A	61	15*	45.5**
Cork Route B	63	40.6*	22.4**
Cork Route C	69.5	59 *	10.5 **

*GZC (covers areas where up to 1.5 m of sandy Holocene sediments overly Pleistocene sediments.

**GZA (GZA mainly bedrock and interpreted to be exposed at seafloor or covered by a thin layer (<1m) of Holocene sediments

***GZB (covers various small areas between exposed bedrock, that contain between 1 m and 5 m of Holocene sediments)

4. Comparative Economic Capital Expenditure (CAPEX) Assessment

4.1. Economic CAPEX Assessment for Waterford/Wexford Cable route

The Waterford/Wexford landing has the Transition Joint Bay and landfall area at The Long Gap. Transition Joint Bay (TJB) can be sited within 100m of the beach and an open cut installation is feasible considering the nature of the ground composition of this route. Vessel access distance from coastline to 15m water depth is approximately 2000m which has got slightly higher associated cost due to longer pulling distance and the requirement of a more powerful pulling tool.

Route A presents the shortest route with total export cable route length of 46km. This route option will have to traverse hard rock and biogenic reefs for approximately 24km which may require a mix of cable protection tools as identified in Section 3.3. This route will also need arrangements to mitigate environmental impacts while passing through Special Area of Conservation. These combined factors will have implications for cost and time.

Route B is the intermediate route with total export cable route length of 47.5km. This route option will have to traverse hard rock and biogenic reefs for approximately 23km may require a mix of cable protection tools as identified in Section 3.3. This route will also need arrangements to mitigate environmental impacts while passing through Special Area of Conservation. These combined factors will have implications for cost and time.

Route C is the longest proposed route being approximately 51.5km long and comparatively 5.5km longer route than Route A which is the shortest proposed routes. However, Route C which is comparatively 14km shorter length in hard rock. will still have to traverse approximately 10km into hard rock which may require a mix of cable protection tools as identified in Section 3.3. This route will also need arrangements to mitigate environmental impacts while passing through Special Area of Conservation. Comparatively Route C will have less installation cost.

The above routes have one HVDC cable crossing which will add to the overall cost.

Installation through a designated traffic route to and from Port of Waterford may require liaison with port authority and with marine traffic and additional measures for exclusion zones or safety measures which may add extra cost.

4.2. Economic CAPEX Assessment for Cork Cable route

Ballycroneen Beach landfall location was assessed for the Cork cable route. Some localised steep seafloor was noted during the analysis due to exposed bedrock, and the presence of boulders may have to be removed.

Three cable routes were assessed for Cork area, from the Ballycroneen landfall location to the preliminary proposed platform in the centre of Area A.

Route A is the shortest route which traverses approximately 45.5km into hard rock and biogenic reef and would require mechanical trenching tools, potentially rock placement, and other additional protection measures. As a result, this would be the most expensive among all the three routes studied.

Route B is intermediate in terms of distance and cost.

Route C is the longest route however only 10.5km exposed hard rock noted along this route which will have less economic implications with relatively more time saving in terms of trenching into hard rock and rock placement and potentially additional protection measures.

The above routes have two cable crossings which will add to the overall cost.

5. Environmental Assessment

5.1. Environmental Assessment for Waterford/Wexford Route

The Environmental Assessment for Waterford/Wexford Route is based on proximity to Natura 2000 sites. The data shows that the closest Natura 2000 site is less than 1km from The Long Gap Landfall. Hook Head and Bannow Bay special area of conservations are situated to the west of the routes, as seen in Figure 5-1 and Figure 5-2. Route A and Route B are crossing through the Hook Head special areas of conservations. Route C will minimise the footprint of these special areas of conservation.

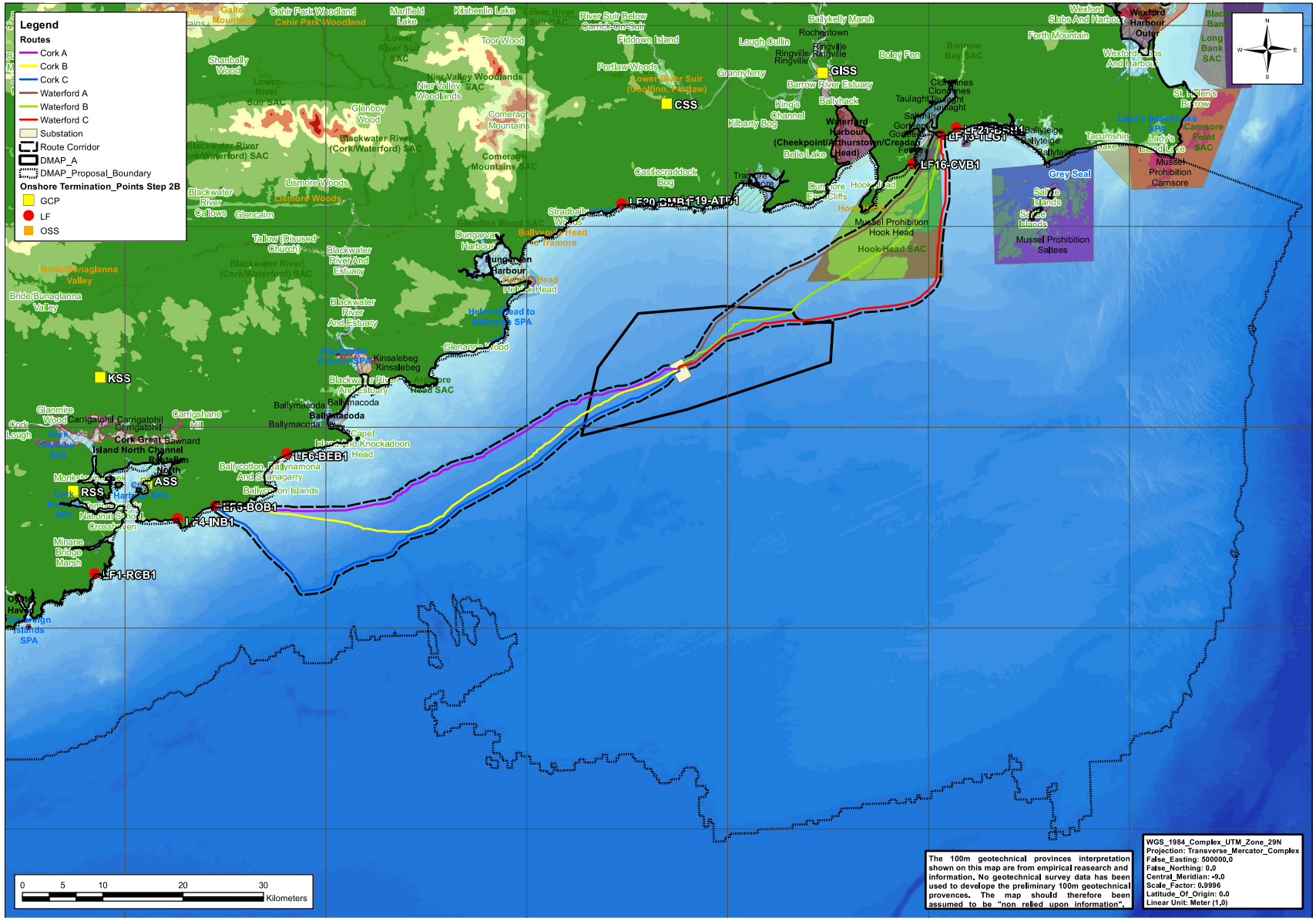


Figure 5-1 : Showing cable for Waterford/Wexford and Cork area and Special Area of Conservation

Routes A and B are traversing through Hook Head SAC which has large shallow inlets and bays, reefs, and vegetated sea cliffs. Bannow Bay SAC & SPA are also in the close proximity of these routes.

Route C has limited footprint within these environmental designated sites.

Many shipwrecks (Figure 6-2) have been noted on the seabed as part of these routes lay within the traffic separation zone (Figure 6-3) and a detailed assessment will be required as part of the cable route engineering studies.

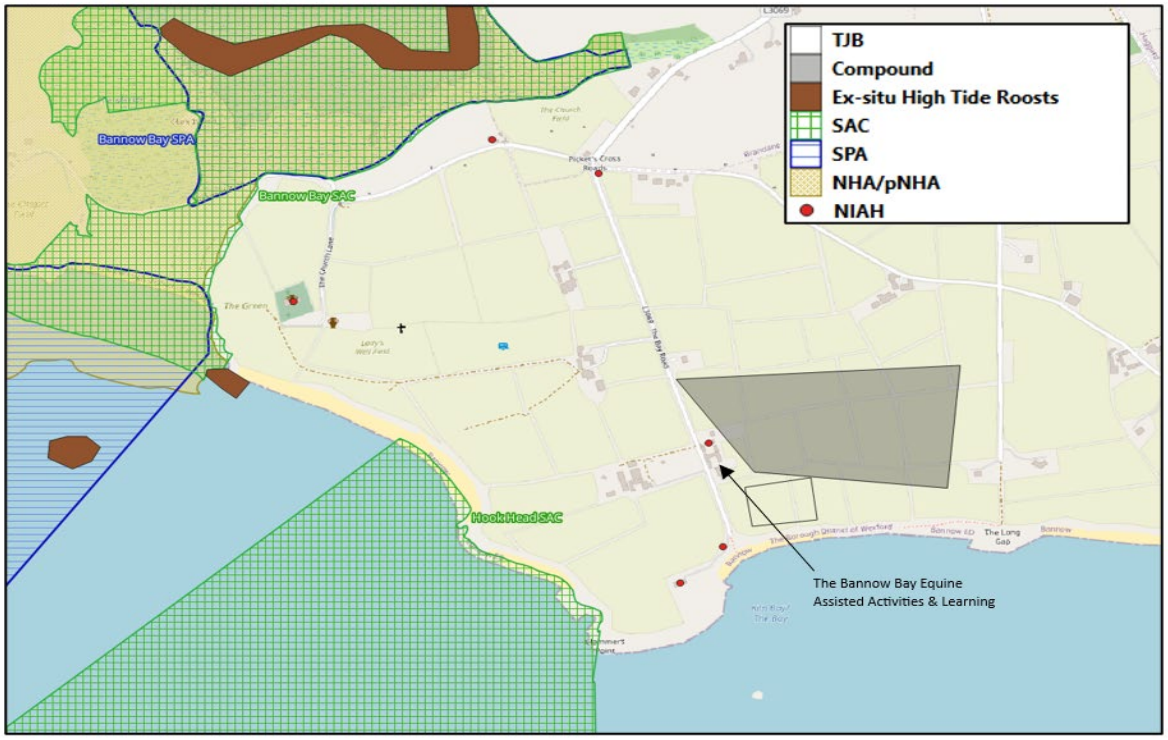


Figure 5-2 : Environmental designated areas along the Waterford/Wexford Route A and Route B

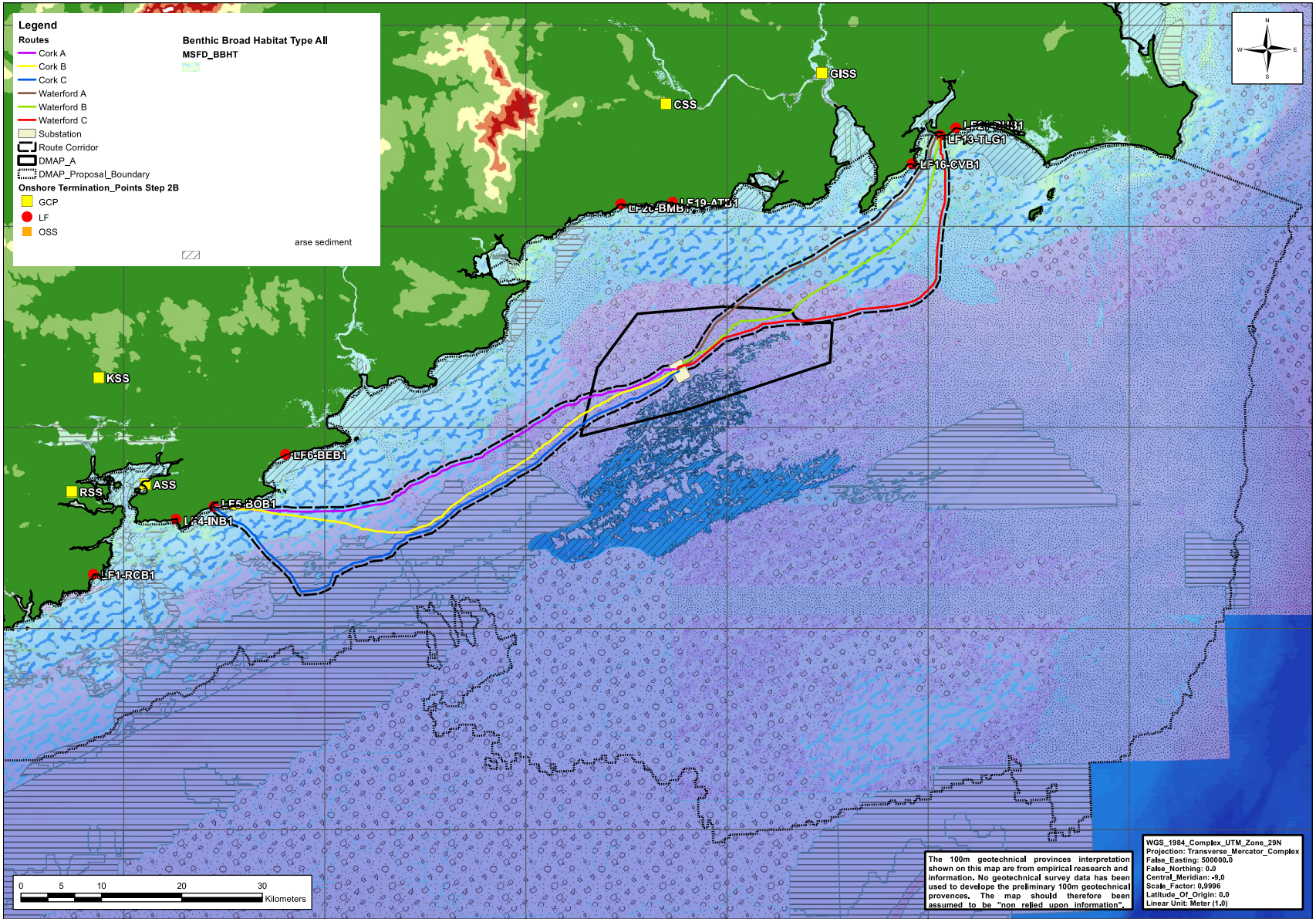


Figure 5-3 : Sea floor showing benthic features and biogenic reefs.

5.2. Environmental Assessment for Cork Area Route

Environmental Assessment shows that Ballycroneen Beach lies approximately 3000m away from the closest designated Natura 2000 sites and therefore any potential environmental impact designation is low for the landfall area.

Route A and Route B will have larger footprints within biogenic reefs in the Cork Area, seen above in Figure 5-3. These two options require larger rock dumping because of trenching through rock and cable protection measures. Therefore, these two routes are less desirable owing to a higher environmental footprint.

Route C will have smaller footprint within biogenic reef and comparatively less rock dumping required for this route.

Many shipwrecks (Figure 6-2) have been noted on the seabed and a detailed assessment will be required as part of the cable route engineering studies.

6. Socio-economic Assessment

6.1. Socio-economic Assessment for Waterford / Wexford Route

The Socio-economic impact for Waterford/Wexford Export Cable Route Options is assessed and described below.

All three export cable route options have been considered to have low to moderate impact on fisheries, cultural heritage, recreation, and tourism with no known impacts on defence and for this study are assumed to be the same.

All route options will cross the Greenlink HVDC Interconnector cable.

Shipwrecks are also known to exist in the proximity of the cable routes (Figure 6-2).

Waterford/Wexford Route A: Vessel density map given below in Figure 6-1 shows this route significantly affects vessel traffic to Waterford Port and some fishing vessels.

Waterford/Wexford Route B: This is approximately 2.5km to 3.5km south of Route A and socio-economic conditions are almost identical to Route A.

Waterford/Wexford Route C: Vessel density for this route is approximately 1-2 vessels per hour whereas Vessel's density for Route A and Route B which are in the proximity of the harbour is average 2-3 per hour. All other conditions are similar to Route A and Route B.

6.2. Socio-economic Assessment of Cork Area Route

The Socio-economic impact for Cork Export Cable Route Options is assessed and described below.

All three export cable route options have been considered to have low to moderate impact on fisheries, cultural heritage, recreation, and tourism with no known impacts on defence and for this study are assumed to be the same.

All route options (when installed) will cross the Celtic HVDC Interconnector cable, and the EXA Express telecommunication cable.

Shipwrecks are also known to exist in the proximity of the cable routes (Figure 6-2).

Cork Route A: Vessel density map given below Figure 6-1 show most of the route has low to moderate vessel density between average 0.5 to 1 vessel per hour per square kilometre except some sections where it ranges between 1-2 vessel per square kilometre per hour.

Cork Route B are considered to have identical socio-economic conditions to Route A.

Cork Route C are considered to have identical socio-economic conditions to Route A.

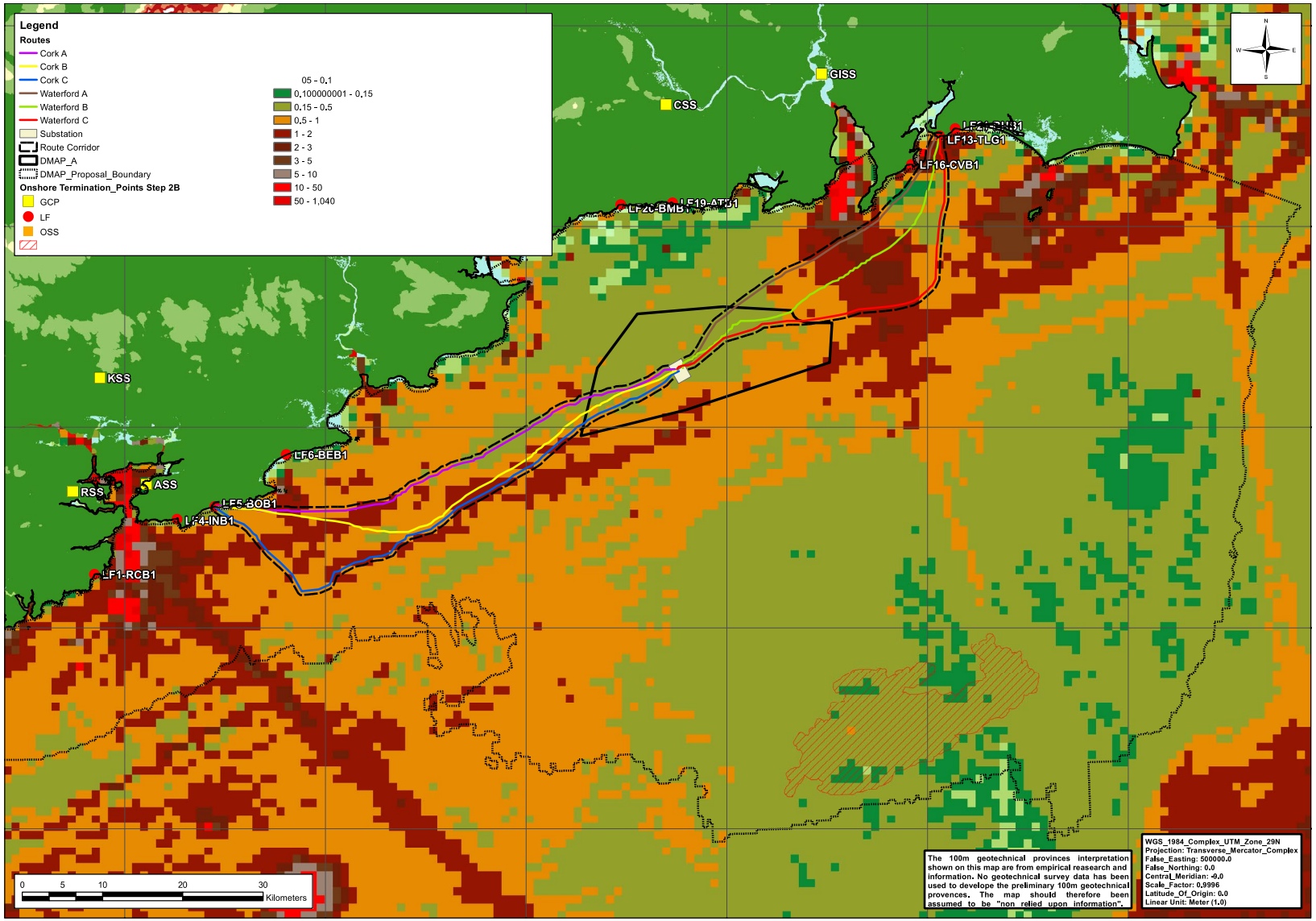


Figure 6-1 : Vessel density including fishing and other vessels along the proposed routes.

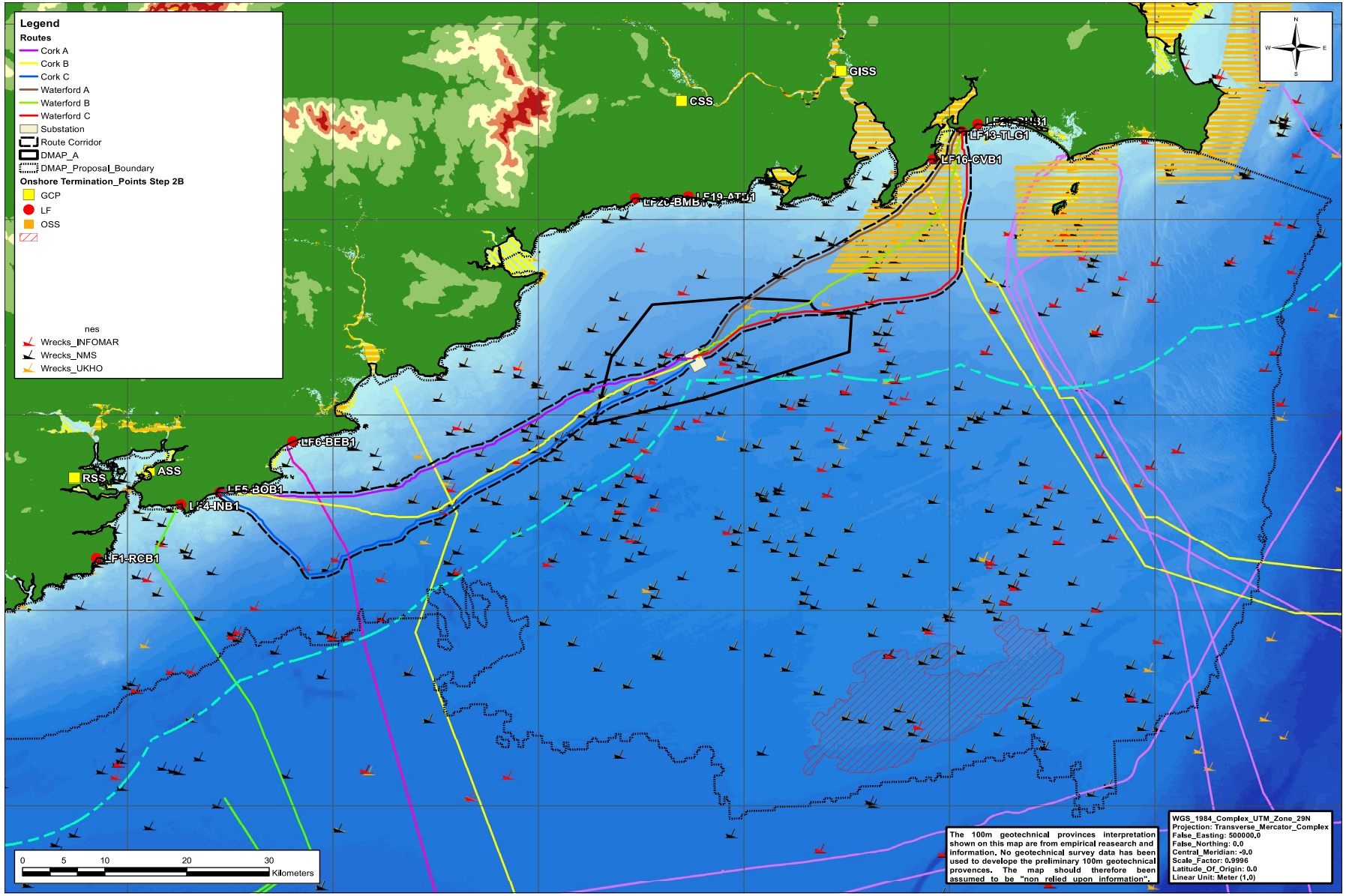


Figure 6-2 : Map Showing anthropogenic features including shipwrecks, and HVDC cables.

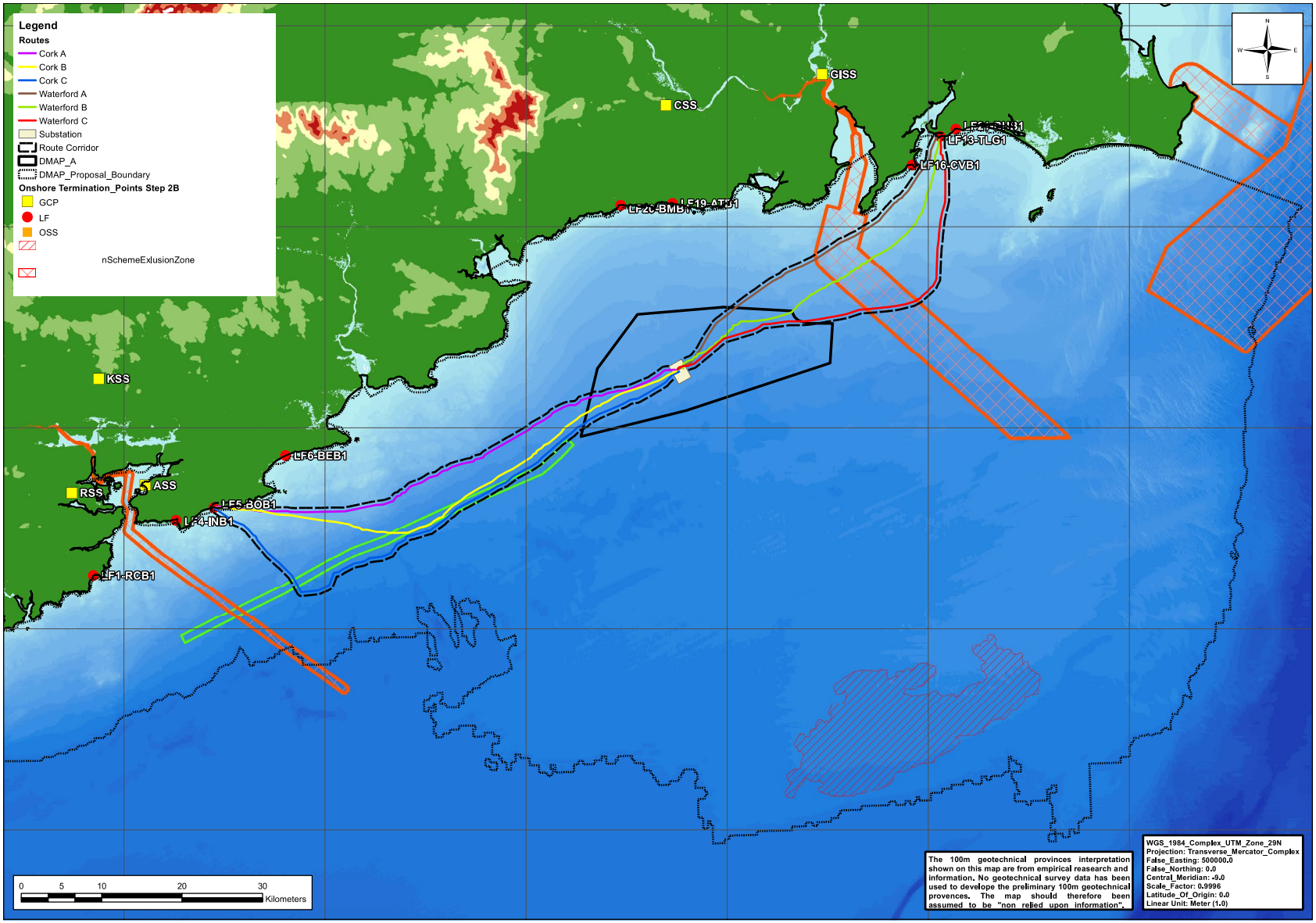


Figure 6-3 : INFOMAR Traffic Separation Zones

7. Comparison of Routes

Three routes for the Waterford/Wexford export cable were assessed from The Long Gap landfall to the centre point of Area A.

Three routes for Cork export cable route were assessed from Ballycroneen Beach landfall to the centre of Area A.

Routes A and B for Waterford/Wexford routes score very low in technical, deliverability and economic assessment because of the extent of the route traversing through hard rock. The longest route, Route C scored high in the deliverability assessment and average score throughout other assessment criteria. Therefore, Route C appears to be the preferred route during this preliminary assessment.

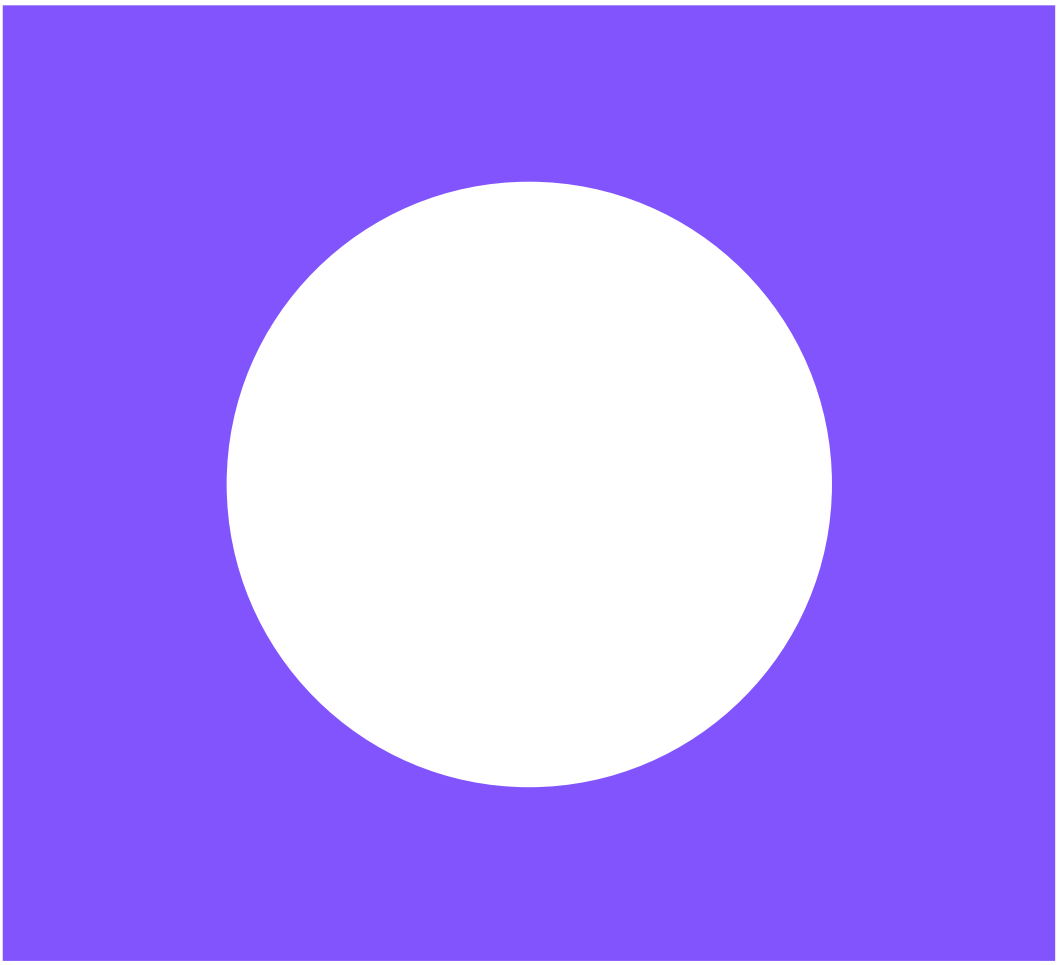
Route A in the Cork area route is the shortest route however it scored very low in deliverability, technical and economic assessment. Route B is intermediate, and Route C is the preferable route as it scored relatively better in technical performance criteria during preliminary assessments carried out on the basis of limited publicly available data. Table 7-1 shows the summary of the assessment for various criteria.

Table 7-1 : Comparison of various routes from Waterford/Wexford and Cork

Routes		Technical Assessment	Economic Assessment	Deliverability Assessment	Environmental Assessment	Socio-economic Assessment	Combined
Wexford Export Cable Route							
1	Route A						
2	Route B						
3	Route C						
Cork Export Cable Route							
1	Route A						
2	Route B						
3	Route C						

8. Conclusion

In conclusion, the cable route study analysed three preliminary cable routes from an assumed Offshore Substation (OSS) location within Area A of a draft DMAP to a provisional landfall at Ballycroneen Beach for the Cork area and a provisional landfall at The Long Gap, in the Wexford area. The results of this analysis showed that the present preferred options to be taken forward into the concept design are Route C for the Cork offshore cable route and Route C for the Wexford cable route.

At this present time, it is recommended that a cable route survey corridor of a minimum width of 1500m, should be centred around the routes identified.

The results of the study will be used to develop the scope of work for the marine survey activities. It will also be shared with the Marine Institute, who may add the route survey as part of their work scope when they perform their geophysical survey of Area A.