Note: Readers are advised that this document may require ongoing amendment to reflect (i) developments in the regulatory framework applicable to offshore wind farm development and connection to the Transmission System (ii) decisions of relevant regulatory bodies and (iii) specific project requirements necessary and applicable on a case-by-case basis. Any actions taken on foot of the information contained in this document is at the reader's sole risk and discretion.

ORESS Tonn Nua Bidder Information Pack

This document (version 1) is being issued to all prospective bidders of ORESS Tonn Nua. Once confirmed at a later date, a revised document (version 2) will issue that contains both the associated Offshore Generator Transmission Use of System (**"OG-TUoS"**) charges, as well as any associated asset costs.

2nd April 2025 **Ref: ORESS-Tonn Nua-CC-GCI_V1**

Dear Prospective Bidder,

EirGrid PLC, a statutory corporation having its principal office at The Oval, 160 Shelbourne Road, Ballsbridge, Dublin 4 and having company registration number 338522 (the "**Company**") has agreed, subject to the conditions herein contained, to provide all prospective bidders (the "Prospective Bidders") into ORESS Tonn Nua with indicative details for a connection (the "**Indicative Connection Method**"). The Indicative Connection Method of the Prospective Bidder's offshore wind facility will have a Maximum Export Capacity (**"MEC"**) of 900 MW, split between the Cork area (450 MW) and the Waterford area (450 MW) and will be known as Tonn Nua Offshore Windfarm (the **"Facility"**). The Indicative Connection Method is set out in Section 1 and 2 below (herein referred to as the **"Grid Connection Information Pack**" or "**GCI**"). Please note that, once the associated OG-TUoS charges and asset costs are confirmed, an updated version of this document (version 2) will issue.

The Company has agreed to provide this GCI and the information contained in the absence of key information and in advance of a connection agreement in place with the Prospective Bidder. Whilst the Company has endeavored to ensure the accuracy and completeness of this GCI and the connection method contained within, it must be noted that the information provided within is for information purposes only and is subject to change. For the avoidance of any doubt, the Company reserves the right to change any elements of the proposed connection method, during the connection offer process. Reliance on and use of this information is at the sole discretion and risk of the Prospective Bidder. This GCI does not infer any rights to the Prospective Bidder with regard to any future guarantee of receiving a connection offer from the Company for the connection of the Facility to the Transmission System (the "**Offer**"). The Company understands that the Prospective Bidder will only receive

an Offer if the Prospective Bidder is successful in the Second Offshore Competition under the Renewable Energy Support Scheme Auction ("**ORESS Tonn Nua**") run by the Irish Government's Department of Climate, Energy and Environment (**"DECC"**) and on the basis that the Prospective Bidder meets the necessary conditions required under same, in accordance with the relevant CRU Direction (CRU/2024/124) which includes the submission of an ORESS Tonn Nua Notice of Award (as defined in the ORESS Tonn Nua Terms and Conditions published by DECC on 30th October 2024) to the Company no later than three (3) calendar months from receipt of the ORESS Tonn Nua Notice of Award from DECC.

This GCI, and all contents of and appendices to it, are provided solely for the Prospective Bidder's information purposes. Actions taken by the Prospective Bidder on foot of information and statements contained within this GCI are taken at the Prospective Bidder's sole risk and discretion. The Company accepts no responsibility, duty or liability for any loss or damage (whether direct, indirect or consequential loss or damage) suffered by the Prospective Bidder arising from their reliance on this GCI. As such, reliance on this GCI is strictly at the Prospective Bidder's sole risk.

1 The Indicative Connection Method (Cork)

The Indicative Connection Method will be a double circuit loop into the Aghada – Knockraha 1 & 2 220 kV circuits and will require the provision and installation of the following:

1.1.1 New 220 kV 8 Bay Enhanced Ring Station comprising (at a minimum) of:

4 x 220 kV busbar sections (A1, B1, A2, B2)
4 x 220 kV bays for the loop in connection
1 x 220 kV bay for the onshore compensation compound (**"Cork Onshore Compensation Compound** or **COCC"**) connection
3 x 220 kV spare bays
1 x 220 kV wing couplers
4 x 220 kV sectionaliser bays

(the **"New 220 kV Connecting Station at Cork"**)

1.1.2 Expandability:

Expandability options for the New 220 kV Connecting Station at Cork will also be considered as part of the assessment of a suitable substation location.

(the **"Expandability Options at Cork"**)

1.1.3 220 kV Loop in Connection:

4 x 220 kV circuits are required to loop into the Aghada – Knockraha 1 & 2 220 kV circuits. This loop in connection shall be rated to achieve 1707/2021 A. This connection will be via an underground cable (**"UGC"**) or overhead line (**"OHL"**) and will include all associated equipment.

(the **"Aghada – Knockraha 1 220 kV Loop In"**)
(the **"Aghada – Knockraha 2 220 kV Loop In"**)

1.1.4 Remote End Works:

Relevant remote end works at Aghada 220 kV station and Knockraha 220 kV station.

(the **"Remote End Works at Cork"**)

1.1.5 Fibre Link:

A redundant optical fibre link is to be provided to the New 220 kV Connecting Station at Cork. Therefore, an optical fibre link is to be installed between the New 220 kV Connecting Station at Cork and Aghada 220 kV Station and between the New 220 kV Connecting Station at Cork and Knockraha 220 kV Station.

(the **"New Loop In Station Fibre Link at Cork"**)

1.1.6 New 220 kV Cable Section:

UGC to connect the adjacent COCC and the connecting transmission station.

(the **"COCC – New Loop In Station 220 kV Station Cable"**)

1.1.7 Fibre Link:

A redundant optical fibre link is to be provided between the COCC and the connecting transmission station.

(the **"COCC – New Loop in Station Fibre Link"**)

1.1.8 Power Quality Recorder ("PQR"):

1 x PQR installed on the COCC 220 kV bay in the New 220 kV Connecting Station at Cork.

(the **"Power Quality Recorder at Cork"**)

1.1.9 Metering:

Main and checks metering for the Facility are required on the bay coming from the onshore compensation compound.

(the **"Metering at Cork"**)

1.1.10 Uprate works

Assessment on uprate works is currently ongoing and will be confirmed as part of GCI version 2.

1.1.11 New Cork Onshore Compensation Compound:

1 x compensation compound consisting (as a minimum) of:

1 x busbar (A1)
1 x offshore cable bay
1 x transmission system bay
1 x reactor bay with point on wave (**"POW"**) soft switching equipment
1 x static compensator (**"STATCOM"**) bay with POW soft switching equipment
1 x filter bay with POW soft switching equipment
Additional bays as required to connect any additional equipment (e.g. transformer) that is identified as part of the detailed design.

(the **"Cork Onshore Compensation Compound** or **COCC"**)

1.1.12 Power Quality Recorders:

6 x PQRs are required at the offshore platform to monitor the 66 kV array cable feeders. The number of PQRs is dependent on the number of 66 kV array cables.

(the **"Connection Point PQRs at Cork"**)

1.1.13 STATCOM:

1 x STATCOM to be connected to a bay in the COCC. The STATCOM shall be capable of ensuring the Facility can operate at +0.93 Power Factor.

(the **"STATCOM at the COCC"**)

1.1.14 Harmonic Filter:

1 x filter to be connected to a bay in the COCC. Further detailed analysis is required to determine the filter requirements. Additional compensation equipment will also be required to compensate the filter.

(the **"Filter at the at the COCC"**)

1.1.15 Reactors:

1 x shunt reactor to be connected onto the offshore cable at the COCC.
1 x shunt reactor to be connected onto the offshore cable at the offshore substation (**"OSS)"**.
1 x switched shunt reactor to be connected to a bay in the COCC.
The sizing and configuration of the reactors requires additional detailed analysis. This design shall consider the voltage along the offshore cable and on the OSS and ensure that all equipment remains within allowable limits during all operating conditions.

(the **"Reactors at COCC"**)

1.1.16 Onshore/Offshore Cable(s):

Onshore/offshore cable solution to connect the COCC to the OSS including associated terminations, transition joint bays and all associated equipment. The cable(s) shall include a fibre optic link between the COCC and OSS. The cable(s) shall be rated to carry 450 MW in all system conditions. When the cable lengths and the reactive power solution are confirmed, power flow studies are required to determine the maximum current in all system conditions.
The cable(s) shall be designed so that it can carry the maximum expected current.

(the **"Cork Onshore/Offshore Cable(s)"**)

The indicative onshore/offshore cable length is assumed between 72 – 83 km. This an assumption based on best estimates as OCC location, cable route, landfall location and OSS locations are not yet defined.

1.1.17 Offshore Station comprising (at a minimum) of:

2 x cable/transformer bay
1 x 66 kV busbar (A1 and A2)
2 x 66 kV transformer bay
1 x 66 kV sectionaliser bay
6 x 66 kV bays for the connection of the offshore array cables (number dependant on offshore array design.

(the **"Cork Offshore Station"**)

1.1.18 Transformer:

2 transformers located on the offshore platform. The transformer shall be rated to achieve 300 MVA.

(the **"Cork Offshore Transformer"**)

1.1.19 Metering:

6 x main and check meters for the facility are required at the connection point on the offshore platforms. The number of meters is dependent on the number of 66 kV array feeders.

(the **"Metering at the Cork Offshore Connection Point"**)

2 The Indicative Connection Method (Waterford)

The Indicative Connection Method will be a loop into the Great Island – Kellis 220 kV circuit and a loop into the Great Island – Lodgewood 220 kV circuit and will require the provision and installation of the following:

2.1.1 New 220 kV 8 Bay Enhanced Ring Station:

4 x 220 kV busbar sections (A1, B1, A2, B2)
4 x 220 kV bays for the loop in connection
1 x 220 kV bay for the onshore compensation compound **("Waterford Onshore Compensation Compound** or **WOCC")** connection
3 x 220 kV spare bays
1 x 220 kV wing couplers
4 x 220 kV sectionaliser bays

(the **"New 220 kV Connecting Station at Waterford"**)

2.1.2 Expandability:

Expandability options for the New 220 kV Connecting Station at Waterford will also be considered as part of the assessment of a suitable substation location.

(the **"Expandability Options at Waterford"**)

2.1.3 Great Island – Kellis 220 kV Loop in Connection:

2 x 220 kV circuits are required to loop into the Great Island – Kellis 220 kV circuit. This loop in connection shall be rated to achieve 1707/2021 A. This connection will be via UGC or OHL and will include all associated equipment.

(the **"Great Island – Kellis 220 kV Loop In"**)

2.1.4 Great Island – Lodgewood 220 kV Loop in Connection:

2 x 220 kV circuits are required to loop into the Great Island – Lodgewood 220 kV circuit. This loop in connection shall be rated to achieve 1707/2021 A. This connection will be via UGC or OHL and will include all associated equipment.

(the **"Great Island – Lodgewood 220 kV Loop In"**)

2.1.5 Remote End Works:

Relevant remote end works at Great Island 220 kV station, Lodgewood 220 kV station and Kellis 220 kV station.

(the **"Remote End Works at Waterford**")

2.1.6 Fibre Link:

A redundant optical fibre link is to be provided to the New 220 kV Connecting Station at Waterford. Therefore, an optical fibre link is to be installed between the New 220 kV Connecting Station at Waterford and Lodgewood 220 kV Station and between the New 220 kV Connecting Station at Waterford and Kellis 220 kV Station. Two optical fibre links are also to be installed between the New 220 kV Connecting Station at Waterford and Great Island 220 kV Station.

(the **"New Loop in Station Fibre Links at Waterford"**)

2.1.7 New 220 kV Cable Section:

UGC to connect the adjacent WOCC to the transmission system. Including the associated cable terminations/sealing ends at either end of the cable.

(the **"WOCC – New Loop in Station 220 kV Station Cable"**)

2.1.8 Fibre Link:

A redundant optical fibre link is to be provided between the WOCC and the connecting transmission station.

(the **"WOCC – New Loop in Station Fibre Link"**)

2.1.9 Power Quality Recorder:

1 x PQR installed on the WOCC 220 kV bay in the New 220 kV Connecting Station at Waterford.

(the **"Power Quality Recorder at Waterford"**)

2.1.10 Metering:

Main and checks metering for the Facility are required on the bay coming from the offshore compensation compound at the grid interface point.

(the **"Metering at Waterford"**)

2.1.11 New Waterford Onshore Compensation Compound:

1 x compensation compounds consisting (as a minimum) of:

1 x busbar (A1)
1 x offshore cable bay
1 x transmission system bay
1 x reactor bay with POW soft switching equipment
1 x STATCOM Bay with POW soft switching equipment
1 x filter bay with POW soft switching equipment
Additional bays as required to connect any additional equipment that is identified as part of the detailed design.

(the **"Waterford Onshore Compensation Compound** or **WOCC"**)

2.1.12 Power Quality Recorders:

6 x PQRs are required at the offshore platform to monitor the 66 kV array cable feeders. The number of PQRs is dependent on the number of 66 kV array cables.

(the **"Connection Point PQRs at Waterford"**)

2.1.13 STATCOM:

1 x STATCOM to be connected to a bay in the WOCC. The STATCOM shall be capable of ensuring the Facility can operate at +0.93 power factor.

(the **"STATCOM at the WOCC"**)

2.1.14 Harmonic Filter:

1 x filter to be connected to a bay in the WOCC. Further detailed analysis is required to determine the filter requirements. Additional compensation equipment will also be required to compensate the filter.

(the **"Filter at the WOCC"**)

2.1.15 Reactors:

1 x shunt reactor to be connected onto the offshore cable at the WOCC.
1 x shunt reactor to be connected onto the offshore cable at the OSS.
1 x switched shunt reactor to be connected to a bay in WOCC.
The sizing and configuration of the reactors requires additional detailed analysis. This design shall consider the voltage along the offshore cable and on the OSS and ensure that all equipment remains within allowable limits during all operating conditions.
(the **"Reactors at WOCC"**)

2.1.16 Onshore/Offshore Cable(s):

Onshore/offshore cable solution to connect the OCC to the OSS including associated terminations, transition joint bays and all associated equipment. The cable(s) shall include a fibre optic link between the OCC and OSS. The cable(s) shall be rated to carry 450 MW in all system conditions. When the cable lengths and the reactive power solution are confirmed, powerflow studies are required to determine the maximum current in all system conditions.
The cable(s) shall be designed so that it can carry the maximum expected current.

(the **"Waterford Onshore/Offshore Cable(s)"**)

The indicative onshore/offshore cable length is assumed between 61 – 63 km. This an assumption based on best estimates as OCC location, cable route, landfall location and OSS locations are not yet defined.

2.1.17 Offshore Station comprising (at a minimum) of:

2 x cable/transformer Bay
2 x 66 kV busbar (A1 and A2)
2 x 66 kV transformer bay
1 x 66 kV sectionaliser bay

6 x 66 kV bays for the connection of the offshore array cables (number dependant on offshore array design.

(the **"Waterford Offshore Station"**)

2.1.18 Transformer:

2 x Transformer located on the offshore platform. The transformer shall be rated to achieve 300 MVA.

(the **"Waterford Offshore Transformer"**)

2.1.19 Metering:

6 x main and check meters for the Facility are required at the connection point on the offshore platforms. The number of meters is dependent on the number of 66 kV array feeders.

(the **"Metering at the Waterford Offshore Connection Point"**)

3 Assumptions

The Prospective Bidder is hereby made aware that any change in the content of any element of the Assumptions may lead to a change in any and all of (1) the Connection Charge (both estimated and actual), (2) the cost of Consents, (3) the timing of the Connection and (4) the Indicative Connection Method. The consequences and effects of such changes will be to the account of the Prospective Bidder. Please note that the list of assumptions contained in this GCI are for informational purposes and a more comprehensive and detailed list of assumptions will be provided in the formal offer following the auction.

3.1 Key Technical Assumptions:

3.1.1 Fibre available to Offshore Windfarm Operator:

48 x fibres

3.1.2 Number of Power Park Modules ("PPM"):

6 x PPMs

3.1.3 Array Voltage:

66 kV

3.1.4 Transformer per OSS Platform:

2 x transformers per OSS platform

3.2 Target Level 0 Schedule:

The target schedule detailed in Appendix 1 is the best estimate made by the Company at the time of the auction. As noted in the Terms and Conditions ORESS Tonn Nua Offshore Wind Auction Ver. 1.0 dated 30 October 2024, the Company may update the Target Grid Delivery Date from time to time ahead of the Grid Standstill Date being confirmed.

3.3 Provisional OSS location GPS Coordinates for auction[1]:

OSS #	Easting	Northing
1	612,199	5,754,886
2	630,241	5,760,914

3.4 Provisional Offshore Substation Zones:

The diagram in Appendix 2 displays the provisional offshore substation zones.

3.5 Landfall and Grid Connection Zones:

A shortlist of options following our multi-criteria analysis (**"MCA"**) for proposed landfall zones and grid connections are provided in Appendix 3. These emerging best performing options will be further analysed to finalise the best performing options going forward. For more details of the multi criteria analysis please refer to the project website Powering Up Offshore South Coast.

3.6 Proposed High Level Equipment Requirements at the Offshore Platform:

The schematic diagram in Appendix 4 is an outline of typical high level equipment requirements at the offshore platform. The equipment positions are not indicative of the final positions and is not a general arrangement drawing. Each party shall be responsible for the installation and commissioning of their own equipment.

[1] Centre point coordinates are indicative for auction purposes. Offshore Substation Zones are subject to change post completion of marine survey.

3.7 Connection Point:

The Point of Common Coupling (**"PCC"**) between the offshore PPM and the Company is specified at the cable termination of the inter-array cables and the switchgear on the offshore substation platform. Diagram outlined in Appendix 5.

3.7 Risks and Opportunities:

The current top 10 risks and opportunities that are associated with Powering Up Offshore South Coast Project are displayed in the risk register outlined in Appendix 6.

4 Interpretations

Capitalised terms used but not otherwise defined herein shall have the meaning assigned to such terms in the Offshore General Conditions of Connection and Use of System (the "**General Conditions**")[2].

Yours sincerely,

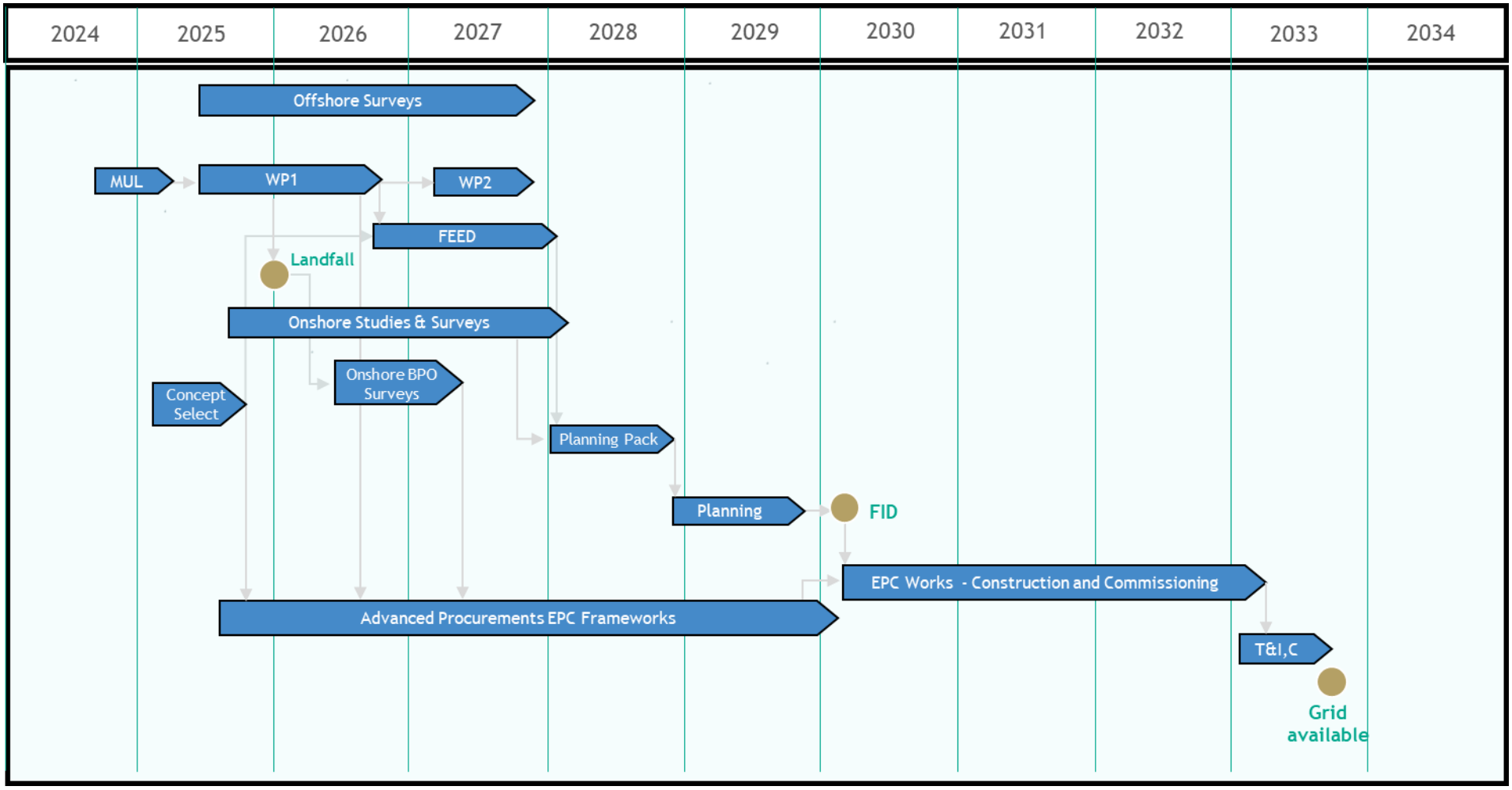
Michael Mahon

Chief Infrastructure Officer

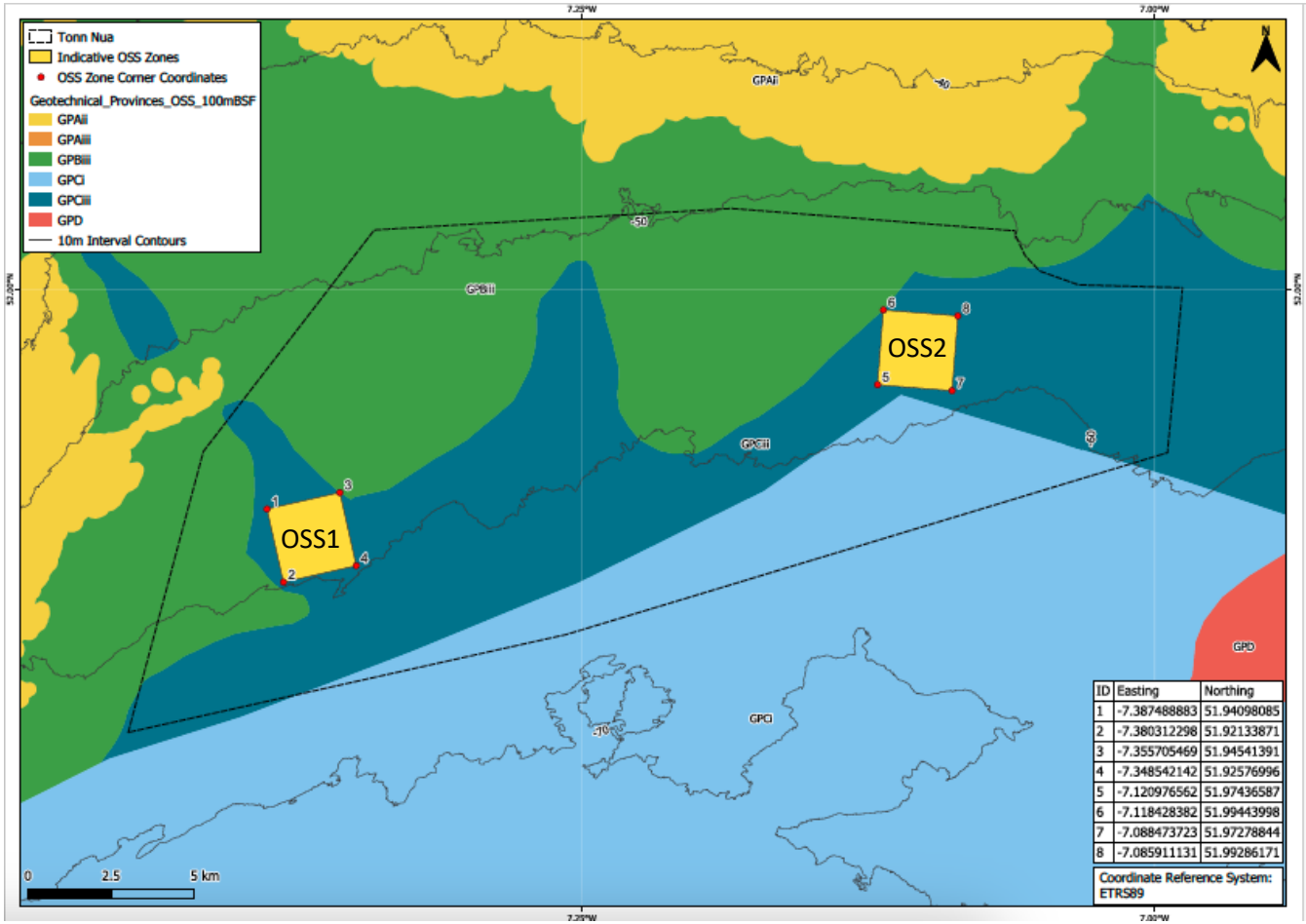
EirGrid plc

[2] **Note**: The Offshore General Conditions of Connection and Use of System are currently under development and will be published in due course.

Appendix 1 – Indicative Level 0 Schedule

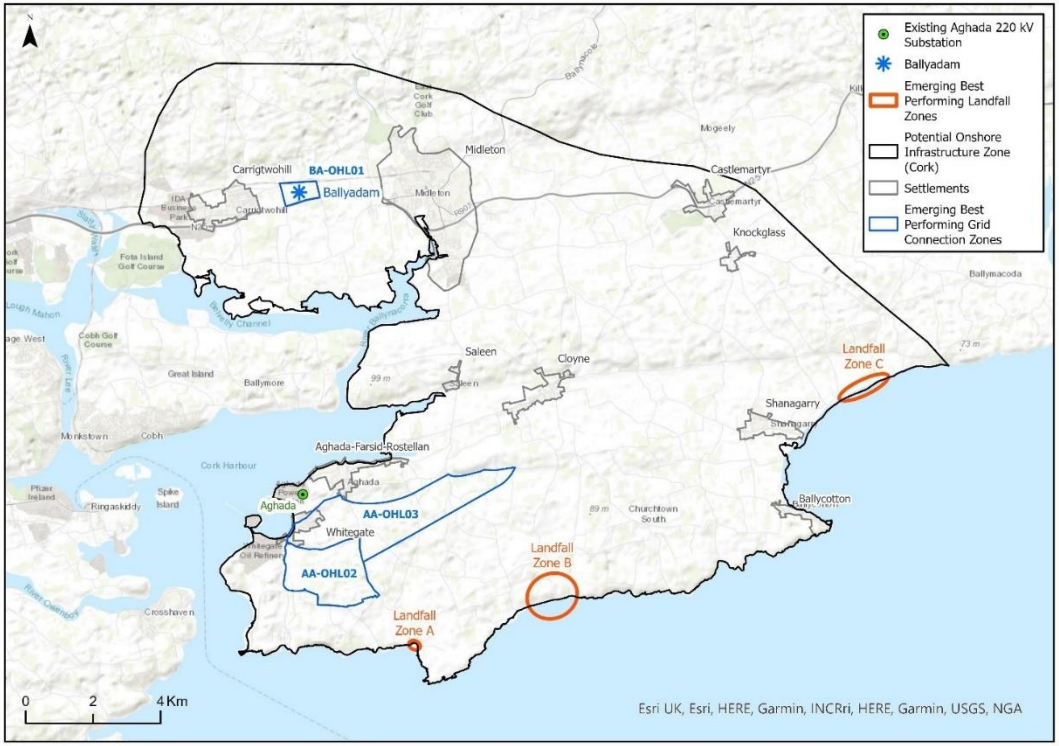


Appendix 2 – Provisional Offshore Substation Zones



Appendix 3 – Landfall & Grid Connection Zones

3.1 – Emerging Best Performing Zones (Cork Area)



Landfall Zones	Description
Landfall Zone A	Located within the townlands of Ballintra East, Inch and Lahard.
Landfall Zone B	Located within the townlands of Shanahee Ballybranagan, Ballycroneen West, Ballyrobin South and Ballycroneen East.
Landfall Zone C	Located within the townlands of Garryvoe Lower, Ballybutler and Ballycrenane.

Emerging Best Performing Grid Connection Zones (Cork):

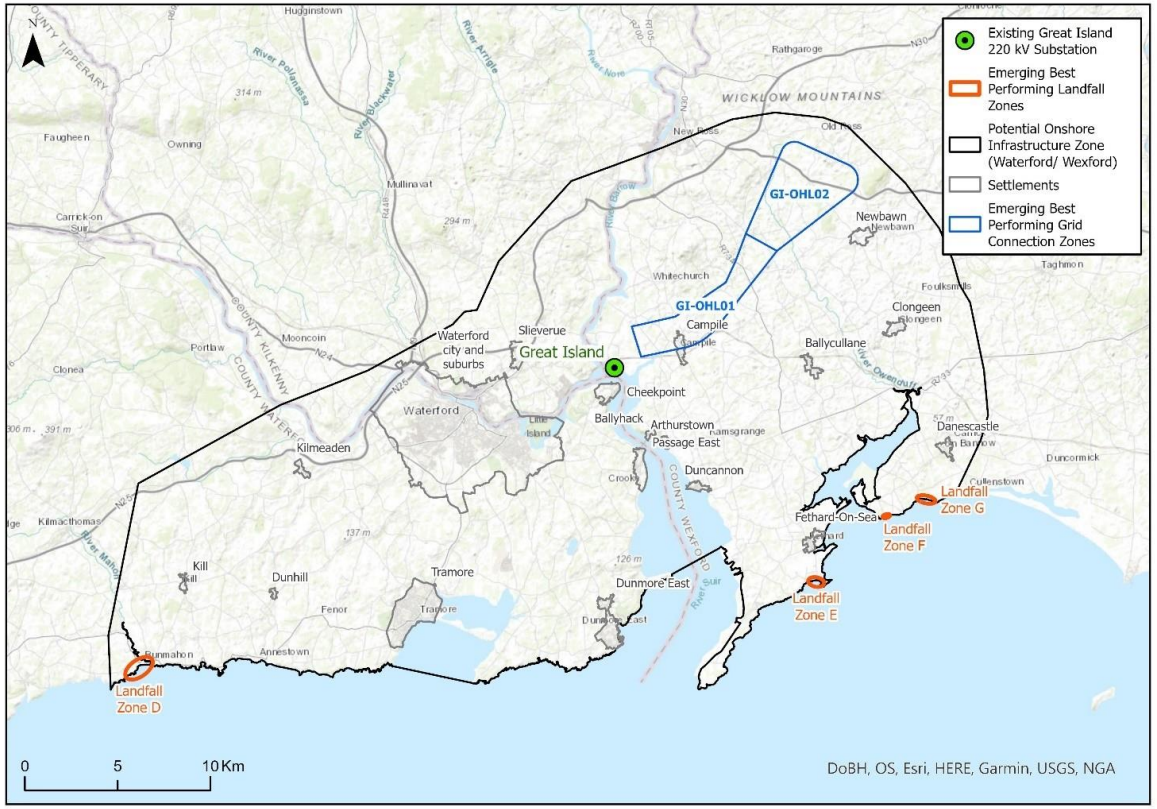
The Areas of Focus for Grid Connection Zones are in proximity to:

- AA-OHL Zone: Loop-in to Aghada - Knockraha 220 kV double OHL in County Cork.
- BA-OHL Zone: Loop-in to Ballyadam OHL in County Cork.

Table 42 Emerging Best Performing Grid Connection Zones (Cork)

Grid Connection Zones	Description
AA-OHL02 (County Cork)	Aghada Loop-in Zone 2
AA-OHL03 (County Cork)	Aghada Loop-in Zone 3
BA-OHL01 (County Cork)	Ballyadam Loop-in Zone 1

3.2 - Emerging Best Performing Zones (Waterford)



Landfall Zones	Description
Landfall Zone D	Located within the townlands of Knockmahon, Templeyvrick, Ballynasissala and Ballynagigla.
Landfall Zone E	Located within the townland of Ramstown.
Landfall Zone F	Located within the townland of Bannow.
Landfall Zone G	Located within the townlands of Blackhall, Haggard, Ballymadder, Loftusacre.

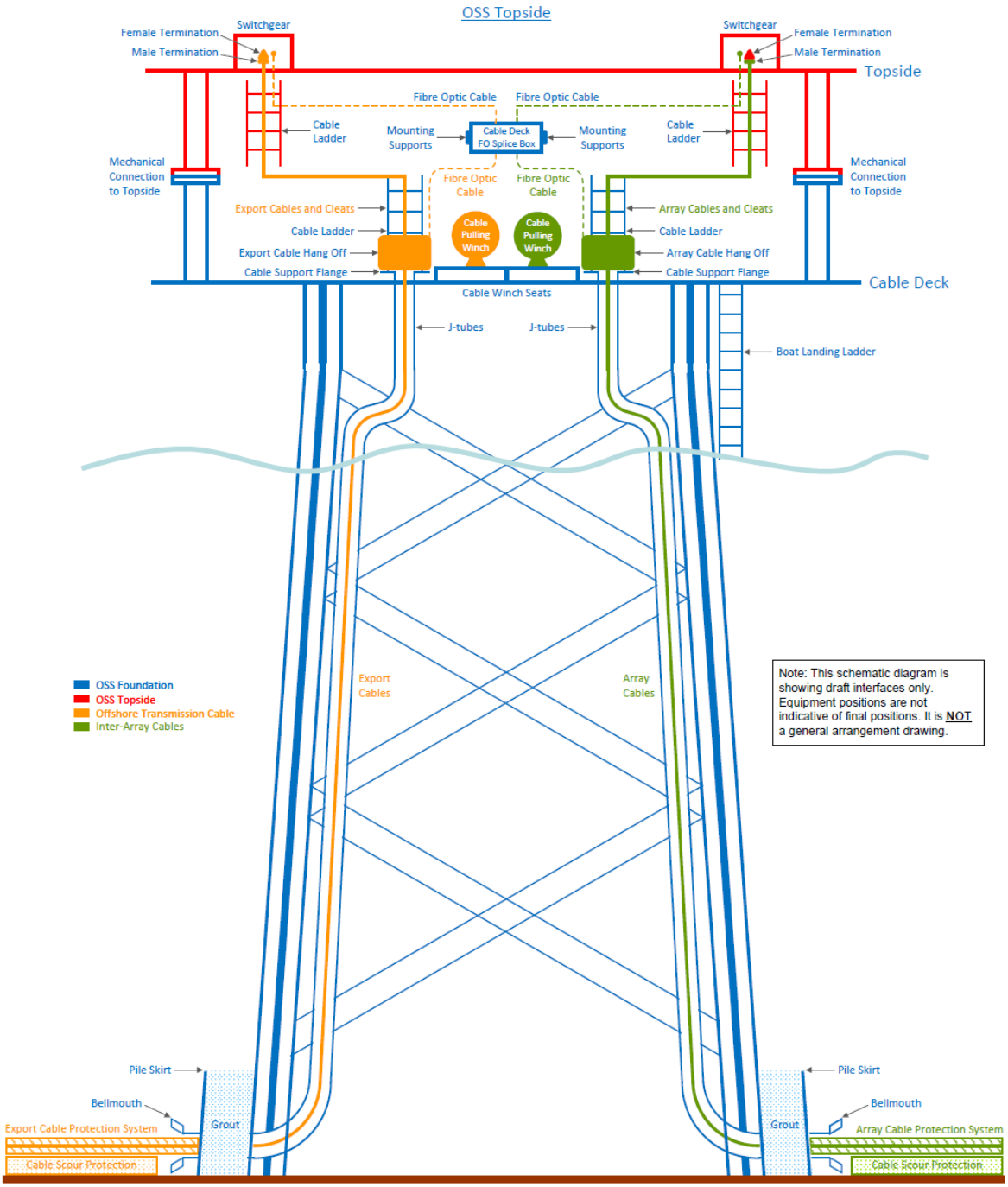
Emerging Best Performing Grid Connection Zones (Waterford/Wexford):

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

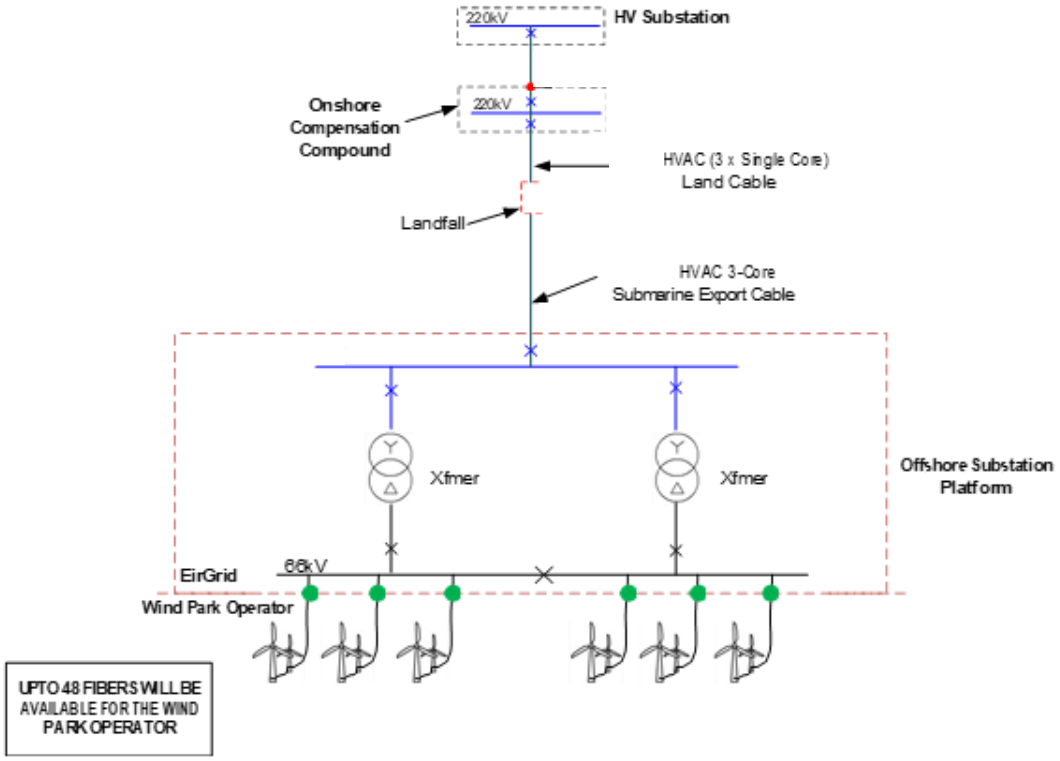
- GI-OHL Zone: Existing Great Island 220 kV Substation, Great Island – Kellis 220 kV OHL and Great Island – Lodgewood 220 kV OHL in County Wexford.

Grid Connection Zones	Description
GI-OHL01 (County Wexford)	Great Island Direct Connection Zone 1
GI-OHL02 (County Wexford)	Great Island Direct Connection Zone 2

Appendix 4 – Proposed High Level Equipment Requirements at the Offshore Platform



Appendix 5 – Offshore Connection Point



Appendix 6 – Risk Register

Open Risks	Closed Risks	Actions Allocated	High Threats	Medium Threats	Low Threats	All Opportunities
78	31	72	14	20	44	3

Threats

Risk ID	Title	Rank	Category	Prob	Cost	Time	Score	Risk Event	Mitigations
002	Limited Capacity in EU Supply Chain	1	Construction	4	5	5	20	Limited Capacity (factory slots, yard availability etc) in supply chain to meet our target schedule	· Early and timely market engagement · Establish early framework agreements · Secure critical supply early
015	Adverse weather during Offshore surveying	2	Surveying	4	5	4	20	Adverse Weather may be worse than expected during surveying works.	· Agree appropriate contractual provisions for weather · Consider suitable weather windows and reflect in schedule · Understand the limitations and workability.
028	Adverse weather during Offshore construction and commissioning	3	Construction	4	5	4	20	Adverse Weather may be worse than expected during construction and commissioning in Offshore.	· Set operation criteria for vessels. · Define season for statistical better window. · Proposed controls for each stage of construction included in the actions.
004	Timeframe Reaching agreements with requirements from statutory authorities	4	Engagement	4	1	4	16	Objection may exist from statutory authorities (County Councils) before planning submission.	· Statutory Stakeholder Management approach to be defined and adopted. · Develop and maintain Stakeholder Management Plan that includes early engagement with statutory authorities. · Master schedule to reflect key decisions etc from statutory stakeholders
094	Delays in obtaining Marine Usage Licence (MUL)	5	Approvals	3	3	5	15	Our MUL licence is delayed which results in delays to commencing marine surveys in 2025.	· Continuous liaison with MARA and DECC on MUL application · Undertake scenario analysis to understand implications of a potentially delayed MUL · Work with Marine Survey Contractor on opportunities in a constrained schedule
086	Availability of heavy lift vessels for OSS Jacket	6	Procurement	3	5	3	15	Limited heavy lift vessel(s) available to meet schedule due to significant Global demand in Offshore wind.	· Continued dialogue with supply chain to understand constraints and opportunities · Consider flexibility options for mobilisation of the vessels · Review potential design solutions and opportunities to overcome this potential challenge
033	Archaeological findings Offshore	7	Surveying	3	5	1	15	Archaeological artifacts identified and additional investigations may be required.	· Consideration of existing archaeological data · Analyse large corridor · Engagement with relevant stakeholders
058	Judicial review to statutory decisions MUL/Planning	8	Approvals	3	5	5	15	A Judicial Review (JR) may be taken on any of the statutory decisions (license /MAC /Planning Applications/NISs/EIA/Annex IV)	· Arrange Legal Review on all key relevant documentation · Undertake schedule scenario analysis to understand potential implications
056	Scope changes during concept Stage	9	Design	4	3	2	12	Scope changes may occur which cause abortive design and revisit consents in concept stage in offshore	· Develop an agreed 'Basis of Design' and confirm in a 'Scope Book' · Robust change control processes to assess impact prior to implementing change · Continuous briefings with relevant key stakeholders
080	Timing of interface with OWF developer	10	Interfaces	3	4	4	12	Project requires information or clarifications from OWF developer to complete the design. Misalignment in Consenting preparation.	· Develop Collaboration Agreement between EirGrid and successful OWF Developer · Clear engineering requirements and Interface Matrix · Aligned schedule with successful developer identifying information required points

Opportunities

Risk ID	Title	Category	Prob	Cost	Time	Score	Risk Event	Mitigations
066	PCI funding	Financial	3	-5		-15	Opportunity to obtain PCI Status which may provide opportunities for grant funding and potentially accelerated consenting	PCI funding application submitted November 2024
022	Use data from Marine Institute (MI) surveys in our proposed areas of interest	Surveying	3	-3	-2	-9	Opportunity to use the survey information MI have collected to inform our proposed survey campaigns - potential to reduce extent of our Geotechnical surveys?	Assess opportunity to align with our scope