Arklow Bank Wind Park 2

Environmental Impact Assessment Report

Volume I: Non-Technical Summary (Revised March 2026)

sse Renewables

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Glossary

Term	Meaning
Arklow Bank Wind Park 1 (ABWP1)	Arklow Bank Wind Park 1 consists of seven wind turbines, offshore export cable and inter-array cables. Arklow Bank Wind Park 1 has a capacity of 25.2 MW. Arklow Bank Wind Park 1 was constructed in 2003/04 and is owned and operated by Arklow Energy Limited. It remains the first and only operational offshore windfarm in Ireland.
Arklow Bank Wind Park 2 – Offshore Infrastructure	"The Proposed Development", Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements under the existing Maritime Area Consent.
Arklow Bank Wind Park 2 (ABWP2) (the Project)	Arklow Bank Wind Park 2 (ABWP2) (the Project) is the onshore and offshore infrastructure. This EIAR is being prepared for the Offshore Infrastructure. Consent for the Onshore Grid Infrastructure and Operations Maintenance Facility has been granted in May and June 2022, respectively. • Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements to be consented in accordance with the Maritime Area Consent. This is the subject of this EIAR and will be referred to as 'the Proposed Development' in the EIAR. • Arklow Bank Wind Park 2 Onshore Grid Infrastructure: This relates to the onshore grid infrastructure for which planning permission has been granted. • Arklow Bank Wind Park 2 Operations and Maintenance Facility (OMF): This includes the onshore and nearshore infrastructure at the OMF, for which planning permission has been granted. • Arklow Bank Wind Park 2 EirGrid Upgrade Works: any non-contestable grid upgrade works, consent to be sought and works to be completed by EirGrid.
Array Area	The Array Area is the area within which the Wind Turbine Generators (WTGs), the Offshore Substation Platforms (OSPs), and associated cables (export, inter- array and interconnector cabling) and foundations will be installed.
Cable Corridor and Working Area	The Cable Corridor and Working Area is the area within which export, inter-array and interconnector cabling will be installed. This area will also facilitate vessel jacking operations associated with installation of WTG structures and associated foundations within the Array Area.
Competent Authority (CA)	The authority designated as responsible for performing the duties arising from the EIA Directive as amended. For this application, the Competent Authority is An Bord Pleanála (ABP).
Environmental Impact Assessment (EIA)	An Environmental Impact Assessment (EIA) is a statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council (EIA Directive).
EirGrid	State-owned electric power transmission system operator (TSO) in Ireland and Transmission Asset Owner (TAO) for the Project's transmission assets.

Term	Meaning
Landfall	The area in which the offshore export cables make landfall and is the transitional area between the offshore cabling and the onshore cabling.
Maritime Area Consent (MAC)	A consent to occupy a specific part of the maritime area on a non-exclusive basis for the purpose of carrying out a Permitted Maritime Usage strictly in accordance with the conditions attached to the MAC granted on 22nd December 2022 with reference number 2022-MAC-002.
Mitigation Measure	Measure which would avoid, reduce, or offset an impact.
Permitted Maritime Usage	The construction and operation of an offshore windfarm and associated infrastructure (including decommissioning and other works required on foot of any permission for such offshore windfarm).
The Application	The full set of documents that will be submitted to An Bord Pleanála in support of the consent.
The Developer	Sure Partners Ltd.

Non-Technical Summary

Summary of Changes

This document has been updated to reflect changes since submission of the planning application to An Bord Pleanála (ABP) (now An Coimisiún Pleanála (ACP)) in June 2024. All references to ABP, should be considered ACP throughout the document.

The changes that have been made are in response to the Request for Information (RFI) that was received by the Developer and matters that have been raised therein. It is confirmed that the information in this Chapter is relevant and appropriate at the point of submission (i.e. March 2026). In summary, the following amendments have been made (please note that this is non-exhaustive):

- This chapter have been adjusted to ensure consideration of the latest information as appropriate to ensure consistency and accuracy.
- Associated cross-references and paragraph numbering have been updated, as appropriate, to reflect the changes listed above.

1 Introduction

1.1 What is this document?

1.1.1.1 This is the Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) that has been undertaken for the offshore elements of Arklow Bank Wind Park 2 (ABWP2), an offshore windfarm. It is provided as a stand-alone document with the full report of the assessment available in the Environmental Impact Assessment Report (EIAR) (Revised March 2026). The NTS presents a summary of the information contained in the EIAR including the main findings of the EIAR undertaken for the Proposed Development in non-technical language. The EIAR, including the NTS, accompanies the Application.

1.1.1.2 Arklow Bank Wind Park 2 (ABWP2) (the Project) is a proposed offshore windfarm situated on and around Arklow Bank in the Irish Sea, approximately 6 to 15 km to the east of Arklow in County Wicklow.

1.1.1.3 ABWP2 is made up of both onshore and offshore components. The subject of this EIAR is the offshore infrastructure only (the Proposed Development).

1.1.1.4 In May 2022, Sure Partners Ltd. (the Developer) received planning approval for the onshore grid infrastructure (OGI) (Case Reference: 310090). In June 2022, the Developer received planning permission for the Operations and Maintenance Facility (OMF) (Planning Register Reference: 21/1316).

1.1.1.5 A Maritime Area Consent (MAC) (Ref:2022-MAC-002) was granted for the Proposed Development in December 2022 and the Developer has prepared a planning application for the Proposed Development which has been submitted to An Bord Pleanála (ABP) and is accompanied by this EIAR.

1.1.1.6 An existing offshore windfarm, Arklow Bank Wind Park 1 (ABWP1) consisting of seven wind turbines with a capacity of 25.2 MW was constructed on Arklow Bank in 2003/04. ABWP1 is owned and operated by Arklow Energy Limited. It remains the first and only offshore windfarm in Ireland. The Proposed Development surrounds the existing ABWP1 wind turbines, ABWP1 does not form part of the Proposed Development.

1.1.1.7 The owner and operator of the ABWP1, Arklow Energy Limited has commenced pre-application consultation (Case Reference OC27.321635) with the appropriate local authorities to decommission ABWP1, which has reached the end of its operating life.

1.1.1.8 The ABWP1 team has begun engaging with the Maritime Area Regulatory Authority (MARA) and is working closely with An Coimisiún Pleanála to agree on the details of the decommissioning and removal works

1.1.1.9 The EIAR provides the environmental information which has been gathered to carry out an assessment of the likely significant effects upon the receiving environment as a result of the construction, operation and decommissioning of the Proposed Development. This NTS presents a summary of the main findings of the EIA undertaken for the Proposed Development, in non-technical language, and a list of all documents being submitted to support the Application submission.

1.1.1.10 For more detailed information, the full EIAR can be accessed on the Developer's website: http://www.arklowbank2offshoreplanning.ie/

1.2 Who wants to develop the Proposed Development?

1.2.1.1 Sure Partners Ltd (SPL) is a wholly owned subsidiary of SSE Plc and is the Developer for the Proposed Development. SSE plc is the leading generator of renewable electricity in the UK and Ireland. It develops and operates low-carbon infrastructure supporting the net zero transition, including onshore and offshore wind, hydro power, electricity transmission and distribution grids and efficient gas-fired generation, alongside providing energy products and services for businesses. FTSE 100 listed, SSE is a major contributor to the UK and Ireland economies, employs 12,000 people and is real Living Wage and Fair Tax Mark accredited.

1.2.1.2 SSE Renewables is a leading developer and operator of renewable energy generation, focusing on onshore and offshore wind farms, hydro-electric power and flexible storage technologies. It is part of electricity infrastructure company SSE plc, a FTSE-100 company with operations across the UK and Ireland, and a presence in carefully selected international markets. In Ireland, SSE is investing over €1 billion in critical electricity infrastructure across the five years to 2030 to deliver secure and affordable homegrown energy. SSE now supplies power to almost 750,000 homes and businesses nationwide each year and directly employs more than 1,300 people throughout the island of Ireland.

1.2.1.3 SSE's investment in low-carbon infrastructure and associated activities make a significant contribution to the Irish economy. Latest economic impact data tracked by professional services firm PwC shows SSE made an estimated €1.1bn contribution to GDP in Ireland in 2024/25, supporting 5,190 jobs (an increase from 4,450 jobs supported in the previous year).

1.2.1.4 SSE Renewables is delivering clean power assets to increase SSE's operational renewable generation capacity as part of this investment drive. This includes delivery of the world's largest offshore wind farm in construction, the 3.6GW Dogger Bank Wind Farm, and progressing the company's 10GW pipeline of offshore wind projects including the 800MW Arklow Bank Wind Park 2. SSE Renewables also owns and operates 800 MW of onshore wind capacity from 32 sites across Ireland including the 174MW Galway Wind Park in Connemara and the 73MW Slieve Kirk Wind Park outside Derry City.

1.3 What is Arklow Bank Wind Park 2?

1.3.1.1 ABWP2 is made up of both onshore and offshore components but it is important to note that this EIAR and Application only relate to the Offshore Infrastructure. However, for context, the key onshore and offshore infrastructure that make up the complete ABWP2 project are:

1.3.1.2 Arklow Bank Wind Park 2 - Offshore Infrastructure:

1.3.1.3 The offshore infrastructure will comprise either 53 or 47 Wind Turbine Generators (WTGs) and two Offshore Substation Platforms (OSPs), to which the turbines will be connected by a network of inter-array cabling. The OSPs will transform the electricity generated by the wind turbines to a higher voltage. The power will be transmitted to shore from the offshore substation platforms using two high voltage alternating current (HVAC) offshore export cables.

1.3.1.4 Arklow Bank Wind Park 2 - Onshore Grid Infrastructure:

1.3.1.5 In May 2022, ABP granted planning approval (Case Reference: 310090) to develop the onshore grid connection infrastructure (OGI). The OGI includes a 220 kV substation at Shelton Abbey, with an associated connection from the new substation to the existing National Electricity Transmission Network. The consented development also includes an underground cable route and associated infrastructure connecting the substation to the landfall point at Johnstown North (approximately 4.5 km north of Arklow harbour), where it will meet the proposed offshore export cables connecting to the Proposed Development.

1.3.1.6 Arklow Bank Wind Park 2 - Operational and Maintenance Facility:

1.3.1.7 In June 2022, the Developer received planning permission from Wicklow County Council (Planning Register Reference: 21/1316) to develop an Operation and Maintenance Facility (OMF) at South Dock, Arklow Harbour. The building and associated pontoon and ancillary infrastructure will serve as the support base for the Project throughout its operational lifetime and will support around 80 long term local jobs. This facility will also incorporate a Sustainable Education Centre.

1.3.1.8 The schematic below (Figure 1) shows the main components of ABWP2.

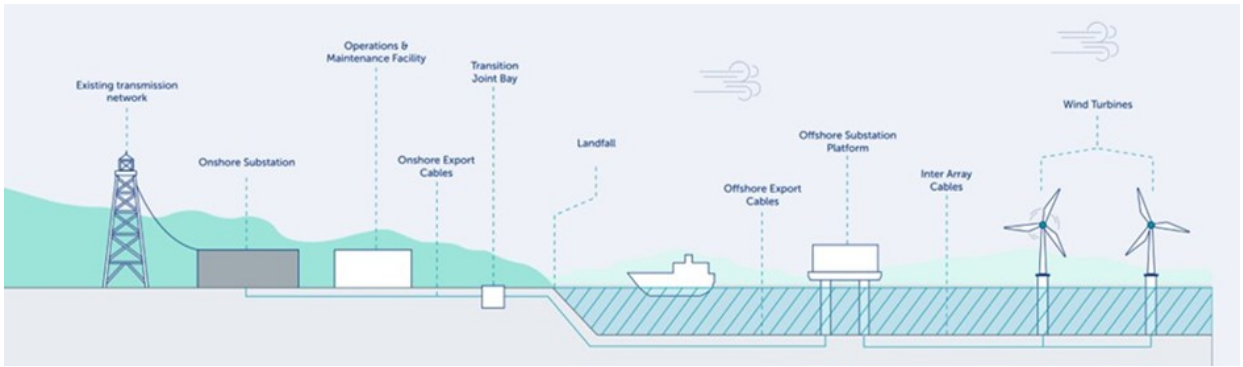

Figure 1: Schematic of Arklow Bank Wind Park 2

1.4 What is the Proposed Development (Offshore Infrastructure of ABWP2) and where will it be built?

1.4.1.1 The Proposed Development is an offshore windfarm, located off the coast of Co. Wicklow and Co. Wexford, on the east coast of Ireland. A Maritime Area Consent (MAC) (Ref 2022-MAC-002) was granted in December 2022 for the construction and operation of an offshore windfarm and associated infrastructure (including decommissioning and other works) on and around the Arklow Bank in the Irish Sea.

1.4.1.2 The Developer is seeking consent for two discrete Project Design Options comprising either 53 or 47 wind turbines. The details of each Project Design Option are set out within the EIAR and the parameters for each have been fully assessed in the EIAR.

1.4.1.3 The Proposed Development includes all offshore infrastructure in the maritime area up to the High Water Mark (HWM). The key components of the Proposed Development include:

- Either 53 or 47 wind turbines with three rotor blades on monopiles foundations;
- Two offshore substation platforms on monopile foundations;
- Subsea inter-array cabling linking the wind turbines to the offshore substation platforms, due to the installation of two OSPs, an interconnector cable may be required to connect the OSPs to each other to provide redundancy and improve the availability of the electrical system;
- Subsea export cabling to connect the windfarm to the Landfall approximately 4.5 km to the north of Arklow at Johnstown North; and
- Scour protection and cable protection, if required.

1.4.1.4 The site of the Proposed Development is shown in Figure 1.1 and comprises an Array Area (the area within which the wind turbines, the offshore substation platforms, and associated cables will be installed) and a Cable Corridor and Working Area (the area within which export, inter-array and interconnector cabling will be installed). The overall Proposed Development site area is 139.4 km^2 and all of the Proposed Development will be seaward of the HWM. The Array Area is located approximately 6 km to 15 km off the coast and covers an area of approximately 63.4 km^2. The Cable Corridor and Working Area extends from the Array Area to the HWM at Johnstown North, approximately 4.5 km north of Arklow Town, Co. Wicklow where the offshore export cables make landfall (the Landfall). The Cable Corridor and Working Area covers an area of approximately 76.0 km^2.

1.4.1.5 Further information on the technical details and methodologies that may be employed for the Proposed Development can be found in the Volume II: Chapter 4: Description of Development (Revised March 2026).

1.5 Why do we need the Proposed Development?

1.5.1.1 There is an urgent and yet unfulfilled need for offshore wind generation in Ireland and urgent action is required to meet Ireland's Climate Change targets as set out in the latest Climate Action Plan 2025. Offshore wind is a critical part of Ireland's strategy to achieve its Climate Change targets of 80% renewables and at least 5GW of offshore wind generation by 2030.

1.5.1.2 Six Maritime Area Consents (MACs) were granted by the Minister for the Environment, Climate and Communications, with a commencement date of 23rd December 2022, representing a potential opportunity for approximately 4.2 GW of offshore wind generation capacity. These Phase 1 developments, which include the Proposed Development, are aiming to commence operation in the late 2020s subject to securing a planning consent. Since then, the Sceirde Rocks Offshore Wind Farm, a 450 MW Phase 1 project, has been formally withdrawn following the developer's decision not to proceed, further reducing the total deliverable offshore wind capacity in the 2030 pipeline. In addition, the Government has concluded the Offshore Renewable Energy Support Scheme (ORESS) 2.1 (Tonn Nua) auction, awarding a 900 MW offshore wind project, however, this project is intended for delivery in the mid-2030s and therefore does not alter the current position regarding capacity available to meet the 2030 targets. Therefore, the capacity of Ireland's offshore wind development pipeline, based on the current pipeline of identified proposed developments, is not yet sufficient to meet the Climate Action Plan targets of at least 5 GW of offshore wind by 2030.

1.5.1.3 The Proposed Development will comprise an offshore windfarm. Offshore wind is a proven technology and can be deployed with confidence, following a grant of planning permission. It will, if consented, export power to the Irish grid export renewable energy power to the Irish grid and will therefore provide a critical contribution to the offshore wind sector in Ireland, to support both the 2030 Irish decarbonisation targets and delivery commitments, and Ireland's energy security. The Proposed Development has the potential to deliver 16% of the Climate Action Plan 2025 offshore wind capacity target for 2030.

1.5.1.4 The Proposed Development possesses several key attributes which demonstrate its suitability to deliver on decarbonisation targets, in the context of other identified and any future pipeline of offshore wind development opportunities. These attributes include:

- the deliverability of the Proposed Development at the proposed location;
- the suitability of the proposed location in relation to important environmental factors;
- the suitability of the grid connection options already identified;
- the potential export capacity from the Proposed Development, and
- progress already made on certain development actions which increases the deliverability of the project (the Proposed Development has secured a grant of planning permission for the onshore grid infrastructure to connect ABWP2 to Ireland's electricity transmission grid and consent was also granted by Wicklow County Council for the associated Onshore Maintenance Facility for the Project).

1.5.1.5 The Irish Government has set ambitious targets of delivering 5GW of offshore wind generation by 2030. The capacity of the six Phase 1 offshore wind development projects that have secured Maritime Area Consents is not sufficient to achieve the 5GW target by 2030 alone and contribution from the next phase of projects will be required[1]. The Proposed Development is one of the most advanced offshore wind developments in Ireland, and given the maturity of its development as set out in 1.5.1.4 it is well positioned to be operational by 2030, and therefore can make a significant contribution to the Irish Governments climate action targets.

[1] Sceirde Rocks Offshore Wind Farm, a 450 MW Phase 1 project, has been formally withdrawn following the developer's decision not to proceed, further reducing the total deliverable offshore wind capacity in the 2030 pipeline

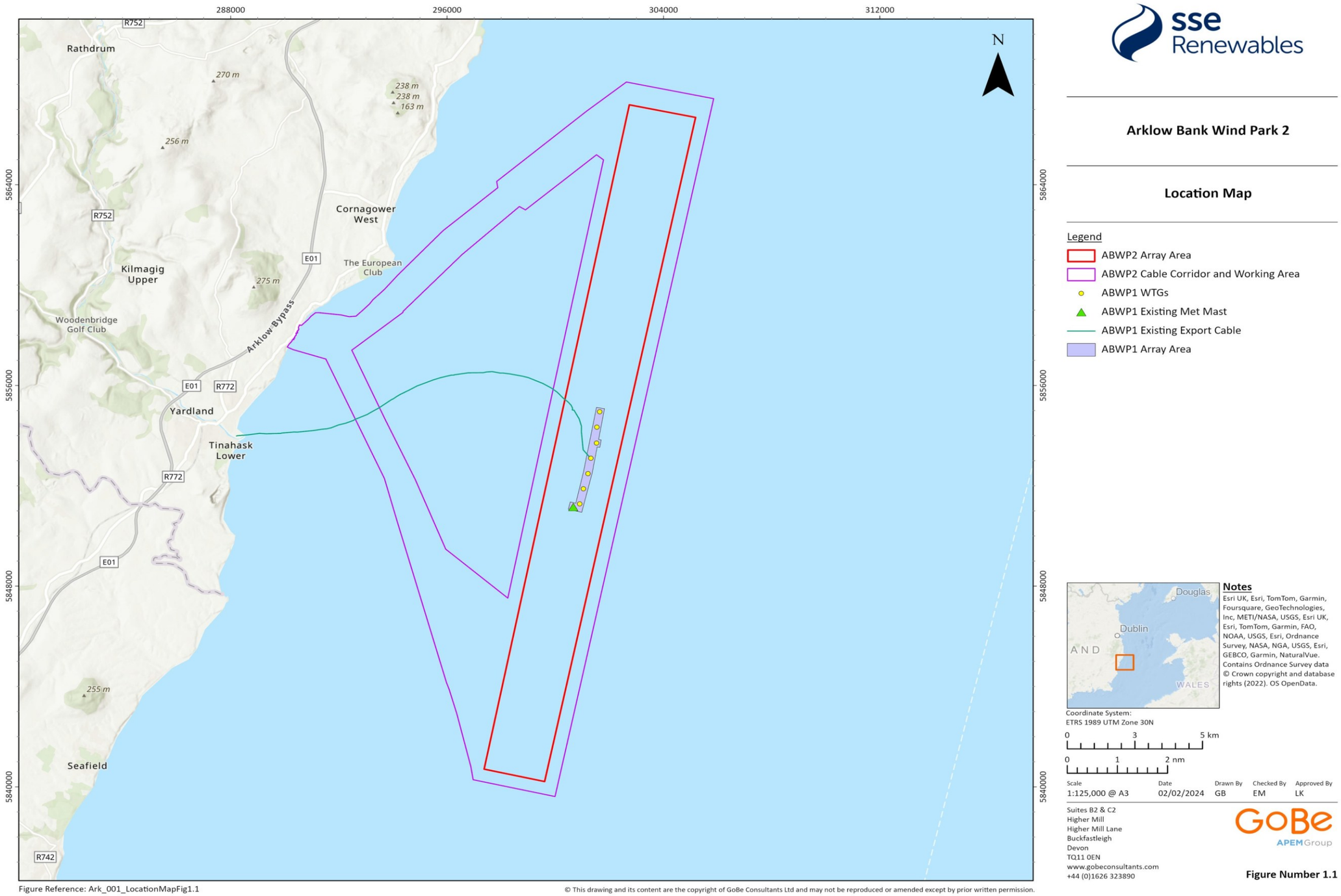

Figure 1.1 Location Map

2 Overview of the Proposed Development - What will be built and how?

2.1 Wind Turbines

2.1.1.1 Wind turbine generators comprise a tower atop a foundation, with a nacelle at its tip which houses the electrical equipment, a gearbox and generator. The turbine blades are attached to the front of the nacelle and capture energy from the wind, transforming it via the generator into electricity. For the Proposed Development, if Project Design Option 1 (consisting of 53 wind turbines) is built, the tips of the turbine blades will be no taller than 273 m above Lowest Astronomical Tide (LAT), and if Project Design Option 2 (consisting of 47 wind turbines) is built, the tips of the turbine blades will be no taller than 287m above LAT. For both options, the clearance between the lowest blade and LAT will be 37m. A typical wind turbine is shown in Figure 2.

Figure 2: Wind turbine

2.2 Offshore Substation Platforms

2.2.1.1 Offshore substation platforms collect the electricity generated by the turbines, via electrical cables, so that it can be transmitted to Irelands electricity transmission grid. The Proposed Development will require two offshore substation platforms located within the Array Area, with one located in the north, and one located in the south. The offshore substation platforms will contain switch gear, transformers, control equipment, auxiliary electrical equipment, cranes, batteries, generators, fire control systems, communication mast and other ancillary equipment.

2.3 Foundations

2.3.1.1 All wind turbines and offshore substation platforms will be secured to the seabed by using monopile foundations that are piled into the seabed.

2.3.1.2 Project Design Options 1 and 2 have defined WTG and OSP layouts with a 100 m limit of deviation applying to each location to allow avoidance of site constraints such as difficult ground conditions during construction.

2.4 Subsea Cables

2.4.1.1 Subsea cables are required to transmit the electricity generated by the wind turbines to the landfall. Cables will connect the wind turbines to substations (inter-array cables with a combined length of between 110 and 122 km), between the offshore substations platforms (interconnector cable with a length of between 25 and 28 km), and from offshore substation platforms to shore (export cables with a combined length of between 35 and 40 km).

2.5 Cable Protection and Scour Protection

2.5.1.1 The preferred method of protecting the subsea cables will be to bury them within the seabed. Where burial of cable is not possible cable protection such as rock placement may be required on the seabed. Additionally, scour protection such as concrete mattresses or rock placement will be installed around foundations to prevent scour holes developing around the structures.

2.6 Confirmatory Surveys

2.6.1.1 Offshore confirmatory surveys will be undertaken as part of the Proposed Development comprising geotechnical, geophysical and environmental surveys.

2.7 Landfall

2.7.1.1 Once the offshore export cables reach the coastline, they will make landfall at Johnstown North, north of Arklow Town, Co. Wicklow where they will connect with the onshore export cables. The cables will be installed using a trenchless technique which involves drilling an underground pathway from the entry pit onshore to the exit pit offshore, through which the offshore export cable is installed, without the need to excavate an open trench across the beach.

2.8 Construction programme

2.8.1.1 A high-level construction programme is provided below and a construction period of four years has been assumed and assessed. The programme illustrates the likely duration of the installation activities associated with each of the major components, and how they may progress in relation to each other.

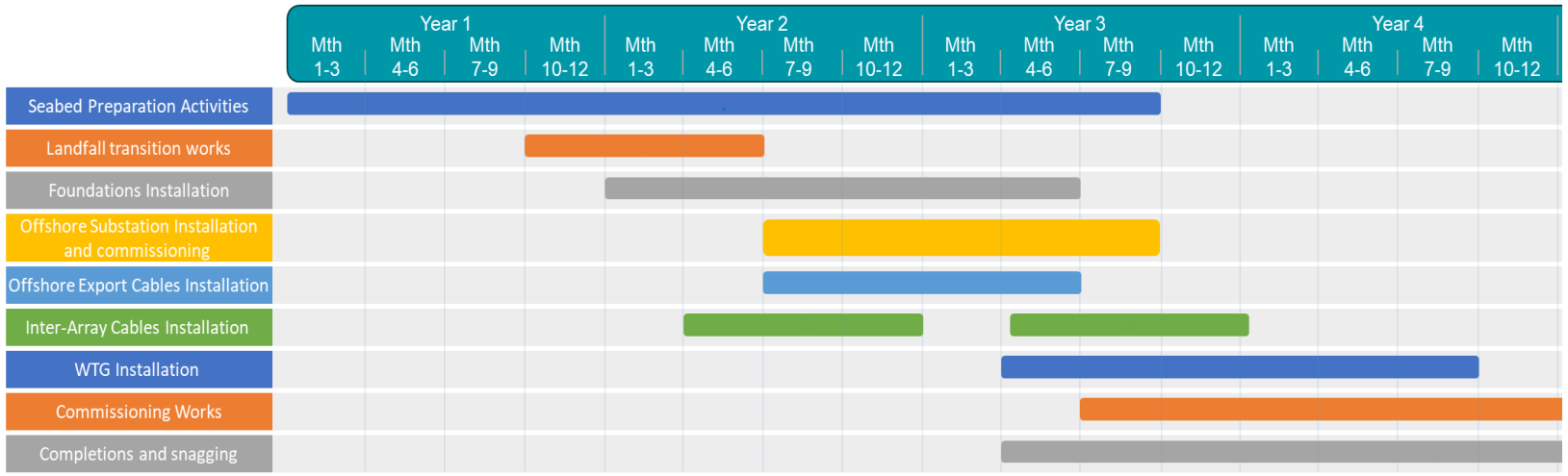

Figure 3: High-level construction programme

2.9 Operation and Maintenance

2.9.1.1 Once construction is complete and the windfarm is fully commissioned, the Proposed Development will enter its operational and maintenance phase. Upkeep of the infrastructure at sea may include routine servicing, component replacements, repairs, remedial works, and painting and cleaning.

2.10 Decommissioning

2.10.1.1 At the end of the operational lifetime of the Proposed Development, it is expected that foundations will be cut 2 m below the seabed level and the foundations, wind turbines and offshore substation platforms removed. Scour and cable protection, and all subsea cables will be left in place.

3 Consideration of Alternatives

3.1 Introduction

3.1.1.1 This section provides a description of the alternatives considered by the Developer during the development of the Proposed Development.

3.1.1.2 This section focuses on the alternative windfarm locations, project designs and layouts including alternative offshore substation platform layouts and cable corridors, construction techniques and technologies, and sets out the main reasons why the final Project Design Options were selected over the alternatives considered. During the project design stage, iterative feedback, between the environmental assessment team (led by GoBe Consultants Ltd) and the engineering design team, influenced the selection of the Proposed Development (including the design options). The environmental assessment process has helped to either avoid, reduce, or minimise the impacts of the Proposed Development on the environment.

3.2 Alternative Offshore Windfarm Locations

3.2.1.1 As part of the alternatives considered, the policy background and the early stage site selection process contextualise the alternative locations that have been considered historically. The sites on the east coast (i.e. Blackwater Bank, Codling Bank, Kish Bank and Arklow Bank) were preferable to those on the west coast (i.e. Donegal Bay, Galway Bay, the Shannon Estuary and off the Cork/Waterford coast) due to rapidly increasing water depths, grid connectivity constraints and limited area being available for development on the west coast. The summary of the selection process between those sites on the east coast demonstrates that Arklow Bank had important geographic and physical advantages and no strong disadvantages compared to other sites that were considered on the east coast.

3.2.1.2 As part of the alternatives assessment process for the Proposed Development, the constraints to offshore wind development in Ireland and the identification of preferred regions were re-examined based on the most up to date data. This re-examination reassessed the most suitable regions for offshore wind development in Ireland and Arklow Bank's suitability to offshore wind on the basis of a wide range of factors including Resource, Engineering, Ports, Environmental Constraints, Land Usage and Interconnection. This assessment identified some key regional constraints to the development of offshore wind in the East, South-east, South-west, West and North regions and the east coast of Ireland was confirmed as a suitable region to develop an offshore wind energy development project.

3.2.1.3 The assessment concluded that the Array Area for the Proposed Development represents a favourable site in the context of Irish offshore wind. An excellent wind resource combined with calmer metocean conditions than in most other areas of the Irish EEZ, and depths well suited to

fixed-bottom foundations, make the site attractive from an engineering perspective. From an environmental perspective, the potential for likely significant effects on fishing, shipwrecks, marine mammals, ornithology, benthic habitats and seascape and landscape were identified. More detailed environmental impact assessments based on additional surveys and desktop assessments have been carried out by technical specialists and are presented in the relevant sections of this NTS.

3.2.1.4 As part of the iterative consideration of alternatives, it is noted that the legislation supporting the existing Foreshore Lease regime (i.e. consenting process for ABWP1) was replaced by a new maritime planning regime in 2021. A re-evaluation of the other east coast sites (i.e. the early-stage site selection process) was undertaken to demonstrate that the conclusions remain valid given technical (baseline conditions and existing permissions), environmental (new European site designations), economic (grid availability and connection) and deliverability (policy framework) considerations.

3.3 Landfall and Alternative Cable Corridor and Working Areas

3.3.1.1 In May 2022, ABP granted planning approval (Case Reference: 310090) to develop the Onshore Grid Infrastructure (OGI) for ABWP2. The OGI includes a 220kV substation at Shelton Abbey, with an associated connection from the new substation to the existing National Electricity Transmission Network (NETN). As part of the Application, the Developer considered alternative Landfall construction techniques and four Landfall locations, and these were reviewed by ABP as part of the determination. The consented development includes an underground cable route and associated infrastructure connecting the substation to the Landfall point at Johnstown North where it will meet the proposed offshore export cables connecting to the Proposed Development. The Landfall is therefore considered as a hard constraint for the assessment of alternative Cable Corridor and Working Areas and OSP solutions as part of this Application.

3.3.1.2 Based on the consented Landfall location, two Cable Corridor and Working Area routes (North – South (N-S) and East – West (E-W)) were considered to connect to the Landfall. The location and number of Cable Corridors and Working Areas is inextricably linked to the number of OSPs required for the Proposed Development. The Developer initially considered two Cable Corridor and Working Areas (as per the OSPs options considered).

3.3.1.3 The potential environmental effects associated with the two potential offshore export cable routes N-S and E-W are similar for each environmental aspect. The N-S Cable Corridor and Working Area was chosen as the selected option for the Proposed Development along with the preferred OSP and Landfall option on the basis that the environmental impacts of the N-S and E-W Cable Corridor and Working Area were comparable but that the E-W Cable Corridor and Working Area is not required as the three OSP solution was not taken forward for the Proposed Development. The comparison of effects indicates that the chosen two OSP option is preferable to the three OSP option as overall, it results in the least potential for environmental impacts in particular on seascape, landscape and visual receptors as well as benthic and seabed disturbance.

3.4 Alternative Offshore Substation Platform (OSP) layouts

3.4.1.1 The purpose of the OSPs is to transform the electricity generated by the wind turbines (at 66 kV) to a higher voltage (220 kV), allowing the power to be efficiently transmitted to shore. The OSP foundations will comprise steel monopile foundations.

3.4.1.2 During the iterative design process, five options for the number of OSPs were considered for the Proposed Development early in the design process:

1) The option to exclude the requirement for OSPs was considered but was discounted as it would require significantly more cables both onshore and offshore. This option would result in increased potential for increased suspended sediment concentrations and associated sediment deposition and associated environmental impacts.
2) The option to include one OSP was considered but was discounted as it would require laying cables to turbines which are diametrically opposite the location of the substation.
3) The option to include four or more OSPs was deemed unlikely to provide the best option from an economical and environmental perspective due to the potential impacts on benthic ecology and visual impacts.
4) The option to include two OSPs allows for the two platforms to be diametrically opposite each other, reducing the longest 66 kV inter-array route length.
5) The option to include three OSPs was considered disadvantageous due to the visual impacts of an additional OSP but was taken forward for further assessment.

3.4.1.3 A layout study was conducted, focusing on the two platform and three platform layouts and a comparison of the key environmental effects of the two options was considered. During the final stages of the design process, two options for the number of OSPs were brought forward for final consideration: three OSPs, or two OSPs.

3.4.1.4 The comparison of effects indicates that the two OSP option is preferable to the three OSP option as overall, it results in the least potential for environmental impacts in particular on seascape, landscape and visual receptors as well as benthic and seabed disturbance.

3.4.1.5 In response to the feedback received from the Irish Coast Guard and the RFI, a change in layout occurred to optimise the search and rescue access and coverage. This has resulted in a move of the OSP locations (i.e. from the locations in the original application to those presented in the RFI response).

3.5 Alternative Landfall Construction Techniques

3.5.1.1 A feasibility exercise to establish the most appropriate cable landing technique at the Landfall was undertaken by the Developer.

3.5.1.2 The study considered open cut trenching and trenchless construction techniques including steerable direct pipe thrusting, micro-tunnelling/pipe jacking and Horizontal Directional Drilling (HDD) to install the offshore export cables at the Landfall.

3.5.1.3 The Developer considered the advantages and disadvantages of using these techniques at the Landfall and carried out a comparison of the environmental effects from open cut and trenchless techniques.

3.5.1.4 Through a process of options appraisal, two trenchless techniques (HDD and direct pipe) were selected as the preferred method for the following reasons:

- Suitability of the ground conditions;
- Minimum impact to environment;
- Accuracy of installation operations; and
- Speed of installation operations.

3.6 Alternative Layouts and designs

3.6.1 Foundation Types

3.6.1.1 Three different types of foundations were initially considered for the Proposed Development to support the wind turbines and the OSPs. These included:

- Monopiles;
- Piled jackets; and
- Gravity bases.

3.6.1.2 Monopile foundations typically consist of a single hollow steel tube installed at depth into the seabed. Jacket foundations comprise a steel lattice structure, with tubular steel members and welded joints, secured to the seabed by hollow steel pin piles. Gravity base foundations are heavy steel, concrete, or steel and concrete structures, sometimes including additional ballast, that sit on the seabed to support the turbine tower.

3.6.1.3 During the development of the Project Design Options, jacket and gravity base foundations were excluded from further consideration, due to being the least favourable options for both technical and environmental reasons. Therefore, monopile foundations were chosen to support the WTGs and the OSPs.

3.6.2 Scale of Windfarm (Number of Wind Turbines)

3.6.2.1 Since the 2020 and 2023 Scoping campaigns, an iterative design process has taken place resulting in a reduction in the proposed number of WTGs forming part of the Proposed Development. The final design presented and assessed in this EIAR is for two layouts comprising either 56 or 47 WTGs. The final layout will be chosen based on the WTG model procured.

3.6.2.2 Reducing the number of turbines has also resulted in reduced environmental impacts, including reduced seabed footprint, reduced operational noise, reduced potential for disturbance and injury to fish, shellfish, sea turtles and marine mammals, reduced seabird collision risk, reduced impacts on commercial fisheries, and reduced visual impact.

3.6.3 Layout

3.6.3.1 Two turbine layouts have been provided for the purposes of the impact assessment. The layouts of the Proposed Development have been designed around a number of physical and environmental constraints:

- Wind speed and direction;
- Water depth;
- Ground conditions;
- Existing infrastructure: the Proposed Development infrastructure will be designed with reference to the location of the existing ABWP1 wind turbines and cables;
- Underwater archaeology (i.e. wrecks): the WTG and inter-array cable layouts have been designed to avoid known wreck sites; and
- Sensitive habitats: the layout of the offshore infrastructure will be refined around any areas of Annex I reef habitat and seed mussel beds.

3.6.3.2 In addition, the two layouts have been informed by layout principles including ensuring a minimum spacing of 500 m is maintained between blade tip to blade tip of all surface infrastructure and 500 m spacing between WTGs and OSPs.

3.6.3.3 In response to the feedback received from the Irish Coast Guard and the RFI, a change in layout has occurred to optimise the search and rescue access and coverage. This has resulted in a reduction in the number of turbines for layout Option 1 from 56 to 53 WTGs, with associated adjustments to the specific locations within the Array Area (i.e. from the locations in the original application to those presented in the RFI response).

3.6.4 Offshore export and interconnector cables

3.6.4.1 During the iterative design process, the following export transmission system technologies were considered as part of the design of the export and interconnector system technology for the Proposed Development: High Voltage Direct Current (HVDC) and 275 kV, 220 kV, 132 kV, 110 kV and 66 kV High Voltage Alternating Current (HVAC). The appraisal of options indicates that the 220 kV HVAC technology option is preferable from a technical perspective and also because it results in the least potential for environmental impacts.

3.6.4.2 Two 220 kV offshore export cables will be required to transmit the power to shore for the Proposed Development, and one 220 kV interconnector cable to connect the OSPs to each other.

3.6.5 Inter-array cables

3.6.5.1 During the iterative design process, two options for inter-array system technologies were considered: 66 kV and 33 kV HVAC. The 66 kV HVAC technology was selected for the Proposed Development as it requires the fewest number of inter-array cables and is unlikely to cause significant effects on coastal process and benthic receptors.

3.6.6 Air Gap

3.6.6.1 The iterative project design process has culminated in raising the turbine's lower blade tip height to 37 m above Lowest Astronomical Tide (LAT) for all wind turbine options for which development permission is being sought.

3.6.6.2 Wind turbine options with air gaps ranging from 22 m to 45 m above LAT were considered. The alternative air gap scenarios considered comprised air gaps of 22 m, 25 m, 35 m, 37 m and 45 m above LAT.

3.6.6.3 An air gap of 37 m above LAT which will deliver significant environmental benefits particularly in relation to collision risk for birds and bats is considered to be the maximum technically feasible in the circumstances of the Proposed Development. Increasing the minimum air gap beyond 37m above LAT would have implications on technical aspects, the related supply chain, availability of suitable installation vessels and spreads and on the feasibility of the development.

3.6.7 Rehabilitation Schedule Options

3.6.7.1 During the iterative design process, options for the complete or the partial removal of monopile foundations, cables and ducting, and scour protection during the decommissioning phase of the project were considered. The criteria used to inform the assessment comprised technical feasibility, harm to people, the potential for restoration of the part of the site to a satisfactory state with particular regard to the seabed, water quality, wildlife, natural habitats landscape or seascape, or to enable it to be restored for the purpose for which it was previously used or for another purpose, and the re-use of removed materials and commercial viability.

3.6.7.2 The option to partially remove the monopiles by cutting below the seabed was selected in consideration of the fact that it was technically feasible and was a proven technology. Due to the reduced scale and complexity of the construction works, it also represented the safest option and had significantly less potential for environmental impacts on the seabed, water quality and wildlife due to the reduced extent and duration of construction. Both the option to completely remove the monopiles, or to partially remove the monopiles enable restoration of the seabed for the purpose it was previously used or for another purpose.

3.6.7.3 The option to retain the ducting and cables *in-situ* was selected in consideration of the fact that it had significantly less potential for environmental impacts and due to the reduced scale of the construction works it also represented the safest option and the most commercially viable option.

3.6.7.4 Where loose rock, rock bags or mattressing is used as scour protection, the option to leave this *in-situ* has been selected as this option reduces the potential for significant environmental impacts particularly impacts on the benthic environment in conjunction with reductions in health and safety risks, and costs. Both the option to completely remove the scour protection or to retain it *in-situ* enable restoration of the seabed for the purpose it was previously used or for another purpose.

4 Potential Environmental Impacts

4.1 Introduction

4.1.1.1 The EIA process has assessed the potential for impacts to arise during the construction, operational and maintenance and decommissioning phases of the Proposed Development on physical, biological and human environment receptors. This section provides a non-technical summary of the revised assessments undertaken for the Proposed Development. Further information on the assessments can be found in each of the topic chapters in Volume II of the EIAR.

4.2 Coastal Processes

4.2.1.1 Coastal processes relate to the action of tidal currents, waves, and sediment transport regimes. The processes associated with the physical environment are not always receptors in themselves, however they are the pathway for impacts on other receptors. Therefore, in addition to informing the assessment of potential impacts on geomorphological/coastal features of designated sites within the Coastal Processes Study Area, the coastal processes assessment is also used to inform the assessment for other disciplines such as benthic subtidal and intertidal ecology, fish, shellfish and sea turtle ecology and marine mammals. Information on coastal processes was collected through a comprehensive desk study which employed computational modelling techniques to quantify the potential impacts. The Developer also completed offshore surveys to gather information on the conditions across the Array Area and Cable Corridor and Working Area.

4.2.1.2 Water depths across the Array Area vary between 0.6 m and 50 m, with the shallower depths corresponding to the sandbank named the Arklow Bank. At the location of the proposed wind turbine structures, the water depths are in the range 18.6 m to 41.8 m. The Arklow Bank is an open-shelf linear sandbank situated, approximately, 6 km to 15 km off the Irish coast near Arklow. The sandbank is approximately 25 km long, orientated roughly north-south and experiences strong tidal currents, breaking waves and active sediment transport. Spring tidal current speeds are in excess of 2 m/s towards the north end of the sandbank on both flood and ebb tides, whilst to the south the peak tidal currents are of the order of 1.4 m/s, with maximum wave heights of less than 6.9 m. Most of the Array Area is characterised by a sandy and slightly gravelly sand seabed. Suspended sediment concentrations are naturally low in the array but increase towards shore.

4.2.1.3 Within the Cable Corridor and Working Area, water depths typically shallow in a landward direction from 40 m. Due to the shallow bathymetry at the Arklow Bank, a large proportion of the waves break when reaching the bank, even during low swell conditions. The bank therefore acts as a natural breakwater and influences the wave climate within the Cable Corridor and Working Area. In relation to tidal currents, there is a more limited slack water period closer to shore and more benign tidal currents in comparison with those on Arklow Bank, with mean spring flood and ebb current speeds of 0.66 m/s and 0.59 m/s. The majority of cable corridor lengths are underlain by Ordovician Slate overlain by reworked glacial and post-glacial sediments. Towards Landfall, whilst sands and gravels predominant, there is an increased presence of finer sediments. At the Landfall, the Arklow coastline shoreward of the Proposed Development is composed of rocky headlands and sandy beaches.

4.2.1.4 A number of potential impacts were identified for both Project Design Options. These comprised:

- Increased suspended sediment concentrations and associated deposition arising as a consequence of construction works (such as seabed preparation, confirmatory surveys, cable laying and foundation installation activities), operational and maintenance works (such as cable repair and replacements and maintenance dredging), and decommissioning

activities (removal of all structures above the seabed, foundations removed to 2 m below the seabed level, and scour protection, cables and cable protection left in situ) . These activities will result in the disturbance of sediments and the consequential release into the water column. In turn, this will give rise to suspended sediment plumes and localised changes in bed levels as the material settles out of suspension; and

- Presence of infrastructure during the operational and maintenance phase leading to changes to tidal currents, wave climate and sediment transport, examined using a comparative study employing numerical modelling techniques. The presence of offshore infrastructure will have the potential to result in a localised blockage of waves and tides, which could lead to changes to seabed and coastal morphology. This blockage will commence when offshore construction begins, increasing incrementally until the array is installed in its entirety.

4.2.1.5 These impacts were predicted to result in effects of **Not significant/Slight** significance on coastal features for both Project Design Options, which is **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches that have been adopted for this Coastal Processes assessment. These include:

- Numerical modelling of hydrodynamic, wave and sediment transport processes;
- The 'evidence base' containing monitoring data collected during the construction, operational and maintenance and decommissioning phases of other offshore windfarm developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.2.1.6 Cumulative impacts on coastal processes from Increased suspended sediment concentrations and associated deposition from the Proposed Development in combination with other developments were assessed. The magnitude of the cumulative impact was concluded to be low for both Project Design Options, however this impact is a pathway rather than the coastal processes being receptors in themselves. As such, the assessment of significance is not applicable.

4.2.1.7 Cumulative impacts on coastal processes from presence of infrastructure from the Proposed Development in combination with the decommissioning of ABWP1, Wicklow Port, Arklow Port and Codling Wind Park were assessed. No significant cumulative effect was concluded for both Project Design Options.

4.2.1.8 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to coastal processes for both Project Design Options.

4.2.1.9 No transboundary effects with regard to coastal processes from the Proposed Development on the interests of other states were predicted.

4.2.1.10 In order to reduce impacts to coastal processes receptors, the Developer has made commitments to implement factored in measures such as rehabilitation of the seabed after decommissioning, the use of scour protection, the burial of cables wherever possible, and ongoing monitoring of these buried cables.

4.3 Marine Water and Sediment Quality

4.3.1.1 Marine water and sediment quality includes consideration of water quality (including changes in compliance of Water Framework Directive (WFD) Water Bodies and Protected Areas, Bathing Waters, Shellfish Waters, and Nutrient Sensitive Areas) and sediment quality (including sediment type, suspended sediment concentration and sediment contamination). Marine water and sediment quality is not just a receptor in its own right, but also provides impact pathways (i.e., changes to water or sediment quality) for other receptors (e.g., marine ecological features).

4.3.1.2 The assessment considered the potential changes in marine water and sediment quality as a result of the Proposed Development during the construction, operational and maintenance and decommissioning phases of the Proposed Development, using existing data and site-specific survey data.

4.3.1.3 Within the study area for this topic, there are three coastal and four transitional WFD water bodies which are monitored and managed under the WFD. There were also six Bathing Waters that are monitored and managed under the Bathing Water Regulations in Ireland. There are no Shellfish Waters or Nutrient Sensitive Areas.

4.3.1.4 The sediments throughout the Array Area and Cable Corridor and Working Area are generally heterogeneous, although site-specific surveys showed that the sediment is composed of mobile sands, slightly gravelly sands, and gravelly sands on Arklow Bank seabed. Sediment type is an important factor when considering the potential presence of contaminants; sediments with a finer particle size provide a higher surface area to volume ratio for adsorption of contaminants which may be released when sediment is disturbed. Sediments with larger particle sizes (e.g. sands) are not associated with anthropogenic contaminants.

4.3.1.5 Sediment contamination concentrations in the Array Area and Cable Corridor and Working Area are generally low. Site-specific analysis of a full suite of contaminants (including, metals, organochlorines, Polychlorinated Biphenyls (PCBs), hydrocarbons, organotins and Polycyclic Aromatic Hydrocarbons (PAHs)) indicate that most sediment samples were below the marine sediment quality guidelines (i.e., the Lower Irish Action Levels). Slightly elevated concentrations of arsenic were recorded at four out of nine stations, but these remained well below upper marine sediment quality guidelines (i.e., the Upper Irish Action Levels) and are consistent with natural background variation. Where guideline levels for individual PAHs are not provided under Irish Action levels, the Canadian Marine Sediment Quality guidelines were applied. Concentrations of individual PAHs were well below these thresholds and were mostly reported below the limit of detection, indicating that environmental levels are low.

4.3.1.6 The Irish Sea is characterised by a high degree of spatial and temporal (both annual and inter-annual) variability in Suspended Sediment Concentrations (SSC). Turbidity (the clarity of water) is caused by a range of small particles in the water column, including organic material. These are typically summarised under the term Suspended Particulate Matter (SPM). It is estimated that the average surface SPM levels associated with the Arklow Bank are relatively low (approximately less than 2.5 mg/l); however, these values represent broad-scale, long-term averages. Higher levels are more common during winter months, and variation is expected throughout the water column, with elevated concentrations typically occurring closer to the seabed due to the resuspension processes. This is supported by site-specific survey data which identifies an average mean near-bed turbidity value of 31.7 mg/l taken from *in situ* measurements.

4.3.1.7 A number of potential impacts were identified for both Project Design Options during all phases of the Proposed Development. These comprised:

- Deterioration in water quality due to suspension of sediments. Temporary increases may occur (i.e. seabed levelling, cable protection remediation and removal of Proposed Development infrastructure), resulting in reduction of water clarity and resuspension of nutrients, altering water quality and primary production levels.;
- Release of sediment bound contaminants from disturbed sediments. Whilst in suspension, there is the potential for sediment-bound contaminants, such as metals, hydrocarbons, and organic pollutants, to be released into the water column and lead to an adverse effect on water quality receptors; and
- Accidental releases or spills of materials or chemicals. The Proposed Development has the potential to result in accidental spills during all phases which has the potential to lower the quality of water physically, chemically, or biologically.

4.3.1.8 These impacts were predicted to result in effects of **Imperceptible – Slight adverse** significance on marine water and sediment quality receptors for both Project Design Options, which is **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches which have been adopted for this marine water and sediment quality assessment. These include:

- The 'evidence base' containing monitoring data collected during the construction and operational and maintenance phases of other developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.3.1.9 Cumulative impacts of the Proposed Development alongside Codling Wind Park, other elements of the ABWP2 project, and other developments were assessed. No significant cumulative effects were concluded for both Project Design Options.

4.3.1.10 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to marine water and sediment quality for both Project Design Options.

4.3.1.11 No transboundary effects with regard to marine water and sediment quality from the Proposed Development on the interests of other states were predicted.

4.3.1.12 In order to reduce impacts to marine water and sediment quality receptors, the Developer has made commitments to implement factored in measures such as the adherence to plans such as an Environmental Management Plan, a Marine Pollution Contingency Plan, and a Vessel Management Plan, rehabilitation of the seabed after decommissioning, and the use of scour protection.

4.4 Airborne Noise

4.4.1.1 Airborne noise considers the effects of noise from the construction, operation and decommissioning of the Proposed Development at the nearest onshore Noise Sensitive Receivers (NSRs). This includes the coastline adjacent to the Proposed Development and NSRs which are located in close proximity of this shoreline from Magherabeg, Co. Wicklow in the north to Ballymoney, Co. Wexford in the south (approximately 29 km stretch of the coastline). NSRs include clusters of houses, villages, towns, nursing homes or caravan parks. and other sites for which preserving tranquillity is important. The airborne noise environment was characterised by site-specific noise monitoring, carried out over the course of August and October 2020, with further visit to the identified NSRs in May 2023.

4.4.1.2 The baseline noise environment across the study area was determined through unattended noise surveys at locations representative of the nearest NSRs to the Array Area. All monitors were in place for a minimum of two weeks.

4.4.1.3 A number of potential impacts on onshore noise sensitive receptors were identified for both Project Design Options. These comprised:

- Increased noise levels at noise sensitive receivers along the coastline from piling during construction. Piling operations will take place intermittently over an approximate six-month period. Piling operations will be weather dependent, but could occur during daytime, evening and/or night-time; and
- Airborne noise impact at noise sensitive receivers along the coast during operation. Operational wind turbines can emit an aerodynamic noise which is a function of many interacting factors including blade design, rotational speed, wind speed and inflow turbulence; it is generally broadband in nature and can display some “character” (swish).

4.4.1.4 In relation to the construction piling noise, without further mitigation, the impact for both Project Design Options was predicted to result in effects of **Slight** during daytime and evening and **Moderate** during the night-time and therefore **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of the following:

- Guidance in relation to acceptable levels of noise from windfarms as contained in the document "Wind Energy Development Guidelines" published by the Department of the Environment, Heritage and Local Government in 2006;
- The ETSU-R-97 assessment procedure specifies that noise limits should be set relative to existing background noise levels at the nearest properties and that these limits should reflect the variation in both turbine source noise and background noise with wind speed. and
- Sound prediction calculations.

4.4.1.5 The piling activity has been assessed using piling industry standard mitigation measures to assess if noise limits can be achieved through the application of physical mitigation measures such as a bellows screen during night-time piling operations.

4.4.1.6 The Developer commits to meeting the BS5228-1 construction noise limits during piling activities during day, evening and night. The industry standard methods of mitigation using a bellows screen will be employed as required during piling operations that take place during night time in the north of the array area during downwind propagation conditions.

4.4.1.7 Airborne noise arising from the operation of the wind turbines for both Project Design Options was predicted to result in **Moderate** effects during daytime, evening and night-time and therefore **Not significant** in EIA terms. The predicted airborne noise levels are well below the measured background noise levels across a range of wind speeds from 3-12 m/s at all receiver locations and this indicates that operational noise levels will be inaudible at all onshore receiver locations.

4.4.1.8 Cumulative impacts of the construction phase piling noise for both Project Design Options with ABWP1, and Codling Wind Park were assessed and predicted to result in effects of **Slight** during daytime and evening and **Moderate** during the night-time and therefore **Not significant** in EIA terms.

4.4.1.9 Cumulative operational noise impacts from wind turbine noise were assessed for both Project Design Options cumulatively with ABWP1, and Codling Wind Park and predicted to result in **Moderate** effects during daytime, evening and night-time and therefore **Not significant** in EIA terms.

4.4.1.10 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to airborne noise for both Project Design Options.

4.4.1.11 No transboundary effects with regard to airborne noise from the Proposed Development on the interests of other states were predicted.

4.4.1.12 In order to reduce impacts to airborne noise receptors, the Developer has made commitments to implement factored in measures such as the adherence to the Construction Noise Management Plan, the use of noise mitigation for piling activities (bellows screen and programming of piling).

4.5 Benthic Subtidal and Intertidal Ecology

4.5.1.1 Benthic ecology refers to the communities of animals and plants which live on or in the seabed and the relationships that they have with each other and with the physical environment. Specifically, this section considers the potential impact of the Proposed Development below the HWM during the construction, operational and maintenance, and decommissioning phases. The benthic subtidal and intertidal ecology of the Proposed Development was characterised via a

series of site-specific surveys using grab sampling, Drop Down Video (DDV) and beam trawls undertaken for ABWP1 and validated by site-specific geophysical and hydrographic surveys for the Proposed Development. For the purposes of the Benthic Subtidal and Intertidal EIAR Chapter, the subtidal portion of the Benthic Subtidal and Intertidal Ecology Study Area is defined as the area encompassing the Array Area, Cable Corridor and Working Area, together with an associated buffer defining the Zone of Influence (ZoI). The ZoI has been established to capture potential secondary (or indirect) impacts occurring below the HWM.

4.5.1.2 The benthic subtidal ecology characterisation showed that the Array Area and Cable Corridor and Working Area are sediments with little or no fixed hard substrates. The Array Area contains a boulder field near the northeast tip of Arklow Bank, sandwaves to the south, and sand habitat across the bank itself. The distribution of sediment across the Cable Corridor and Working Area is medium to coarse sands which coincide with the large presence of sandwaves, megaripples and sediment waves on the approach to Arklow Bank. Conversely, finer grained facies types such as sandy mud to clay are visible in troughs between sandwave crests.

4.5.1.3 There is a relatively low diversity of benthic communities with little variation recorded throughout the time series of data. Species diversity was highest within areas of sandy shell, gravel and cobbles in the northwest, southwest and southeast of Arklow Bank and inshore along the Cable Corridor and Working Area. The communities associated with sandy sediments were extremely species poor in comparison, as would be expected for the more mobile sandy sediments characterising a shallow sandbank.

4.5.1.4 A number of potential impacts on benthic subtidal and intertidal ecology receptors, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Temporary habitat loss/disturbance during all phases as a result of a range of activities including confirmatory surveys, installation and maintenance of cables and associated seabed preparation, and use of jack-up vessels during installation and maintenance activities, and decommissioning works;
- Increased suspended sediment concentrations and associated deposition during all phases as a result of the installation and removal of foundations and the installation and maintenance (repair and reburial) of cables, and decommissioning works;
- Injury and/or disturbance from underwater noise and vibration during the construction phase as a result of a range of activities including impact piling, drilling and unexploded ordnance clearance;
- Long-term subtidal habitat loss/change during the operational phase. Long-term subtidal habitat loss/change will occur where there is placement of all foundation structures, associated scour protection and cable protection;
- Colonisation of hard substrates during all phases. The presence of wind turbines and offshore substation platform foundations, associated scour protection and cable protection may result in the colonisation of these hard structures by organisms;
- Alteration of seabed habitat arising from effects on physical processes during the operational phase through changes to locations of sediment scour, sediment deposition and grain size distribution;
- Removal of hard substrates during the decommissioning phase resulting in loss of benthic colonising communities;
- Increased risk of introduction and spread of invasive and non-native species during all phases due to the introduction of hard structures (allowing for colonisation) and the presence and movement of vessels (due to colonisation of vessel hulls and structures and ballast water discharge); and

- Accidental pollution during all phases. Accidental release of pollutants (such as fuel, lubricants, and anti-fouling biocides) from vessels or equipment associated with the Proposed Development has the potential to occur as a result of the installation/removal of foundations, presence of operational equipment, confirmatory survey activities, maintenance activities, and the installation of cables.

4.5.1.5 These impacts were predicted to result in effects of **Imperceptible** to **Moderate** significance for both Project Design Options, which are **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches have been adopted for this benthic subtidal and intertidal ecology assessment. These include:

- Numerical modelling of sediment transport processes;
- The 'evidence base' containing monitoring data collected during the construction, operational and maintenance and decommissioning phases of other offshore windfarm developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.5.1.6 Cumulative impacts from the Proposed Development in combination with other elements of the ABWP2 project and other developments were assessed and predicted to result in effects of imperceptible to **Moderate** significance for both Project Design Options, which are **Not significant** in EIA terms.

4.5.1.7 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to benthic subtidal and intertidal ecology for both Project Design Options.

4.5.1.8 A screening of transboundary impacts has been carried out and has identified that there was potential for significant transboundary effects with regard to Benthic Subtidal and Intertidal Ecology from the Proposed Development upon the interests of other states. The only impact that has the potential to result in transboundary effects is the effect of underwater noise and vibration during the construction phase (particularly piling), which has the potential to result in injury and/or disturbance to benthic, subtidal and intertidal ecology receptors. However, the magnitude of the impact for pilling was deemed to be Low and the sensitivity of the receptors considered to be Low. The effect will, therefore, be of **Slight adverse** significance, which is **Not significant** in EIA terms.

4.5.1.9 In order to reduce impacts to benthic, subtidal and intertidal ecology receptors, the Developer has made commitments to implement factored in measures such as the adherence to plans including an Environmental Management Plan, an Invasive Non-Indigenous Species Management Plan, a Marine Pollution Contingency Plan, and a Vessel Management Plan, confirmatory surveys and micrositing of infrastructure around sensitive Annex I habitats, adherence to soft start piling ramp ups and maximum piling energies, rehabilitation of the seabed after decommissioning, burial of cables where possible, and the use of scour protection.

4.6 Fish, Shellfish and Sea Turtle Ecology

4.6.1.1 The fish, shellfish and sea turtle ecology assessment focusses on the fish, shellfish and sea turtle communities within the vicinity of the Proposed Development and the wider western Irish Sea. These include fish and shellfish populations which are important to commercial fisheries in the area (although the effects on those fisheries themselves have been assessed in the commercial fisheries assessment), species which are protected under national and international conservation legislation, and those species which provide an important ecological function to the marine ecosystem (e.g. as food for birds, marine mammals and larger fish species). The fish, shellfish and sea turtle ecology in the vicinity of the Proposed Development was characterised through a detailed desktop review of existing studies and datasets, with reference to site-specific data

collected during benthic and geophysical surveys and during digital aerial surveys which recorded basking shark and sea turtles.

4.6.1.2 Fish communities within the western Irish Sea are dominated by flatfish such as dab, plaice, and sole, with shark/ray species such as thornback ray, cuckoo ray and spurdog being widespread throughout the region. The offshore deeper waters are characterised by species such as Atlantic cod, Poor cod, Atlantic herring, European hake, whiting and mackerel. During the site-specific surveys species found included plaice, dab, poor cod, sand eel, common dragonet and sand goby. Other commercial species noted included whiting, lemon sole, sole, John dory and turbot. Spawning areas for lemon sole and sprat occur throughout the southwest Irish Sea, including the Fish, Shellfish and Sea Turtle Ecology Study Area and within the Proposed Development. The Fish, Shellfish and Sea Turtle Ecology Study Area also overlap, across a small stretch at the northern extent, with spawning grounds for cod, ling, mackerel, sandeel, sole, plaice and whiting. Nursery grounds for anglerfish, plaice, sand eel, haddock, cod, whiting, lemon sole and herring overlap with the Fish, Shellfish and Sea Turtle Ecology Study Area as well as the elasmobranchs; spotted ray, tope and thornback ray (Ellis *et al.*, 2012).

4.6.1.3 The most abundant shellfish species include Norway lobster, great scallop, brown crab, European lobster, razor clam, common whelk, and blue mussel. Seed mussel beds occur in inshore areas along the east coast of Ireland, with key areas around Wicklow, to the north of the Array Area, and along the Wexford coastline. A large portion of the Irish Sea, including the waters off the coast of Wicklow, is considered important as a nursery and spawning area for several species of fish and shellfish.

4.6.1.4 The western Irish Sea is also home to a number of fish species that migrate between the sea and freshwater at different stages of their lifecycle, with Atlantic salmon and sea trout being the two commercially important species in the region. Sea lamprey, river lamprey, and twaite shad are known to occur in inshore waters off the coast of county Wicklow.

4.6.1.5 Basking sharks migrate through the Irish Sea during spring and summer, with the Celtic and Irish seas recognised as an important area for overwintering and migration for this species. During the site-specific surveys for the Proposed Development a single basking shark was recorded in October 2019. Sea turtle species, including leatherback turtle, loggerhead turtle and Kemp's Ridley turtle are likely to occur in Irish waters, with leatherback turtle being the most regularly reported turtle species around the coast of Ireland.

4.6.1.6 A number of potential impacts on fish, shellfish and sea turtle receptors, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Temporary habitat loss/disturbance during all phases as a result of a range of activities including use of jack-up vessels during installation/maintenance activities, installation and maintenance of cables, associated seabed preparation and decommissioning works;
- Increased suspended sediment concentrations and associated deposition during all phases as a result of the installation and removal of foundations and the installation and maintenance (repair and reburial) of cables;
- Injury and/or disturbance from underwater noise and vibration during pile driving and cable installation during the construction and operational and maintenance phases as a result of a range of activities including impact piling, cable laying, dredging, drilling, rock placement, operational wind turbine noise, and unexploded ordnance clearance;
- Injury and/or disturbance to basking shark and sea turtles from increased vessel activities during all phases. There is the potential for these vessel movements to lead to an increased risk of collision on basking shark and leatherback turtle as these species may occur near the surface and therefore within the potential zone of impact;

- Accidental pollution from vessels, vehicles, equipment and machinery during all phases. Accidental release of pollutants (such as fuel, lubricants, and anti-fouling biocides) from vessels or equipment associated with the Proposed Development has the potential to occur as a result of the installation/removal of foundations, presence of operational equipment, maintenance activities, and the installation of cables;
- Long term habitat loss during the operational and maintenance phase as a result of the presence of footprint of foundation structures, scour protection and cable protection;
- Alteration of seabed habitats during the operational and maintenance phase arising from changes in physical processes as a result of the presence of foundation structures, scour protection and cable protection; and
- Changes in Electromagnetic Fields (EMF) from subsea electrical cabling during the operational phase. The conduction of electricity through subsea power cables has the potential to emit a localised EMF which could potentially affect the sensory mechanisms of some species of fish and shellfish.

4.6.1.7 These impacts were predicted to result in effects of **Imperceptible** to **Moderate** significance for both Project Design Options, which are **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches have been adopted for this fish, shellfish and sea turtle ecology assessment. These include:

- Numerical modelling of sediment transport processes;
- The 'evidence base' containing monitoring data collected during the construction, operational and maintenance and decommissioning phases of other offshore windfarm developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.6.1.8 Cumulative impacts arising from the Proposed Development together with other developments were assessed and predicted to result in effects of **imperceptible** to **moderate** significance for both Project Design Options, which are **Not significant** in EIA terms.

4.6.1.9 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to fish, shellfish and sea turtle receptors for both Project Design Options.

4.6.1.10 The majority of impacts on fish, shellfish and sea turtle receptors will be restricted to within the Proposed Development boundaries and the area immediately surrounding it. The only impact with the potential to have transboundary effects is underwater noise during the construction phase (particularly piling), which has the potential to result in injury and/or disturbance to fish, shellfish and sea turtle receptors which may migrate to and from other states. However, the effect was assessed to be of **Slight adverse** significance, which is **Not significant** in EIA terms.

4.6.1.11 In order to reduce impacts to fish, shellfish and sea turtle receptors, the Developer has made commitments to implement factored in measures such as the adherence to plans including an Environmental Management Plan, a Marine Mammal Mitigation Plan, a Marine Pollution Contingency Plan, and an Environmental Vessel Management Plan, confirmatory surveys and micrositing of infrastructure around sensitive Annex I habitats, adherence to soft start piling ramp ups and maximum piling energies, rehabilitation of the seabed after decommissioning, burial of cables where possible, and the use of scour protection.

4.7 Marine Mammals

4.7.1.1 The marine mammal assessment considers the effects of the Proposed Development on cetaceans (i.e. whales, dolphins and porpoises) and pinnipeds (i.e. seals). The characterisation of the marine mammal baseline was informed by an extensive literature review of existing studies and data sets to provide an overview of species ecology, behaviour, and distributions, combined

with data from site-specific surveys including historical survey data (2000 to 2009) along with aerial survey data (2018 to 2020 and 2023 to 2025), monthly land-based seal surveys (2025) and data from Marine Mammal Observer (MMO) sightings during the site investigation surveys carried out for the Proposed Development.

4.7.1.2 A review of the data available have confirmed the likely presence of the following marine mammal species in the vicinity of the Proposed Development and these species have been considered within the assessment:

- Harbour porpoise;
- Bottlenose dolphin;
- Risso's dolphin;
- Short-beaked common dolphin (hereafter referred to as common dolphin);
- Minke whale;
- Grey seal; and
- Harbour seal.

4.7.1.3 Site-specific surveys undertaken between 2000 and 2009 recorded harbour porpoise as the most commonly observed species in the vicinity of the Proposed Development, with Risso's dolphin occasionally recorded and small numbers of seals (primarily grey seal) also noted. Site-specific aerial surveys carried out between 2018 to 2020 and 2023 to 2025 also found that harbour porpoise were the most frequently sighted species, with grey seal and common dolphin also recorded frequently. All of these species are internationally protected, with some listed as features of designated sites in Irish or other states territorial waters.

4.7.1.4 A number of potential impacts on marine mammal species, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Injury and/or disturbance to marine mammals from underwater noise and vibration during pile-driving during the construction phase. Impacts to marine mammals from underwater noise range from changes in behaviour and masking that affect communication and listening space, and/or locating prey, displacement and disturbance, injury and mortality;
- Injury and/or disturbance to marine mammals from vessel activities during all phases. Impacts include injury or death due to collision with vessels, avoidance behaviour or displacement, and masking of vocalisations or changes in vocalisation rate;
- Changes in the fish and shellfish community affecting prey resources during all phases. Marine mammals are dependent on fish and shellfish species as prey resources, therefore there is potential for indirect effects on marine mammals to occur as a result of direct impacts on fish and shellfish and/or their supporting habitat;
- Accidental pollution during all phases, from vessels and equipment associated with the activities related to the Proposed Development;
- Changes in Electromagnetic Fields (EMF) from subsea electrical cabling during the operational and maintenance phase. The conduction of electricity through subsea power cables has the potential to emit a localised EMF which could potentially affect the sensory mechanisms of marine mammal species;
- Injury and/or disturbance to marine mammals from underwater noise during unexploded ordnance clearance during the construction phase; and
- Injury and/or disturbance from underwater noise during site surveys during the construction and operational and maintenance phase.

4.7.1.5 These impacts were predicted to result in effects of **Imperceptible** to **Slight** significance, which is **Not significant** in EIA terms. This conclusion was reached following an assessment that used

a combination of complementary approaches have been adopted for this marine mammals assessment. These include:

- Underwater noise modelling of pile driving activities;
- The 'evidence base' containing monitoring data collected during the construction, operational and maintenance and decommissioning phases of other offshore windfarm developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.7.1.6 Cumulative impacts arising from the Proposed Development together with other projects and plans in relation to disturbance from underwater noise was assessed and predicted to result in effects of **Slight adverse** significance (**Not significant** in EIA terms) to marine mammal receptors.

4.7.1.7 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to marine mammal receptors for both Project Design Options.

4.7.1.8 The following potential transboundary impacts have been identified in regard to effects of the Proposed Development: injury and/or disturbance from underwater noise and vibration during pile-driving, injury and/or disturbance to marine mammals from vessel activities, changes in the fish and shellfish community affecting prey resources, changes in EMF from subsea electrical cabling, accidental pollution, injury and/or disturbance to marine mammals from underwater noise during UXO clearance and injury and/or disturbance to marine mammals from underwater noise during site surveys. Overall, it is concluded that there will be no significant transboundary effects arising from the Proposed Development.

4.7.1.9 In order to reduce impacts to marine mammal receptors, the Developer has made commitments to implement factored in measures such as the adherence to plans including an Environmental Management Plan, a Marine Mammal Mitigation Plan, a Marine Pollution Contingency Plan, and an Environmental Vessel Management Plan, adherence to soft start piling ramp ups and maximum piling energies, rehabilitation of the seabed after decommissioning, burial of cables where possible, and the use of scour protection.

4.7.1.10 Monitoring has been proposed to understand the potential for behavioural disturbance to marine mammals during piling. Such monitoring will include both visual monitoring and the use of Passive Acoustic Monitoring.

4.8 Offshore Ornithology

4.8.1.1 Offshore ornithology refers to those species of seabirds, sea ducks and divers which depend on the marine environment for food resources and only make landfall for the purposes of breeding and resting. The offshore ornithological interests of the Proposed Development were characterised through a detailed desktop review of existing studies and datasets, data from 43 months of site-specific digital aerial surveys carried out between 2018 and 2020 and 2023 and 2025, boat based kittiwake flight height surveys (2025 – 2026), Vantage point surveys (2025), Passive Acoustic monitoring (2025), Black-legged kittiwake GPS tacking (2024 and 2025) and six surveys of the intertidal area at the Landfall.

4.8.1.2 These surveys indicated that the Array Area supports a typical range of seabird species found in the Irish Sea such as the cormorants, guillemots, razorbills, puffins, red-throated divers, and gannets. Numbers and presence of these species vary across different seasons. Higher densities of seabirds were generally observed during migration periods and over winter, with the site appearing to be of comparatively low importance during the breeding season.

4.8.1.3 A number of potential impacts on offshore ornithology, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Disturbance and displacement during all phases due to installation and construction vessel and helicopter activity, vessel and helicopter activity during the operational and maintenance phase, and presence of working vessels and crews and the movement and noise associated with decommissioning works;
- Indirect disturbance and displacement resulting from changes to prey and habitats during all phases;
- Collision risk during the operational and maintenance phase. There is a potential risk of collision with the wind turbine rotors and associated infrastructure resulting in injury or fatality to birds which fly through the Array Area whilst foraging for food or commuting between breeding sites and foraging areas; and
- Barriers to movement (barrier effect) during the operational and maintenance phase. Birds could be prevented from accessing foraging grounds and the journey to or from foraging grounds could be made more energetically expensive, particularly during the breeding season.

4.8.1.4 These impacts were predicted to result in effects of **Not significant** to **moderate** significance for both Project Design Options, which are **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches have been adopted for this offshore ornithology assessment. These include:

- Numerical modelling of collision and displacement effects and Population Viability Analysis;
- The 'evidence base' containing monitoring data collected during the construction, operational and maintenance and decommissioning phases of other offshore windfarm developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.8.1.5 Cumulative impacts from the Proposed Development together with other offshore windfarms were assessed and predicted to result in effects of **Negligible** to **Moderate** significance for both Project Design Options, which are **Not significant** in EIA terms.

4.8.1.6 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to offshore ornithology for both Project Design Options.

4.8.1.7 Potential transboundary impacts have been identified in relation to offshore ornithology, including disturbance and displacement, indirect disturbance and displacement resulting from changes to prey and habitats, collision risk, and barrier effect. Overall, it was concluded that there will be no significant transboundary effects arising from the Proposed Development.

4.8.1.8 In order to reduce impacts to offshore ornithology receptors, the Developer has made commitments to implement factored in measures such as a lower blade tip height of 37 m from LAT to minimise the seabird collision risks since the abundance of birds decreases with increasing height above the sea surface, the limitation of the number of turbines to 53 or 47 (depending on the Project Design Option), and the adherence to plans including an Environmental Vessel Management Plan and Environmental Management Plan.

4.8.1.9 Project-specific monitoring combined with participation in the East Coast Monitoring Group, to discuss and agree potential strategic monitoring initiatives in relation to offshore ornithology has been committed to by the Developer.

4.9 Offshore Bats

4.9.1.1 A total of nine bat species are resident in Ireland. A number of these species are known to be migratory outside of Ireland, but due to lack of significant scientific evidence their migratory routes to/from Ireland are not well understood. There is currently no publicly available empirical evidence of offshore bat activity (e.g. migration, commuting, foraging) within Irish marine waters; however, this is due to an absence of survey rather than evidence that such activity does not occur. Information on bats within the offshore environment was collected through a detailed desktop review of existing studies and datasets. Offshore bat monitoring surveys were conducted within the Array Area between 2021 – 2025 and at a location on a headland in the vicinity of the Proposed Development. The findings of the offshore surveys confirm the presence of two bat species (Leisler's bats "*Nyctalus leisleri*", Nathusius' pipistrelle "*Pipistrellus nathusii*", soprano pipistrelle "*Pipistrellus pygmaeus*" and common pipistrelle "*Pipistrellus pipistrellus*") in the offshore environment and within the vicinity of the Proposed Development. Two bat species were recorded on the headland surveys (Nathusius' pipistrelle "*Pipistrellus nathusii*" and Leisler's bats "*Nyctalus leisleri*")

4.9.1.2 A number of potential impacts on offshore bats, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Disturbance and displacement due to anthropogenic noise including noise from pile-driving and other construction activities such as vessel and helicopter use during all phases. This has the potential to disturb or displace offshore bats present within the Array Area due to auditory impacts and/or habitat-related impacts;
- Disturbance and displacement due to increased vessel activity and infrastructure presence during all phases as a result of obstruction or change in flightpath impacts;
- Disturbance and displacement due to artificial lighting at night during all phases. This can lead to bats orienting towards or away from light of certain wavelengths during migration or be attracted by insect concentrations near illuminated areas;
- Indirect disturbance and displacement resulting from changes to insect prey during all phases; and
- Collision and barotrauma (results from exposure to the pressure variations caused by rotating turbine blades) during the operational and maintenance phase.

4.9.1.3 **No significant effects** were predicted for these impacts for both Project Design Options.

4.9.1.4 These conclusions have been reached following an assessment that used a combination of complementary approaches that have been adopted for this offshore bat assessment. These include:

- The 'evidence base' containing monitoring data collected during the construction, operational and maintenance and decommissioning phases of other offshore windfarm developments (especially in similar environmental settings); and
- Analytical assessments of project-specific data.

4.9.1.5 Cumulative impacts arising from the Proposed Development together with other elements of the ABWP2 project, ABWP1 and other Phase 1 Projects were assessed. No significant cumulative effects would be expected to occur associated with both Project Design Options and other projects.

4.9.1.6 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no effects of greater significance than the individual impacts in isolation are predicted to occur with respect to offshore bats for both Project Design Options.

4.9.1.7 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to offshore bats from the Proposed Development upon the interests of other states. No significant transboundary effects would be expected to occur within this assessment for all impacts. It should be noted that most species (including vagrants assumed to be in Ireland from the UK) were screened out of the assessment due to their aversion to lighting impacts.

4.9.1.8 In order to reduce impacts to offshore bats, the Developer has made commitments to implement factored in measures such as a lower blade tip height of 37 m from LAT which minimises potential bat collision risks for Nathusius pipistrelle bats since most activity occurs below 40m, and the limitation of the number of turbines to 53 or 47 (depending on the Project Design Option).

4.9.1.9 The Developer is committed to participating in the East Coast Monitoring Group, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats.

4.10 Commercial Fisheries

4.10.1.1 Commercial fishing is defined as any form of fishing activity legally undertaken for taxable profit. The activity of Irish and non-Irish commercial fishing fleets operating in the vicinity of the Proposed Development was characterised through desktop review and analysis of available fisheries data, through site-specific vessel traffic and fisheries activity scouting surveys, and through direct consultation with local fishermen via the Fisheries Liaison Officer (FLO).

4.10.1.2 Whelks are the principal species targeted in the vicinity of the Proposed Development, accounting for the majority of landings. Potting for whelks takes place all year round, whilst some local vessels also target other species seasonally potting for lobster and crab, trawling for whitefish, herring and sprats, and netting for whitefish. Beam trawling also takes place targeting species such as rays, plaice, sole and cod, and mussel dredging takes place in the autumn. Fishing grounds are primarily targeted by local vessels under 12 m in length. Activity by Irish vessels over 12 m in length and activity by foreign fishing vessels was described to be very low. It was noted during consultation that areas in the vicinity of the Proposed Development support a seed mussel fishery. Mussel dredgers participating in this fishery must hold a valid mussel seed authorisation. Fishing generally takes place in the autumn, subject to seed availability.

4.10.1.3 A number of potential impacts on commercial fisheries and aquaculture, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Loss of grounds or restricted access to fishing grounds as commercial fisheries will be prevented from fishing were works are taking place and from the direct footprint of the infrastructure and any safety zones;
- Displacement of fishing activity into other areas. Localised exclusion from fishing grounds may lead to temporary increases in fishing effort in other areas that may already be exploited thereby leading to gear conflict and increased fishing pressure on adjacent grounds;
- Interference with fishing activities due to vessel traffic for the Proposed Development and changes to shipping patterns as a result of navigational channels leading to interference with fishing activity (i.e. reduced access due to physical presence of vessels);
- Increased steaming times to fishing grounds due to the implementation of advisory safety zones and advisory clearance distances could result in some short term increases in steaming distances and steaming times to alternative fishing grounds;
- Effects on commercially exploited species. Temporary noise and vibration, and seabed disturbances may displace commercially important fish and shellfish populations from the area; and

- Potential for gear snagging. The subsea cables and associated cable protection, together with any structures (and associated scour protection) on the seabed represent potential snagging points for fishing gear and could lead to damage to, or loss of, fishing gear.

4.10.1.4 These impacts were predicted to result in effects of **Not significant** to **Slight** significance for both Project Design Options, which are **Not significant** in EIA terms. The exception to this is the loss of grounds or restricted access to fishing grounds for the Irish whelk potting fleet within the Cable Corridor and Working Area where the effects were predicted to be moderate significance which was significant in EIA terms.

4.10.1.5 In order to mitigate the potential effects on the whelk fishery operating across the Cable Corridor and Working Area during the construction phase, the Developer has produced and submitted a Fisheries Management and Mitigation Strategy with the Application which provides principles for co-existence and details further mitigation, including cooperation agreements and associated payments. With respect to any cooperation agreements and associated payments, an evidence based procedure will be followed. With this mitigation in place, the effect is reduced to **Slight** which is **Not significant** in EIA terms.

4.10.1.6 Cumulative impacts arising from the Proposed Development together with other projects, plans and activities were assessed and predicted to result in effects of **Not significant** to **Slight adverse** significance, which is **Not significant** in EIA terms.

4.10.1.7 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to commercial fisheries for both Project Design Options.

4.10.1.8 The potential transboundary impacts considered for commercial fisheries were:

- Effects on commercial fishing fleets as a result of impacts from the Proposed Development on commercial fish stocks in the waters of other States; and
- Effects on commercial fishing fleets from all States as a result of constraints on foreign commercial fishing activities operating in the Proposed Development. These effects may include reduction in access to fishing grounds and potential displacement of fishing effort from the Proposed Development to alternative fishing grounds in other States, which will have direct implications to that fishing ground.

4.10.1.9 Overall, it was concluded that there will be no significant transboundary effects arising from the Proposed Development for both Project Design Options.

4.10.1.10 In order to reduce impacts to commercial fisheries, the Developer has made commitments to implement factored in measures such as the adherence to plans including a Fisheries Management and Mitigation Strategy, an Environmental Management Plan, a Lighting and Marking Plan, timely and efficient posting of Notice to Mariners and navigational warnings, implementation of advisory safety zones, the development of a Cable Burial Risk Assessment to determine suitable cable burial depths, and rehabilitation of the seabed after decommissioning.

4.11 Shipping and Navigation

4.11.1.1 Shipping and navigation refers to all surface vessel traffic passing within the vicinity of the Proposed Development. The vessel traffic was characterised via collection of vessel "track" data, visual observations from an on-site survey vessel, and consultation including with local marine stakeholders.

4.11.1.2 Based on the data studied, and the consultation carried out, vessels in the area of the Proposed Development do not tend to cross the Arklow Bank due to the shallow water depths representing a navigational hazard. The majority of commercial vessels pass offshore of the Arklow Bank, with smaller vessel types (e.g., fishing and recreation) more commonly being found inshore. The

majority of traffic in the area is comprised of passing cargo vessels, however fishing and recreational traffic is also present, noting that these smaller vessels largely remain coastal.

4.11.1.3 A number of potential impacts on shipping and navigation receptors, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Displacement of vessel traffic (displacement of established commercial vessel routes resulting in increased journey times and distances) due to the structures to be built and ultimately decommissioned, and associated construction, maintenance and decommissioning works);
- Port access restrictions (restricted access in and out of ports in proximity to the Proposed Development);
- Increased collision risk (displacement of established commercial vessel routes resulting in an increased number of vessel to vessel encounters and consequently an increased risk of a vessel to vessel collision);
- Increased allision risk (increased risk of a vessel to structure allision, either involving a powered or drifting vessel);
- Cable interaction risk (risk of snagging by vessel anchors or fishing gear and possible reduction in under keel clearance); and
- Diminished emergency response capability.

4.11.1.4 These impacts were predicted to result in effects of Broadly Acceptable to Tolerable and As Low As Reasonably Practicable (ALARP) which are **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches have been adopted for this shipping and navigation assessment. These include:

- Collision and allision modelling of sediment transport processes;
- The use of a Formal Risk Assessment approach; and
- Analytical assessments of project-specific data.

4.11.1.5 Cumulative impacts arising from the Proposed Development together with other projects, plans and activities were assessed and predicted to result in effects of **Broadly Acceptable** to **Tolerable** and ALARP which are **Not significant** in EIA terms.

4.11.1.6 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to shipping and navigation for both Project Design Options.

4.11.1.7 Potential transboundary impacts have been identified for displacement of vessel traffic (including impacts on vessel routeing to and from international ports). Overall, it was concluded that the effects will be of **Broadly Acceptable** significance, which is **Not significant** in EIA terms.

4.11.1.8 In order to reduce impacts to shipping and navigation, the Developer has made commitments to implement factored in measures such as the charting of all structures on nautical and electronic charts, implementation of a buoyed construction/decommissioning area, adherence to plans including a Marine Pollution Contingency Plan, a Vessel Management Plan, an Emergency Response Cooperation Plan, a Lighting and Marking Plan, timely and efficient posting of Notice to Mariners and navigational warnings, implementation of advisory safe passing distances, the development of a Cable Burial Risk Assessment to determine suitable cable burial depths, and rehabilitation of the seabed after decommissioning. The Developer is also committed to undertaking vessel traffic monitoring throughout all stages of the Proposed Development.

4.12 Civil and Military Aviation

4.12.1.1 Civil and military aviation considers the impact of the Proposed Development on Air Traffic Control (ATC) radar, meteorological radar, airspace designations including low flying areas and military practice areas, and airspace used by helicopters. Wind turbines can present physical obstructions to aircraft in flight and impact radar systems. The baseline environment was characterised through a desktop review using comprehensive aviation documentation and charts in order to identify potential aviation receptors.

4.12.1.2 The Proposed Development is situated in an area of uncontrolled airspace established from the surface up to 2,500 feet (ft) above mean sea level (AMSL) in the northern portion of the Array Area, and up to 4,500 ft AMSL and Flight Level (FL) 75 (7,500 ft) in the remaining portion of the Array Area. Above these altitudes, controlled airspace is established up to FL 245 (24,500 ft). The desktop review indicated that the aviation stakeholders potentially affected by the Proposed Development include the Irish Aviation Authority (IAA) due to potential effects on Dublin Airport Radar, the Department of Defence (DoD) due to potential effects on military aviation at Casement Aerodrome and the Irish Coast Guard due to potential effects on search and rescue helicopter operations.

4.12.1.3 A number of potential impacts on civilian and military aviation operations, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development were identified. These comprised:

- Creation of physical obstacles affecting air traffic during all phases. Wind turbines can be difficult to see from the air, particularly in poor meteorological conditions, leading to a potential increase in obstacle collision risk; and
- Interference with civil and military radar systems during the operational and maintenance phase. These effects include the desensitisation of radar in the vicinity of wind turbines, shadowing and the creation of unwanted returns which can confuse air traffic controllers making it difficult to differentiate between aircraft and those radar returns resulting from the detection of wind turbines.

4.12.1.4 These impacts were predicted to result in effects of **Not significant** for both Project Design Options, which is **Not significant** in EIA terms. This conclusion was reached following an assessment that consider all relevant civil and military aviation receptors in the vicinity of the Proposed Development, the distances between these receptors and the Proposed Development, and the potential impact pathways that could arise.

4.12.1.5 Cumulative impacts from the Proposed Development on air traffic from the creation of physical obstacles arising from the Proposed Development together with other offshore renewable energy developments were assessed and predicted to result in effects **Not significant** in EIA terms for both Project Design Options.

4.12.1.6 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to civil and military aviation for both Project Design Options.

4.12.1.7 No transboundary effects with regard to civil and military aviation from the Proposed Development on the interests of other states were predicted.

4.12.1.8 In order to reduce impacts to civil and military aviation, the Developer has made commitments to implement factored in measures such as the installation of appropriate lighting and marking of the wind turbines and offshore substation platforms in accordance with the Irish Aviation Authority (IAA) guidance, the implementation of a Lighting and Marking Plan and an Emergency Response and Cooperation Plan, the charting of all structures on aeronautical charts and the timely and efficient notifications of any lighting failures.

4.13 Seascape, Landscape and Visual Amenity

4.13.1.1 A seascape, landscape and visual impact assessment has been completed for the Proposed Development using methods derived from best practice guidance. The baseline environment for seascape, landscape and visual characteristics was collected through a combination of detailed desktop review of existing studies and datasets alongside a range of site-specific surveys in 2020 and 2023, and preparation of visibility maps that show the potential for visibility of the Proposed Development.

4.13.1.2 A number of potential impacts on seascape, landscape and visual amenity associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Seascape impacts during all phases;
- Landscape impacts during all phases;
- Landscape designation impacts during all phases; and
- Visual impacts within theoretical visibility of the Proposed Development during all phases.

4.13.1.3 The seascape and landscape assessment concluded **significant effects** for both Project Design Options in relation to the following receptors:

- Visual receptors at twenty-four of the twenty-nine viewpoints;
- Visual receptors experiencing views of night-time lighting at three of the four representative viewpoints assessed;
- Visual receptors travelling along parts of the R750, the Dublin – Cherbourg ferry routes, and the railway between Greystones and Wicklow. Receptors along other parts of these routes will not experience significant effects.
- One seascape character receptor, the South East Irish Sea Regional Seascape Character Area (RSCA13), within which the Array Area is located.
- Three landscape character receptors, comprising Coastal (Wexford) Landscape Character Area, Northern Coastal Area (Wicklow) Landscape Character Area, and Southern Coastal Area (Wicklow) Landscape Character Area.
- One landscape designation, the Bray Head Special Amenity Area Order.

4.13.1.4 There is no difference in the level of effect identified for any of the receptors in relation to each of the Project Design Options. Each Project Design Option is therefore considered to have the same impact on the seascape, landscape and visual resource.

4.13.1.5 These conclusions were reached following an assessment that used a combination of complementary approaches have been adopted for this seascape, landscape and visual amenity assessment. These include a full and proportionate level of assessment combining 'preliminary' (requiring desk-based data analysis) and 'detailed' (requiring site surveys and investigations in addition to desk-based analysis) assessments. This detailed assessment includes primary baseline data collection (for example through site surveys), quantitative and qualitative assessment methodologies, and modelling such as zone of theoretical visibility analysis (and wireline / photomontage visualisations).

4.13.1.6 The assessment has considered cumulative effects, arising from the addition of the Proposed Development together with a range of other proposed and potential developments including other Phase 1 Projects. The seascape and landscape assessment concluded significant cumulative effects for both Project Design Options in relation to the following receptors:

- Visual receptors at six of the twenty-nine viewpoints.
- Visual receptors travelling along parts of the R750, the Dublin – Cherbourg ferry route, and the railway line between Greystones – Wicklow. Receptors along other parts of these routes will not experience significant effects.

- Two seascape character receptors, comprising the South East Irish Sea Regional Seascape Character Area (RSCA13) and the Irish Sea, Sandbanks and Broad Bays Regional Seascape Character Area (RSCA14), where the cumulative effect resulting from the addition of the Proposed Development with the influence of both Codling Wind Park and Dublin Array, will likely result in the seascape being partially defined by the influence of offshore wind turbines as a key characteristic of the seascape character.
- Three landscape character receptors, comprising the Southern Coastal Area (Wicklow) Landscape Character Area, Northern Coastal Area (Wicklow) Landscape Character Area and Coastal (Wexford) Landscape Character Area.

4.13.1.7 The layout of wind turbines and offshore substation platforms have been designed in such a way as to minimise the impacts on seascape, landscape and visual amenity where possible. White aviation lights will be fully cut off so that practically no light will be emitted below the horizontal. However, despite the use of factored in measures significant adverse impacts on the seascape and landscape of the area cannot be mitigated.

4.13.1.8 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no project lifetime or receptor-led effects greater than individually assessed effects were concluded with respect to seascape, landscape and visual amenity for both Project Design Options.

4.13.1.9 There is no potential for significant transboundary effects with regard to SLVIA from the Proposed Development upon the interests of other states due to the separation distances between the Proposed Development with Wales and England and the curvature of the Earth.

4.13.1.10 In order to reduce impacts to seascape, landscape and visual amenity, the Developer has made commitments to implement factored in measures such the adherence to plans including a Lighting and Marking Plan, the use of dimmable aviation lighting, the timely and efficient sharing of information with the relevant navigational and aviation stakeholders for inclusion in nautical and aeronautical charts, and the rehabilitation of the seabed after decommissioning.

4.14 Marine Archaeology and Cultural Heritage

4.14.1.1 Marine archaeology and cultural heritage considers the impact of the Proposed Development on marine archaeology receptors (including shipwrecks and palaeo-landscapes) and cultural heritage receptors (including terrestrial archaeological and architectural heritage sites). The baseline environment for marine archaeology and cultural heritage was collected through a detailed desktop review of existing studies and datasets and informed by review of site-specific marine geophysical survey data and fieldwork including a shore-based walk-over inspection of the landfall and a survey of cultural heritage assets.

4.14.1.2 Arklow Bank is situated geographically in an area known as the Irish Platform. The seabed in the area is dominated by sand and gravel deposited by the abating ice front during the last Glaciation (pre-12,000 Before Present (BP)). The surface sediment is mobile, formed due to reworking following relative sea level rise post-10,000 BP. The southeast coast of Ireland is not associated with the potential for prehistoric landscapes to be discovered within seabed deposits but there is potential for earlier horizons to be discovered. There are 165 recorded historic shipwreck events associated with the Arklow Bank and its immediate sea area. Following archaeological review of the marine geophysical survey data, the total number of wreck sites within the study area for marine archaeology is 64. The distribution of known shipwrecks and locations of potential shipwrecks as indicated on Arklow Bank highlights the northern half of Arklow Bank as an area with clusters of shipwrecks. The walkover inspection of the landfall did not identify any exposed archaeological features.

4.14.1.3 A total of 12 cultural heritage sites within theoretical visibility of the Proposed Development were identified for assessment, including archaeological complexes and the locations of buildings registered in the National Inventory of Architectural Heritage.

4.14.1.4 A number of potential impacts on marine archaeology and cultural heritage, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Sediment disturbance and deposition leading to effects on known and unknown heritage assets during all phases. The disturbance of the sediment/seabed deposits can result in the exposure of known marine archaeology receptors (i.e. shipwreck) and the exposure of as yet unknown shipwreck, unknown buried palaeo-landscapes and associated sites. Such activities can also result in the burial of known receptors;
- Direct impact on historic shipwreck sites during all phases;
- Direct impact on buried palaeo-landscapes during all phases. Works for the Proposed Development will disturb the seabed, and have the potential to expose previously unrecorded buried palaeo-landscapes, and may also bury such locations on the sandbank and on the seabed between the bank and the shore; and
- Indirect impact on the setting of terrestrial cultural heritage assets during all phases due to the visibility of the wind turbines.

4.14.1.5 These impacts were predicted to result in effects of **Moderate** significance for both Project Design Options, which are **Not significant** in EIA terms. This conclusion was reached following an assessment that used a combination of complementary approaches have been adopted for this offshore ornithology assessment. These include:

- Numerical modelling of sediment transport processes; and
- Analytical assessments of project-specific data.

4.14.1.6 Cumulative impacts on marine archaeology and cultural heritage arising from the Proposed Development together with other elements of the ABWP2 project and other developments, were assessed. Overall, it is concluded that there will be significant cumulative effect arising from the Proposed Development alongside other projects/plans for indirect impact on the setting of terrestrial cultural heritage assets during the construction and operational and maintenance phases. No other significant cumulative effects are predicted for the Proposed Development alongside other projects/plans.

4.14.1.7 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to marine archaeology and cultural heritage for both Project Design Options.

4.14.1.8 No transboundary effects with regard to marine archaeology and cultural heritage from the Proposed Development on the interests of other states were predicted.

4.14.1.9 In order to reduce impacts to marine archaeology and cultural heritage, the Developer has made commitments to implement factored in measures such the adherence to plans including an Archaeological Management Plan, confirmatory surveys to identify any archaeological constraints, the establishment of Archaeological Exclusion Zones around each known shipwreck site and potential archaeological site, within which no installation activities should take place, the use of marine archaeologists operating under licence from the Department of Housing, Local Government and Heritage, and the rehabilitation of the seabed after decommissioning.

4.15 Infrastructure and Other Users

4.15.1.1 The infrastructure and other users assessment considers the potential impacts of the Proposed Development on other existing users and uses of the marine environment including recreational

receptors, offshore energy projects, cable and pipeline operators, marine aggregate extraction and disposal activities, and communications infrastructure. The baseline environment for infrastructure and other users was characterised through a detailed desktop review of existing studies and datasets, supplemented with information provided from stakeholder consultation.

4.15.1.2 Other users of the marine environment in the vicinity of the Proposed Development include a number of recreational receptors carrying out activities such as sailing, boat angling, shore angling, and diving. There are two main ports (Arklow and Wicklow), which mainly service fishing fleets and coasters, and periodic maintenance dredging is required to maintain sufficient draught for vessel access. There are areas of potential aggregate resource in the vicinity of the Proposed Development, however no licences have been granted for extraction. Other infrastructure in the vicinity of the Proposed Development includes the seven wind turbines and export cable route associated with ABWP1, with no other active cables or pipelines in proximity to the Proposed Development.

4.15.1.3 A number of potential impacts on infrastructure and other users receptors, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Potential for damage to ABWP1 export cable during the construction and operational and maintenance phases;
- Restriction of access to ABWP1 for maintenance activities during the construction and operational and maintenance phases;
- Impact on ABWP1 existing cables from scour and sediment disturbance during the operational and maintenance phase;
- Displacement of other users due to the physical presence of infrastructure during all phases;
- Displacement of other users due to increased vessel movements during all phases;
- Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing activities during all phases;
- Restrictions to potential aggregate resource availability during all phases; and
- Reduced production of ABWP1 due to proximity of Proposed Development during the operational and maintenance phase.

4.15.1.4 These impacts were predicted to result in effects of imperceptible to **Slight** significance for both Project Design Options, which are **Not significant** in EIA terms. This conclusion was reached following an assessment that consider all relevant infrastructure and other users receptors in the vicinity of the Proposed Development, the distances between these receptors and the Proposed Development, and the potential impact pathways that could arise.

4.15.1.5 Cumulative impacts on infrastructure and other user receptors arising from the Proposed Development together with other projects and plans were assessed and predicted to result in effects of imperceptible to **Slight** significance for both Project Design Options, which are **Not significant** in EIA terms.

4.15.1.6 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to infrastructure and other user receptors for both Project Design Options.

4.15.1.7 No transboundary effects with regard to infrastructure and other users from the Proposed Development on the interests of other states were predicted.

4.15.1.8 In order to reduce impacts to infrastructure and other users, the Developer has made commitments to implement factored in measures such as the ongoing consultation with Arklow Energy Limited in relation to impacts on ABWP1, charting of all structures on nautical and electronic charts, adherence to plans including a Lighting and Marking Plan, timely and efficient

posting of Notice to Mariners and navigational warnings, and rehabilitation of the seabed after decommissioning.

4.16 Air Quality and Climate

4.16.1.1 The air quality and climate assessment considers how receptors may be potentially affected by the Proposed Development and identifies any mitigation measures required to avoid and/or reduce the effects of the Proposed Development on air quality and climate. Air quality and climate were characterised via a detailed desktop review of existing studies and datasets.

4.16.1.2 Due to the offshore location of the Proposed Development, there are none of the typical sources of pollution as would be found with an onshore development, such as road traffic, rail, agriculture, and general dusts.

4.16.1.3 Existing sources of pollution in the Air Quality and Climate Study Area include natural atmospheric systems including sea salt aerosol which is a common natural source of dust in coastal areas. The only other source of note includes marine vessels (commercial, fishing and recreational) which operate periodically in the area.

4.16.1.4 The total national emissions of greenhouse gases in Ireland for 2023 are estimated to be 54.93 million tonnes carbon dioxide equivalent which is 6.8% lower than emissions in 2022.. In 2023, renewables accounted for 40.7% (an increase from 38.6% in 2022 and 35.0% in 2021) as wind energy accounted for 33.7% of electricity supply (up from 33.1% in 2022). There was therefore an 18.3% annual reduction in total fuel used for electricity generation with respective reductions of 44.2% in coal, 78.0% in oil, and 6.8% in natural gas use in 2023.

4.16.1.5 The impacts from emissions to atmosphere during the construction, operational and maintenance and decommissioning phases of the Proposed Development have been assessed on air quality and climate. The potential for changes in emissions to atmosphere (both greenhouse gases and air quality pollutants) from the Proposed Development have been considered both in terms of direct construction and maintenance phase impacts and the indirect impact during the operational phase from the alterations to the power generation market.

4.16.1.6 Consideration was given in the assessment to specific measures associated with the Proposed Development and the greenhouse gas emissions that may arise during the construction phase. Emissions from the Proposed Development may arise from the following sources: embodied emissions in site materials relative to other materials, direct emissions from plant machinery/equipment, and transport emissions from vessels importing/exporting material to and from the Array Area and Cable Corridor and Working Area. This impact was predicted to result in effects of **Slight adverse** for the construction and decommissioning phases for both Project Design Options, which is **Not significant** in EIA terms. For the operational and maintenance phase, the impact was predicted to result in effects of major beneficial for both Project Design Options, which is **significant** in EIA terms. Based upon the predicted energy generation during its operational and maintenance phase, the Proposed Development will 'pay back' the predicted total carbon generation for Construction, Operations and Maintenance and Decommissioning within the third year for all scenarios.

4.16.1.7 In undertaking the cumulative impact assessment for the air quality and climate assessment, other projects and plans including other features of ABWP2 project that would contribute to a cumulative impact alongside the Proposed Development were considered. Cumulative impacts from emissions to atmosphere are predicted to be of **Slight adverse** significance during the construction and decommissioning phases, which is **Not significant** in EIA terms, and of **Major beneficial** significance for climate during the operational and maintenance phase, which is **significant** in EIA terms.

4.16.1.8 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to air quality and climate for both Project Design Options.

4.16.1.9 The changes in national greenhouse gas emissions predicted for the Proposed Development and cumulatively with the other offshore renewable projects, will lead to a net reduction in global greenhouse gas emissions from electricity generation. This is considered a **Slight beneficial** transboundary impact.

4.16.1.10 In order to reduce adverse impacts on air quality and climate, the Developer has made commitments to implement factored in measures such as the adherence to an Environmental Management Plan.

4.17 Population and Human Health

4.17.1.1 Population and human health considers matters such as economic activity, employment and economic deprivation, tourism and recreation, residential amenity and community facilities, in so far as they impact population and human health. The assessment of human health is considered through the assessment of the environmental factors (pathways) through which health could be affected such as air, noise, water and soils. The baseline environment for population and human health was characterised through a detailed desktop review of existing studies and datasets and a site visit of the Wicklow coastal area to appraise the location and potential for impact upon human receptors.

4.17.1.2 The baseline environment for population and human health considered marine and land use patterns; economic activity (including tourism) and employment; residential amenity and community facilities; and human health. Review of marine and land use patterns identified the existing Maritime Area of Consent, ABWP1, and harbours at Wicklow, Arklow and Courtown. The local study area is mostly rural with several urban areas including Wicklow and Arklow. The coastline to the north of Arklow is predominately comprised of beaches, farmland, and one-off housing. Unemployment rates are at 8.3% for County Wicklow; 9.8% in County Wexford and 9.1% in the local area. Both County Wicklow and County Wexford have above average employment in manufacturing and construction, sectors which are likely to benefit from the Proposed Development. The expansion of the onshore wind sector in the area could provide an opportunity for a further diversification of its economic base. In addition, the sector could contribute to the retention of young people in the area through high skilled and high paying jobs.

4.17.1.3 Together, County Wicklow and County Wexford account for just under a quarter of all visits across Ireland, but around 16% of the total annual spending of tourists. This activity driven in part by popular attractions, which receive a total 1.9 million visitors, and the presence of marine activities including water sports, angling, and boat tours.

4.17.1.4 A number of potential impacts on population and human health receptors, associated with the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified. These comprised:

- Economic impact (Gross Value Added (GVA)) due to works associated with the Proposed Development generating economic impact through the expenditure in the economy;
- Economic impact (employment) due to the works associated with the Proposed Development resulting in the creation of employment;
- Tourism sector impact with changes in the surrounding environment brought about by the Proposed Development having the potential to have an impact on the tourism economy of the local area;
- Tourism and recreational assets impacts with the potential for works associated with the Proposed Development having the potential to affect tourism attractions; and

- Residential Amenities and Community Facility Impacts. There is potential for a significant influx of transient workers having an impact on residential community and social assets.

4.17.1.5 These impacts were predicted to result in effects of imperceptible to **Not significant** for both Project Design Options, which are **Not significant** in EIA terms.

4.17.1.6 Cumulative impacts arising from the Proposed Development together with the other elements of the ABWP2 project and other projects and plans were assessed and predicted to result in effects of significant (positive) in the Local Area and **Moderate** (Positive) in Ireland for increase in Gross Value Added and employment or **Not Significant** in EIA terms for other population and human health impacts.

4.17.1.7 In relation to interactions (multiple effects on the same receptor arising from the Proposed Development), no significant project lifetime or receptor-led effects were concluded with respect to population and human health for both Project Design Options.

4.17.1.8 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to population and human health from the Proposed Development upon the interests of other states.

4.17.1.9 In order to reduce adverse impacts on population and human health, the Developer has made commitments to implement factored in measures such as the appointment of a Community Engagement Manager and a Financial Liability Officer during the pre-construction and construction phase.

4.18 Major Accidents and Natural Disasters

4.18.1.1 Major accidents and natural disasters refers to potential sources of both anthropogenic (human made) and biogenic (natural) hazard in the vicinity of the Proposed Development. The major accidents and natural disasters baseline was characterised via a detailed desktop review of existing studies and datasets.

4.18.1.2 Potential sources of anthropogenic hazard in the vicinity of the Proposed Development include the existing ABWP1 project, existing navigational features and vessel traffic, civil and military aviation activities. Potential sources of natural hazards relevant to the Proposed Development include the effects of climate change, including increases in mean annual temperature, changes in precipitation patterns, global sea level rise and increased storm activity.

4.18.1.3 Potential risks identified for the Proposed Development included collision risk from maintenance vessels on ABWP1, collision risk from other vessels, and collision risk from aviation. The Proposed Development is not considered vulnerable to risk of accident and/or disaster from maintenance vessels associated with ABWP1, existing navigation and shipping, or aviation. Potential risks identified on third-party receptors and the marine environment include shipping collision and allision, unexploded ordnance, impacts to third party vessels during cable installation and maintenance, pollution and damage to fishing gear. It was concluded that there is no potential for major accidents and/or disasters to be caused by the Proposed Development.

4.18.1.4 There are no predicted significant transboundary effects associated with major accidents and disasters.

5 Structure of the Application

5.1.1.1 Following submission of the original planning application in June 2024, An Bord Pleanála (ABP), now known as An Coimisiún Pleanála (ACP) issued a Request for Further Information (RFI). In response to the RFI a number of EIAR documents have been revised and resubmitted (Revised

March 2026) or new documents have been produced (RFI March 2026). The EIAR is divided into four volumes:

- Volume I - NTS;
  - This document provides the summary and overview of the EIAR in non-technical language to allow for the members of the public to have a clear and concise summary to show the scope of work carried out within the EIAR including baseline characteristics, impact assessment and mitigation measures of the Proposed Development.
- Volume II - EIAR Main Report;
  - The main body of the EIAR examines and reports the likely significant effects of the Proposed Development to inform the EIA Process.
- Volume III - EIAR Technical Appendices.
  - The technical documents referred to in the main EIAR (Volume II).

- Volume IV – Supporting Information
  - This volume contains new reports requested by the RFI and supplementary reports that have supported the updated environmental assessments.

5.1.1.2 Table 5.1 provides a breakdown of the contents of the EIAR volumes.

Table 5.1: Contents of the EIAR volumes

Volume		Ref	Chapter/Report
Volume I	Chapter		Non-Technical Summary (Revised March 2026)
Volume II – Preface, Chapters 1 to 5 (Introductory, background and need for the Proposed Development)	N/A		Preface (Revised March 2026)
	Chapter	1	Introduction (Revised March 2026)
	Chapter	2	Policy and Legislation (Revised March 2026)
	Chapter	3	Consideration of Alternatives (Revised March 2026)
	Chapter	4	Description of Development (Revised March 2026)
	Chapter	5	EIA Methodology (Revised March 2026)
Volume II – Chapters 6 to 23 (Specialist Assessments)	Chapter	6	Coastal Processes (Revised March 2026)
	Chapter	7	Marine Water and Sediment Quality (Revised March 2026)
	Chapter	8	Airborne Noise (Revised March 2026)
	Chapter	9	Benthic Subtidal and Intertidal Ecology (Revised March 2026)
	Chapter	10	Fish, Shellfish and Sea Turtle Ecology (Revised March 2026)

Volume		Ref	Chapter/Report
	Chapter	11	Marine Mammals (Revised March 2026)
	Chapter	12	Offshore Ornithology (Revised March 2026)
	Chapter	13	Offshore Bats (Revised March 2026)
	Chapter	14	Commercial Fisheries and Aquaculture (Revised March 2026)
	Chapter	15	Shipping and Navigation (Revised March 2026)
	Chapter	16	Civil and Military Aviation (Revised March 2026)
	Chapter	17	Seascape, Landscape and Visual Impact Assessment (Revised March 2026)
	Chapter	18	Marine Archaeology and Cultural Heritage (Revised March 2026)
	Chapter	19	Infrastructure and Other Users (Revised March 2026)
	Chapter	20	Air Quality and Climate (Revised March 2026)
	Chapter	21	Population and Human Health (Revised March 2026)
	Chapter	22	Major Accidents and Natural Disasters (Revised March 2026)
	Chapter	23	Interactions
	Chapter	24	Summary of Cumulative Effects (Revised March 2026)
	Chapter	25	Summary of Factored in Measures, Mitigation and Monitoring (Revised March 2026)
	Annex 1	Chapter 2	NMPF Compliance Table (Revised March 2026)
	Annex 2	Chapter 2	Marine Strategy Framework Directive Assessment (RFI March 2026)
	Annex 3	Chapter 2	Ecosystems Function and Services Assessment (RFI March 2026)
Volume III (Technical Appendices)	Appendix	3.1	Consultation Report
	Appendix	3.2	Cumulative Impact Assessment Screening (Revised March 2026)

Volume		Ref	Chapter/Report
	Appendix	3.3	Transboundary Impacts Screening (Revised March 2026)
	Appendix	3.4	Arklow Bank Wind Park 2 Constraints Analysis
	Appendix	3.5	Isle of Man Marine Nature Reserves (MNR) Report (RFI March 2026)
	Appendix	4.1	Rehabilitation Schedule
	Appendix	6.1	Marine Physical Processes Numerical Modelling (Revised March 2026)
	Appendix	6.2	Arklow Bank Sediment Mobility Assessment (RFI March 2026)
	Appendix	6.3	Arklow Bank - Quantitative Assessment of the Influence of In-place Infrastructure on the Local Sediment Transport System (RFI March 2026)
	Appendix	7.1	Water Framework Directive (Revised March 2026)
	Appendix	8.1	Airborne Noise Technical Report (Revised March 2026)
	Appendix	8.2	Dogger Bank Piling Report (RFI March 2026)
	Appendix	9.1	Benthic Subtidal and Intertidal Ecology Technical Report (Revised March 2026)
	Appendix	9.2	Aquafact Benthic Survey Report 2025 (RFI March 2026)
	Appendix	10.1	Fish, Shellfish and Sea Turtle Ecology Technical Report (Revised March 2026)
	Appendix	11.1	Underwater Noise Assessment (Revised March 2026)
	Appendix	11.2	Marine Mammals Technical Report (Revised March 2026)
	Appendix	11.3	Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD modelling (Revised March 2026)
	Appendix	11.4	Seal Survey – 2025 Survey Report (RFI March 2026)
	Appendix	11.5	Temporary Threshold Shift (TTS) Position Paper - SMRU Consulting (RFI March 2026)
	Appendix	12.1	Offshore Ornithology Technical Report – Overview (Revised March 2026)

Volume		Ref	Chapter/Report
	Appendix	12.2	Offshore Ornithology Technical Report - Monthly Seabird Density (Revised March 2026)
	Appendix	12.3	Offshore Ornithology Technical Report - Monthly Seabird Abundance (Revised March 2026)
	Appendix	12.4	Offshore Ornithology Technical Report – Seabird Collision Risk Model Input Parameters (Revised March 2026)
	Appendix	12.5	Offshore Ornithology Technical Report – Seabird Collision Modelling Results (Revised March 2026)
	Appendix	12.6	Offshore Ornithology Technical Report - Seabird Species Abundance Plots (Revised March 2026)
	Appendix	12.7	Offshore Ornithology Technical Report - Migrant Non-Seabird Collision Risk Modelling (Revised March 2026)
	Appendix	12.8	Offshore Ornithology Technical Report - Seabird Spatial Distribution Maps (Revised March 2026)
	Appendix	12.9	Offshore Ornithology Technical Report - Review of Seabird Monitoring Data 2000 to 2010
	Appendix	12.10	Offshore Ornithology Technical report - Kittiwake Population Viability Analysis (Revised March 2026)
	Appendix	12.11	Offshore Ornithology Technical report - Onshore Cable Route and Landfall - Baseline Bird Survey
	Appendix	12.12	Offshore Ornithology Technical Report - Kittiwake Collision Risk Modelling at ABWP1 (RFI March 2026)
	Appendix	12.13	Offshore Ornithology Technical Report - Kittiwake Displacement Evidence Review (RFI March 2026)
	Appendix	12.14	Offshore Ornithology Technical Report - Kittiwake Displacement Matrices (RFI March 2026)
	Appendix	12.15	Offshore Ornithology Technical Report - Seabird Breeding Reference Populations (RFI March 2026)
	Appendix	12.16	Wicklow Head Seabird Monitoring (RFI March 2026)

Volume		Ref	Chapter/Report
	Appendix	12.17	Kittiwake Flight Height Survey Report (RFI March 2026)
	Appendix	12.18	Kittiwake Tracking Report (RFI March 2026)
	Appendix	12.19	Migratory Bird Survey Methods (RFI March 2026)
	Appendix	12.20	Migratory Bird Survey Report (RFI March 2026)
	Appendix	13.1	Offshore and Headland Bat Monitoring
	Appendix	13.2	Offshore Bat Survey 2022 Technical Report
	Appendix	13.3	Offshore Bat Survey 2021 Technical Report
	Appendix	13.4	Offshore Bats – 2024 Survey Report (RFI March 2026)
	Appendix	13.5	Offshore Bats – 2025 Survey Report (RFI March 2026)
	Appendix	14.1	Commercial Fisheries and Aquaculture Technical Report (Revised March 2026)
	Appendix	15.1	Navigational Risk Assessment (Revised March 2026)
	Appendix	15.2	Shipping and Navigation Safety Justification (RFI March 2026)
	Appendix	17.1	Seascape and Landscape Visual Impact Assessment Methodology (Revised March 2026)
	Appendix	17.2	Seascape and Landscape Visual Impact Preliminary Assessment (Revised March 2026)
	Appendix	17.3	Seascape and Landscape Visual Impact Visuals (Project Design Option 1) (Revised March 2026)
	Appendix	17.4	Seascape and Landscape Visual Impact Visuals (Project Design Option 2) (Revised March 2026)
	Appendix	17.5	Seascape and Landscape Visual Impact Assessment Figures (Revised March 2026)
	Appendix	18.1	Marine Archaeology and Cultural Heritage Technical Report (Revised March 2026)

Volume		Ref	Chapter/Report
	Appendix	18.2	Cultural Heritage Visual Impact Assessment Report (Revised March 2026)
	Appendix	18.3	Intertidal Archaeology Inspection Report
	Appendix	20.1	Climate Change Risk Assessment (RFI March 2026)
	Appendix	21.1	Socio Economic Impact Report
	Appendix	21.2	Supplementary Socio-economic Analysis (RFI March 2026)
	Appendix	25.1	Environmental Management Plan (Revised March 2026)
	Appendix	25.2	Marine Mammal Mitigation Plan (Revised March 2026)
	Appendix	25.3	Fisheries Management and Mitigation Strategy (Revised March 2026)
	Appendix	25.4	Invasive Non-Indigenous Species Management Plan
	Appendix	25.5	Emergency Response Cooperation Plan
	Appendix	25.6	Lighting and Marking Plan (Revised March 2026)
	Appendix	25.7	Vessel Management Plan
	Appendix	25.8	Construction Noise Management Plan (Revised March 2026)
	Appendix	25.9	Archaeological Management Plan (Revised March 2026)
	Appendix	25.10	Environmental Vessel Management Plan
	Annex A	8.1	SPL Data for WTGs (RFI March 2026)
	Annex A	25.1	Operational Monitoring Programme (RFI March 2026)
	Annex A	25.2	ADD Review
Volume IV (Supporting Information)			This volume contains new reports requested by the RFI and supplementary reports that have supported the environmental assessments.
	N/A	XOCEAN 2024	XOCEAN 2024 – Arklow Bank Geophysical Surveys Processing & Interpretation Report

Volume		Ref	Chapter/Report
	N/A	Aquatic Services Unit 2021	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report September 2021. A Report to Alpha Marine On behalf of GE Wind Energy
	N/A	IWDG Consulting 2019	Arklow Bank Wind Park Survey Marine Mammal Mitigation Report August 2019
	N/A	SSE Generation	Bank Cross Sections through Exploratory Borehole locations
	N/A	GeoSurveys 2025	Arklow Bank Wind Park (ABWP) 3D UHRS Geophysical Survey 3D UHRS PROCESSING REPORT Document No.: REP2433023 11 July 2025
	N/A	Cork Ecology 2007	Arklow Bank Seabird and Marine Mammal Monitoring Programme Year 7 Final Report: July 2006 to June 2007 Arklow turbine Report to Airtricity December 2007
	N/A	Cork Ecology 2007	Arklow Bank Seabird and Marine monitoring Programme Year 8 Final Report: July 2007 and June 2008 Report to Airtricity February 2009
	N/A	Cork Ecology 2009	Arklow Bank Seabird and Marine Mammal Monitoring Programme Year 9 Final Report: July 2008 to June 2009 Report to Airtricity May 2010
	N/A	Coveney Wildlife Consulting 2002	Initial Report on the use of Porpoise detector (POD), on Arklow Bank Summer 2002
	N/A	Coveney Wildlife Consulting 2005	Interim Report No. 5 on Year 5 of Seabird & Marine Mammal Surveys of the Arklow Bank, July 2004 to June 2005
	N/A	EcoServe 2001	A marine ecological study of the Arklow Bank for a proposed off-shore windpark development Chapter 1. Baseline survey
	N/A	Fugro 2022	Field Operations and Preliminary Results Report (ISO Part 1) Arklow Bank Wind Park – Geotechnical Borehole Survey 2022 Results from the project -specific borehole survey. Sure Partners Ltd
	N/A	Mizen 2024	Arklow Wind Farm Phase 2 MMO Report
	N/A	Fugro 2021	Final Data Report Arklow Offshore Windfarm
	N/A	Fulmar Ecological Services 2006	SEABIRD AND MARINE MAMMAL MONITORING OF THE ARKLOW BANK: interim report for the period July 2005 to June 2006

Volume		Ref	Chapter/Report
	N/A	Gavin and Doherty Geosolutions 2020a	Arklow Bank Wind Park (ABWP) Phase 2 Repeat Multibeam Survey (July-August 2020) Marine Mammal Mitigation Report
	N/A	Gavin and Doherty Geosolutions 2020b	Arklow Bank Wind Park - Geotechnical Survey MMO Daily Observation Log Compilation Geoquip Saentis Campaign 2020
	N/A	Gavin and Doherty Geosolutions 2023a	Marine Mammal Observer Report
	N/A	Gavin and Doherty Geosolutions 2023b	Marine Mammal Observer Report
	N/A	Green Rebel 2022	Geophysics and Hydrographic Data Processing and Interpretation Report Arklow Bank Wind Park (ABWP)
	N/A	Green Rebel 2024	Processing Report SSE Arklow Bank GR-GEO-REP-24G02
	N/A	HiDef Aerial Ltd. 2018 - 2020	Digital video aerial surveys of seabirds and marine mammals at Arklow Bank: Two-year survey report March 2018 - February 2020 Survey programme (plus April 2020) Population and density estimates
	N/A	Hydroserv Projects Ltd. 2004	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report Surveys October 13th – 15th October 2004 Hydroserv Projects Ltd. July 2005
	N/A	Hydroserv Projects Ltd. 2005	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report Surveys 9th –10th November 2005 A report to Hydroserv Projects Ltd June 2006
	N/A	Hydroserv Projects Ltd. 2006	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report June 2006 A Report to HydroServ Projects Ltd February 2007
	N/A	Hydroserv Projects Ltd. 2007	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report May 2007 A Report to HydroServ December 2007
	N/A	Hydroserv Projects Ltd. 2008	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report May 2008 A Report to

Volume		Ref	Chapter/Report
			HydroServ For Arklow Energy Ltd January 2009
	N/A	Hydroserv Projects Ltd. 2009	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey June 2009 A Report to Arklow Energy February 2010
	N/A	Hydroserv Projects Ltd. 2010	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report June 2010 A Report to GE Wind Energy
	N/A	Hydroserv Projects Ltd. 2011	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report June 2011 A Report to GE Wind Energy March 2012
	N/A	Hydroserv Projects Ltd. 2021	Arklow Bank Offshore Windfarm Environmental Monitoring Benthic Ecology Survey Report September 2021 A Report to Alpha Marine On behalf of GE Wind Energy February 2022
	N/A	MetOceanWorks 2021a	Metocean Data Overview Arklow Bank Offshore Wind Farm
	N/A	MetOceanWorks 2021b	Arklow Bank Wind Park Phase 2 Metocean Analysis for Site Assessment: Eastern Zone
	N/A	Hydenline 2024	Marine Mammal Observer's Report01040-SSE-IRL-WIND In Arklow Bank, Ireland By XOcean For SSE 09/07/2024 – 19/08/2024
	N/A	Partrac 2022	Arklow Bank Wind Park Morphodynamic Study Interpretative Report
	N/A	GeoSurveys 2025	Arklow Bank Wind Park (ABWP) 2D & 3D UHRS Geophysical Survey
	N/A	RPS 2019	Phase 1 Intertidal Walkover Survey Report
	N/A	ADCO 2023	Underwater Archaeological Impact Assessment Arklow Bank Wind Park GI Campaign 2023, Boreholes
	N/A	ADCO 2020	Underwater Archaeological Impact Assessment Arklow Bank Wind Park 2020 GI Campaign 1
	N/A	Waterman Infrastructure & Environment Ltd. 2020	Arklow Bank Wind Park, Phase II Cable Landfall: Feasibility Study April 2020

Volume		Ref	Chapter/Report
	N/A	Waterman Infrastructure & Environment Ltd. 2022	Arklow Bank Wind ParkLF2 Landfall Feasibility Study June 2022