



Arklow Bank Wind Park 2

Environmental Impact Assessment Report

Volume II, Chapter 19: Infrastructure and Other Users

Revision	Date	Status	Author	Checked by	Approved by
1.0	24/04/2024	Final (External)	GoBe Consultants	GoBe Consultants	Sure Partners Limited

Statement of Authority

Experts	Qualifications	Relevant Experience
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Marc Walshe	BEng (Hons), MSc.	Marc Walshe is a Consents Manager with SPL/SSE Renewables and a full Member of the Institution of Environmental Sciences. Marc holds a honours degree in Environmental Engineering (BEng), a masters degree in Renewable Energy (MSc) and an Advanced Diploma in Planning and Environmental Law. Marc has over 23 years experience working in both the energy and environmental sectors on a range of projects which include large scale infrastructural developments in both Ireland and the UK. The management of consents has been key to his role whether through the consent application process or ensuring compliance with the subsequent post consent requirements during construction and/or operation.
Kaj Christiansen	BEng (Hons.) in Environmental Engineering from the University	Kaj has over 14 years' experience within the renewable

Experts	Qualifications	Relevant Experience
	of Galway, MSc (Hons.) in Renewable Energy from University of Aberdeen, CEng with Engineers Ireland	energy industry, specifically in the field of offshore wind and solar energy development. Kaj has acted in both project engineering and project management roles for a number of offshore wind projects throughout the North Sea. Within these projects Kaj was responsible for delivering foundation structures and has experience across the project lifecycle; from procurement and design to construction and commissioning. Kaj also has extensive Irish based development management experience in taking solar and offshore wind energy infrastructure through the development cycle; from early conceptual planning stages through to design, construction and operation.

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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 wind farm 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. Consents for the Onshore Grid Infrastructure (Planning Reference 310090) and Operations Maintenance Facility (Planning Reference 211316) has been granted on 26th May 2022 and 20th July 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.
Disposal sites	Dumping at sea locations, typically used for disposal of dredged material. These sites are subject to Dumping at Sea (DaS) permits from the Environmental Protection Agency (EPA).
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).

Term	Meaning
General sailing areas	Areas in extensive use for general day-sailing by all types of recreational craft but particularly smaller craft such as small cruisers, day-boats, dinghies, sailboards and personal watercraft. Such craft will not normally be undertaking point-to-point passages but will be on out and return activities and may appear to be sailing in random directions as they take advantage of wind and tide to make progress (ICC, 2018).
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 22 nd December 2022 with reference number 2022-MAC-002.
Marine aggregate	Marine dredged sand and/or gravel.
Mitigation Measure	Measures designed to avoid, prevent or reduce impacts.
Project Design Options	The Proposed Development will comprise one of two Project Design Options (Project Design Option 1 (which comprises Models 1a and 1b, one of which will be selected) or Project Design Option 2).
Racing areas	Areas in frequent use, particularly at weekends and holiday periods, by large numbers of racing craft normally under sail but also power. Such areas are generally under the control of nearby sailing clubs and may contain temporary or permanent racecourse marking buoys. Detailed routes will normally only be determined on the day of the race although certain longer-distance races may have routes published in advance. In addition some racing may take place outside the areas indicated. Racing craft will obey the specialised racing rules between themselves but will follow the conventional Collision Regulations when other vessels are in conflict (ICC, 2018).
SCADA	Computerised wind farm control and communication system
The Developer	Sure Partners Ltd.
Permitted Maritime Usage	The construction and operation of an offshore wind farm and associated infrastructure (including decommissioning and other works required on foot of any permission for such offshore wind farm).

Acronyms

Term	Meaning
AA	Appropriate Assessment
ABWP1	Arklow Bank Wind Park 1
ABWP2	Arklow Bank Wind Park 2
ADCP	Acoustic Doppler Current Profiler
AIS	Automatic Identification System
CIA	Cumulative Impact Assessment
CPT	Core Penetration Test
CTV	Crew Transfer Vessel
DECC	Department of Environment, Climate and Communications
DHLGH	Department of Housing, Local Government and Heritage
DHPLG	Department of Housing, Planning and Local Government
EBA	European Boating Association
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environment Impact Statement
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ESCA	European Subsea Cables UK Association
HDD	Horizontal Directional Drilling
HWM	High Water Mark
ICC	Irish Cruising Club
ICPC	International Cable Protection Committee
IMAGIN	Irish Sea Marine Aggregates Initiative
ISA	Irish Sailing Association
LAT	Lowest Astronomical Tide
LMP	Lighting and Marking Plan

Term	Meaning
MPDM	Marine Planning and Development Management
MW&SQ	Marine Water and Sediment Quality
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NRA	Navigational Risk Assessment
OGI	Onshore Grid Infrastructure
OMF	Operations and Maintenance Facility
ORE	Offshore Renewable Energy
OREDPA	Offshore Renewable Energy Development Plan
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
RNLI	Royal National Lifeboat Institution
RS	Rehabilitation Schedule
SAS	Surfers against Sewage
SCADA	Supervisory Control and Data Acquisition
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SSC	Suspended Sediment Concentrations
TSHD	trailer suction hopper dredging
UHF	Ultra-High Frequency
UK	United Kingdom
UXO	Unexploded Ordnance
VHF	Very High Frequency
VMP	Vessel Management Plan
WTG	Wind Turbine Generator

Units

Unit	Description
m	Meter
km	Kilometre
MW	Megawatt
GW	Gigawatt
mg /L	Milligram per Litre

19 Infrastructure and Other Users

19.1 Introduction

19.1.1 Overview

19.1.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) presents the assessment of the potential impacts of the Arklow Bank Wind Park 2 Offshore Infrastructure (hereafter referred to as 'the Proposed Development') on Infrastructure and Other Users. Specifically, this chapter considers the potential impact of the Proposed Development below the High Water Mark (HWM) during the construction, operational and maintenance, and decommissioning phases.

19.1.1.2 The assessment presented is informed by the following technical chapters:

- Volume II, Chapter 6: Coastal Processes (changes to coastal processes have the potential to impact Infrastructure and Other Users receptors, either directly or indirectly, therefore information from the coastal processes assessment has been used to inform this chapter);
- Volume II, Chapter 7: Marine Water and Sediment Quality (MW&SQ) (changes to MW&SQ have the potential to impact Infrastructure and Other Users receptors including recreational diving and fishing, either directly or indirectly, therefore information from the MW&SQ assessment has been used to inform this chapter);
- Volume II, Chapter 10: Fish, Shellfish and Sea Turtle Ecology (changes to fish and shellfish receptors have a direct link to recreational fishing receptors that are covered in the Infrastructure and Other Users assessment, either directly or indirectly, therefore information from the fish and shellfish assessment has been used to inform this chapter);
- Volume II, Chapter 14: Commercial Fisheries and Aquaculture (this assessment has direct links with the assessment of recreational fishing activities which is covered in the Infrastructure and Other Users assessment)
- Volume II, Chapter 15: Shipping and Navigation (the shipping and navigation assessment includes activities that cross over with the receptors assessed in this chapter and therefore are considered together);
- Volume II, Chapter 21: Population and Human Health (this includes the assessment of the impacts on tourism and therefore is associated with this chapter); and
- Volume II, Chapter 22: Major Accidents and Natural Disasters (the major accident and disaster assessment includes receptors that may affect the receptors assessed in this chapter and therefore are considered together);

19.1.1.3 Indirect impacts on nearshore recreational receptors through visual amenity are considered in Volume II, Chapter 17: Seascape, Landscape and Visual Impact Assessment. The potential effects of airborne noise on noise sensitive receptors at the shoreline are assessed in Volume II, Chapter 8: Airborne Noise.

19.1.1.4 The primary purpose of the EIAR is outlined in Volume II, Chapter 1: Introduction. It is intended that the EIAR will provide stakeholders with sufficient information to determine the potential significant impacts of the Proposed Development on the receiving environment. In particular, this EIAR Chapter;

- Presents the existing environmental baseline established from desk studies and consultation;
- Identifies any assumptions and limitations encountered in compiling the environmental information;

- Presents the potential environmental effects on Infrastructure and Other Users arising from the Proposed Development, based on the information gathered and the analysis and assessments undertaken; and
- Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects of the Proposed Development on Infrastructure and Other Users.

19.1.1.5 Infrastructure and Other Users receptors that have been considered in this chapter comprise:

- Recreational receptors (including receptors carrying out recreation fishing, sailing and motor cruising; kite surfing; surfing; windsurfing; kayaking and canoeing; and beach users);
- Offshore energy Projects (e.g. offshore wind farms, oil and gas projects, carbon capture and storage, natural gas storage and underground coal gasification);
- Cable and pipeline operators;
- Dredging areas;
- Aggregate resource areas and coal deposits; and
- Communications infrastructure (microwave, Very High Frequency (VHF) and Ultra-High Frequency (UHF) links).

19.2 Regulatory Background

19.2.1.1 The assessment of potential impacts on Infrastructure and Other Users has been made in adherence with the relevant guidance. Those relevant to the Proposed Development are:

- Environmental Protection Agency (EPA), (2022), Guidelines on the information to be contained in Environmental Impact Assessment Reports; and
- Sustainable Energy Authority of Ireland (SEAI) (2017), Guidance on Environment Impact Statements (EIS) and Natura Impact Statements (NIS) Preparation for Offshore Renewable Energy Projects.

19.2.1.2 A summary of the policy provisions relevant to Infrastructure and Other Users are provided in Table 19.1, Table 19.2 and Table 19.3.

Table 19.1: Summary of Regulator Background

Publisher	Name of document incl. reference	Key provisions
Statutory		
Legislation		
European Commission, 2011	European Communities (Marine Strategy Framework) Regulations 2011 (S.I. No. 249 of 2011);	Transposes EU Directive 2008/56/EC (Marine Strategy Framework Directive) into Irish law.
Planning Policy and Development Control		
Department of Environment, Climate and Communications (DECC 2014)	Offshore Renewable Energy Development Plan (ORED P)	The ORED P sets out key principles, policy actions and enablers for delivery of Ireland's significant potential in this area. In this way, the ORED P provides a framework for the sustainable development of Ireland's offshore renewable energy resources.
Department of Environment, Climate and Communications (DECC, 2022)	Strategic Environmental Assessment (SEA) of the Offshore Renewable Energy Development Plan (OREDPII) in Ireland: Environmental Report https://www.gov.ie/en/publication/71e36-offshore-renewable-energy-development-plan-ii-oredp-ii/#environmental-assessments	Contains the Appropriate Assessment (AA) screening process and SEA scoping report of the Maritime area associated with OREDPII. This resource has some important information on existing baseline conditions in the maritime area.

Publisher	Name of document incl. reference	Key provisions
National Marine Planning Framework (NMPF) (Department of Housing, Local Government and Heritage (DHLGH, 2021)	National Marine Planning Framework (NMPF) (Department of Housing, Local Government and Heritage (DHLGH, 2021): https://www.gov.ie/pdf/?file=https://assets.gov.ie/139062/1079b3c2-b39d-4c26-a195-cd560a2ab627.pdf#page=null	The key relevant policy provisions from the NMPF and how they have been addressed in this Chapter is set out in Table 19.3.
Non-Statutory		
Guidelines and technical standards		
EPA, 2022	Guidelines on the Information to be Contained in Environmental Impact Assessment Reports: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf	These Guidelines apply to the preparation of all Environmental Impact Assessment Reports undertaken in the State (Ireland)

Table 19.2: Summary of OREDP I provisions relevant to Infrastructure and Other Users

Summary of OREDP provision	How and where considered in the EIAR
Recreation and Tourism	
Access restriction: Undertake construction, where possible, outside of peak tourist seasons (June to September); identify and avoid popular routes for sailing or other water sports; where possible, facilitate safe access through arrays for sailing or other water sports	Recreational receptors have been identified through a desktop study and are discussed in section 19.5.2. The potential effects of the construction, operational and maintenance and decommissioning phases of the Proposed Development are assessed in section 19.8. Factored-in measures are discussed in Table 19.12.
Noise: Avoid key recreational periods for installation works; identify and avoid popular recreational areas when possible	
Safety and Collision Risk: Avoid popular cruising routes, diving areas and key water sport locations; incorporate suitable safety features such as lighting, netting and buoys into the device design; provide suitable information for the public regarding safety; restrict access to construction sites; observe good practice during construction, removal and maintenance.	Collision risk and navigational safety is assessed in Chapter 15: Shipping and Navigation.
Cables and Pipelines	
Direct Damage: Use of recommended 500 m avoidance zone; use of crossing agreements; observing seabed lease for existing infrastructure when selecting sites.	Existing cables have been identified through a desktop study and are discussed in section 19.5.2.
Access Restrictions: Use of recommended 500 m avoidance zone, use of crossing agreements; observing seabed lease for existing infrastructure when selecting sites. Existing cables have been identified through a desktop study and are discussed in section 19.5.2.	
Dredging and Disposal Areas	
Access restrictions: Avoid development within 500 m of dredging and/or disposal sites; notification of port and harbour authorities of the proposed works.	Dredging and disposal areas have been identified through a desktop study and are discussed in section 19.5.2.
Existing Renewable Energy Infrastructure	
Access restrictions: Careful site selection to factor in access needs of existing infrastructure; communication with existing wind farm operators. Removal of energy resource: Careful site selection to ensure co-existence with existing renewable energy infrastructure.	Existing renewable energy infrastructure has been identified through a desktop study and is discussed in section 19.5.2.
Natural Gas and CO2 Storage	

Sterilisation of region: Consultation with the relevant regulatory body to establish areas of search for possible future gas/carbon storage sites within Irish waters.

Other energy projects have been identified through a desktop study and are discussed in section 19.5.2.

Oil and Gas Activity

Access restrictions/Collision/Sterilisation of region: Consultation with the relevant regulatory body prior to siting any renewable energy devices; careful site selection avoiding areas of existing and proposed oil and gas activity.

Oil and gas interests have been identified through a desktop study and are discussed in section 19.5.2.

Table 19.3: NMPF Policy Objectives of relevance to Infrastructure and Other Users

Policy Point	Description
Co-existence Policy 1	Proposals should demonstrate that they have considered how to optimise the use of space, including through consideration of opportunities for co-existence and co-operation with other activities, enhancing other activities where appropriate. If proposals cannot avoid significant adverse impacts (including displacement) on other activities they must, in order of preference: a) minimise significant adverse impacts, b) mitigate significant adverse impacts, or c) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding. This provision is addressed in Sections 19.9, 19.10 and 19.12.
Sport and Recreation Policy 2	Proposals should demonstrate the following in relation to potential impact on recreation and tourism: • The extent to which the proposal is likely to adversely impact sports clubs and other recreational users, including the extent to which proposals may interfere with facilities or other physical infrastructure. • The extent to which any proposal interferes with access to and along the shore, to the water, use of the resource for recreation or tourism purposes and existing navigational routes or navigational safety. • The extent to which the proposal is likely to adversely impact on the natural environment. This provision is addressed in Sections 19.9, 19.10 and 19.12.
Telecommunications Policy 2	Preference should be given to proposals where evidence is provided of an integrated approach to development and activity, such as the bundling of cables (electricity and communications) where suitable, as well as pipelines for multiple activities, to minimise impacts on the marine environment, infrastructures and other users. Compatibility should be achieved, in order of preference, through: a) avoiding, or b) minimising, or c) mitigating adverse impacts, or d) If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.

This provision is addressed in Sections 19.9, 19.10 and 19.12.

Telecommunications Policy
3

Preference should be given to proposals that protect submarine cables whilst achieving successful seabed user coexistence, such as the bundling of cables (electricity and communications) as well as pipelines for multiple activities where suitable. Proposals should specify if separate access to cables for the purposes of repair and maintenance is required. With regard to decommissioning redundant submarine cables, a risk-based approach should be applied with consideration given to cables being left in situ where this would minimise significant impacts on the physical, natural, societal, historic, and economic value of the area.

This provision is addressed in Sections 19.9, 19.10 and 19.12.

19.3 Consultation

19.3.1.1 A summary of the key issues raised and where they have been addressed, in relation to Infrastructure and Other Users is presented in Table 19.4. In addition, information was collected during consultation to assist in informing the baseline for the Proposed Development. Where appropriate this information has been included and referenced in section 19.5.2.

19.3.1.2 Consultation relating to the Navigational Risk Assessment (NRA) and specifically regarding the assessment of non-Automatic Identification System (AIS) traffic is set out in Volume III, Appendix 25.1.

Table 19.4: Summary of consultation relating to Infrastructure and Other Users

Date	Consultee	Consultation and key issue raised	Section where provision is addressed
June 2019	Arklow Sailing Club	July is a peak period for recreational sailing activity and includes the SSE Renewables Round Ireland Yacht Race which takes place biannually and results in an influx of yachts from further afield.	The baseline environment for recreational activities is set out in section 19.5.2.
September 2019	Arklow Marina	Season is from May to August. Average approx. 3 to 4 yachts per day during May increasing to 6 to 8 per day for June, July and August.	The baseline environment for recreational activities is set out in section 19.5.2.
November 2020	Arklow Sailing Club	Provided a chart showing race marks, including one ('Turbine') in the vicinity of the existing Arklow Bank Wind Park 1 (ABWP1) wind turbines, which is used regularly. Arklow Sailing Club race as far north as the horseshoe buoy off Wicklow and as far south as Courtown harbour on a regular basis. Once a year, Arklow Sailing Club race around the wind turbines.	The baseline environment for recreational activities is set out in section 19.5.2.

Date	Consultee	Consultation and key issue raised	Section where provision is addressed
November 2020	Wicklow Sailing Club	Club races only venture towards and around the Arklow Bank two or three times a year, with the bulk of club yacht racing held well to the north of the Proposed Development.	The baseline environment for recreational activities is set out in section 19.5.2.
January 2021	Wicklow Sub Aqua Club	Wicklow Sub Aqua Club runs activities all year round, including snorkelling in the harbour and Black Castle areas, with diving taking place between March to October. Diving takes place in the vicinity of Dalkey Islands, the wreck at Kiloughter and some of the wrecks out on the banks, such as the Lanarkshire. Other diving sites including Wicklow Head, Wolf Rocks off Brittas Bay and occasionally at Arklow. Wicklow Sub Aqua Club also runs drift dives and Rescue Diver courses in deeper waters in the bay and is part of a search and recovery unit in the Dublin South Region. The club is a popular destination for the Irish Under Water Council's Leading Diver examinations. Raised concerns in relation to increased volume of traffic in the harbour area and the bay, and in relation to deterioration in visibility and water quality from pile driving. Highlighted that trigger fish octopus and crawfish were new species noted to be in the area in recent years.	The baseline environment for diving activities is set out in section 19.5.2 and potential impacts are assessed in section 19.8. Potential impacts on water quality are addressed in Chapter 6: Coastal Processes and Chapter 7: Marine Water and Sediment Quality.
January 2021	Ocean Divers	Ocean Divers normally operates a dive charter service from Dun Laoghaire Harbour to the popular dive sites off Dalkey Island and the Muglins. Ocean Divers occasionally visit sites off Wicklow Head however this is rare, and they do not travel to any sites in the vicinity of the Proposed Development.	The baseline environment for diving activities is set out in section 19.5.2 and potential impacts are assessed in section 19.8.
May 2021	Arklow Rowing Club	Supportive of project. Wants to ensure smooth traffic flow in harbour once crew transfer vessels (CTVs) are operational. Also says that the Developer should be mindful of increased footfall that lockdown has created in harbour area.	The baseline environment for recreational activities is set out in section 19.5.2.

Recreational Fishing

Date	Consultee	Consultation and key issue raised	Section where provision is addressed
June 2019	Arklow Fishing Sector	Fishing offshore of the site is considered an unlikely occurrence with fishing south of the site more likely.	The baseline environment for recreational fishing activities is set out in section 19.5.2. Potential impacts of reduced access are assessed in section 19.8 Potential impacts on seabed habitats and the potential effect of increased suspended sediments and associated deposition on fish are assessed in Chapter 10: Fish, Shellfish and Sea Turtle Ecology. The potential effects of noise and vibration on fish are also assessed in Chapter 10: Fish, Shellfish and Sea Turtle Ecology.
June 2019	Arklow Fishing Sector/Arklow Sailing Club/Royal National Lifeboat Institution (RNLI)	Vessels would not deliberately cross the Arklow Bank even in a shallow vessel in perfect conditions. For example, if a local fishing vessel wanted to fish on the eastern side, they would pass around the bank rather than pass across the bank.	The baseline environment for recreational fishing activities is set out in section 19.5.2.
November 2020	Wicklow Bay Sea Angling Club	Provided a list of offshore and shoreline fishing marks. There are a minimum of 160 trips per year comprised of club trips, members, moored boats, trailered boats, and other small private boats. Wicklow is the best venue in Ireland for Irish specimen tope, smooth hound, spurdog, black bream and pollock. Advised that there are two charter boats in the local area, both run by Wicklow Boat Charters. There are also several local privately owned boats who fish regularly, launched out of Wicklow. Clubs from Greystones and Bray also have small boats which fish from Wicklow, and clubs, provincial and national championships are fished out of Wicklow from boat and from shore. Concerns included: reduced access to areas regularly fished, including at the shoreline; damage to seabed; effects of	The baseline environment for recreational fishing activities is set out in section 19.5.2. Potential impacts of reduced access are assessed in section 19.8 Potential impacts on seabed habitats and the potential effect of increased suspended sediments and associated deposition on fish are assessed in Chapter 10: Fish, Shellfish and Sea Turtle Ecology. The potential effects of noise and vibration on fish are also assessed in Chapter 10: Fish, Shellfish and Sea Turtle Ecology.

Date	Consultee	Consultation and key issue raised	Section where provision is addressed
		increased suspended sediments and associated deposition on fish; effects of noise and vibration on fish.	
November 2020	Wicklow Boat Charters	Provided a list of angling groups and individuals, with an estimated number of trips per year of 622.	The baseline environment for recreational fishing activities is set out in section 19.5.2. Potential impacts of reduced access are assessed in section 19.8 Potential impacts on seabed habitats and the potential effect of increased suspended sediments and associated deposition on fish are assessed in Chapter 10: Fish, Shellfish and Sea Turtle Ecology. The potential effects of noise and vibration on fish are also assessed in Chapter 10: Fish, Shellfish and Sea Turtle Ecology.
Communications			
October 2020	2RN (TV broadcaster)	Confirmed no impact on 2RN broadcast or telecoms services.	Noted.

19.4 Study area

19.4.1.1 The Infrastructure and Other Users Study Area is shown in Figure 19.1. This includes the Array Area and Cable Corridor and Working Area, as well as all Infrastructure and Other Users where a pathway of effect is considered.

19.4.1.2 The Infrastructure and Other Users Study Area varies in scale depending on the particular receptor and has been divided into different areas according to each receptor, as listed below:

19.4.1.3 Infrastructure and Other Users Study Area (Inner Area): (within 1 km of the Proposed Development): This area includes the extent of potential direct physical overlap between the Proposed Development activities and the following receptors (if identified);

- Recreational receptors (including receptors carrying out fishing, sailing and motor cruising; kite surfing; surfing; windsurfing; sea/surf kayaking and canoeing; and beach users);
- Offshore energy projects (e.g. offshore wind farms, oil and gas projects);
- Cable and pipeline operators;
- Carbon capture and storage, natural gas storage and underground coal gasification;
- Coal deposits; and

- Microwave, Very High Frequency and Ultra-High Frequency links (within 1 km of the Array Area).

19.4.1.4 Infrastructure and Other Users Study Area (Outer Area): This area is based on one tidal ellipse of the Proposed Development (Chapter 6: Coastal Processes), and has been developed to consider impacts from the Proposed Development on the following receptors:

- Marine aggregate extraction and disposal sites; and
- Recreational receptors (diving sites).

19.4.1.5 The cumulative impact assessment considers other projects/plans within 50 km of the Proposed Development.

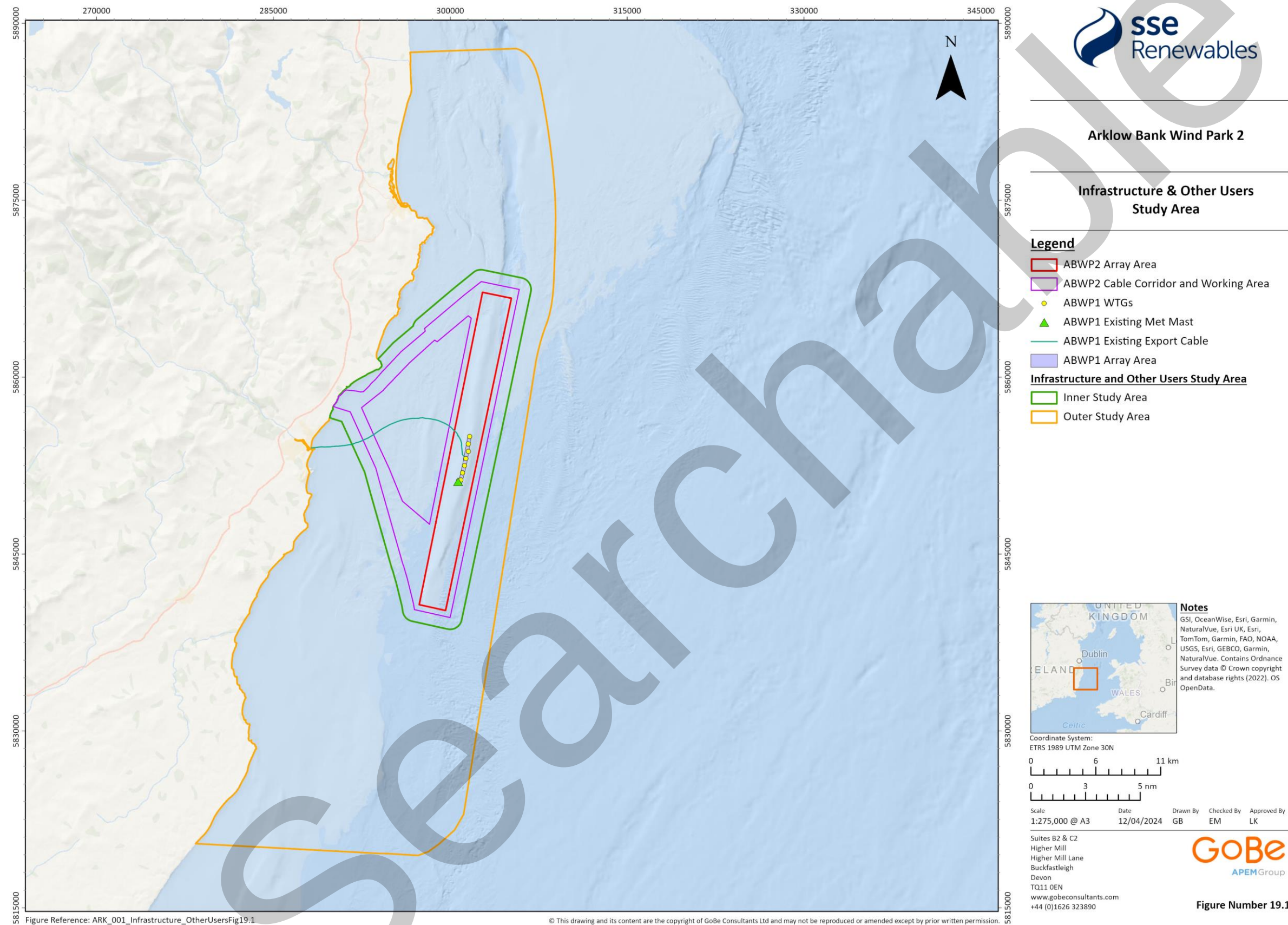


Figure 19.1: Infrastructure and Other Users Study Area

19.5 Methodology

19.5.1 Methodology to inform the baseline

Desktop studies

19.5.1.1 Information on Infrastructure and Other Users within the Infrastructure and Other Users Study Area was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 19.5. The desktop study was supplemented with information provided during stakeholder consultation, as detailed in section 19.3.

Table 19.5: Summary of key desktop reports and data resources

Title	Source	Year	Author
Ireland's Marine Atlas – Webmap Service Offshore Wind Farms; Cables; Pipelines; Oil and Gas infrastructure; and Wrecks.	Marine Institute	Compiles a series of data	N/A
Marine Irish Digital Atlas – Webmap Service Diving and Sub-aqua Clubs; Fishing Spots; Surf Spots; Marinas and Pontoons; and Irish Sailing Association (ISA) Sailing Clubs.	International Coastal Atlas Network	Compiles a series of data	N/A
Human Activities – Webmap Service	EMODnet	Compiles a series of data	EMODnet
Webmap service Offshore Wind Farms.	4cOffshore	Compiles a series of data	N/A
A Guide to Sea Angling in the Eastern Fisheries Region by Norman Dunlop	Eastern Regional Fisheries Board	2009	Eastern Regional Fisheries Board
A Coastal Atlas of Recreational Boating in Ireland	Irish Cruising Club	2018	Irish Cruising Club with support of Irish Sailing
Material Assets Carbon Capture and Storage; Marine Aggregates; and Energy.	National Marine Planning Framework SEA Environmental Report	2019	Department of Housing, Planning and Local Government
Petroleum Activity and Authorisations; Marine Renewable Energy and Infrastructure; High Potential Marine Aggregate Resource; and Sport and Recreation Trends and Features.	National Marine Planning Framework Consultation Draft	2019	Department of Housing, Planning and Local Government
Feasibility study on the establishment of a large-	Marine Institute	2004	Marine Institute

Title	Source	Year	Author
scale inshore resource mapping Project			
Possibilities for commercial mineral deposits in the Irish Offshore Area.	Marine Mining,	1989	Marine Mining,
Northern Ireland Marine Mapviewer – Webmap Webmap Service comprising of Dredging, Cable and pipelines and Oil and Gas infrastructure.	Department of Agriculture, Environment and Rural Affairs	Compiles a series of data	Department of Agriculture, Environment and Rural Affairs
ABWP2 Navigation Risk Assessment (NRA) (Volume III, Appendix 15.1: Navigational Risk Assessment)	SSE	2024	Anatec

Site specific surveys

- 19.5.1.2 No fieldwork has been undertaken to inform the impact assessment for Infrastructure and Other Users. This is because receptor information and data for this topic can be readily collected through desktop study and consultation with relevant stakeholders.

19.5.2 Baseline environment

Recreational sailing, boating and motor cruising

- 19.5.2.1 This section provides an overview of recreational sailing, boating and motor cruising within the vicinity of the Proposed Development.
- 19.5.2.2 In general, recreational boating is highly seasonal, with a greater density of vessels found throughout summer, as well as highly diurnal, with boating occurring usually during the daytime (Irish Cruising Club (ICC), 2018). Boating areas include general sailing areas, racing areas, sailing school and sailing clubs.
- 19.5.2.3 General sailing areas are used for general day-to-day use by all recreational boating users, including dinghies, sailboards, watercraft and small cruisers. Often recreational activity is random, subject to the weather and generally does not involve point-to-point passage as seen with larger more commercial vessels (ICC, 2018). The Infrastructure and Other Users Study Area (Inner Area) overlaps with a general sailing area associated with Arklow Sailing club, which is adjacent to the Cable Corridor and Working Area to the south (Figure 19.2). There is also a general sailing area to the northwest of the Array Area.
- 19.5.2.4 Racing areas are generally used at weekends and during holiday periods by sailing and motor users. These areas are under the control of nearby sailing clubs and often contain temporary or permanent marker buoys. Racing routes are often determined on the day of the race and are subject to bespoke racing rules as well as the International Regulations for Preventing Collisions at Sea (1972) (ICC, 2018). A racing area is located to the northwest of the Array Area associated with the Wicklow Sailing Club (Figure 19.2).
- 19.5.2.5 Consultation with local sailing clubs has advised that the sailing season runs from May to August, with a peak of activity in July, coinciding with the SSE Renewables Round Ireland

biannual yacht race (Table 19.4). Sailing events may attract up to 200 boats, with an average of 60 boats for the SSE Renewables Round Ireland race. There are a number of race marks in the vicinity of the Proposed Development, as advised by Arklow Sailing Club including the 'Turbines Race' in the vicinity of the ABWP1 wind turbines, this is a 34 nm circumnavigation of the ABWP1 turbines held once a year in May. The Arklow Sailing Club holds races on a regular basis, and racing activity takes place around the ABWP1 wind turbines once per year (Table 19.4). The majority of activity associated with the Wicklow Sailing Club is held North of the Proposed Development, although activity may extend to Arklow Bank two to three times per year.

- 19.5.2.6 Sailing schools act as teaching institutions, with marina boat berths attached and are in constant use throughout the year. Sailing clubs are membership organisations with affiliation to Irish Sailing. They provide certain types of activities, ranging from racing and sail cruising to powerboating, all of which are open to members of the public (ICC, 2018). Arklow Sailing School is located to the south of the Landfall, beyond the Infrastructure and Other Users Study Area (Inner Area). Wicklow Sailing Club is located to the north of the Landfall, beyond the Infrastructure and Other Users Study Area (Inner Area).
- 19.5.2.7 There is a medium traffic recreational boating route perpendicular to the coastline which crosses the Cable Corridor and Working Area close to the coast. Light and medium traffic boating routes further offshore cross the very southern extent of the Array Area. Medium traffic routes are defined as popular routes on which some recreational craft will be seen at most times during summer daylight hours, with light traffic routes defined as routes known to be in common use and having local importance (ICC, 2018). Recreational boating generally does not involve point-to-point passage and therefore these routes are understood to be indicative.
- 19.5.2.8 Vessel traffic surveys data collected during Summer 2023 (29 days July – August) is presented in Volume III, Appendix 15.1: Navigational Risk Assessment. To capture AIS traffic and non-AIS traffic (via Radar and visual observations). The AIS was supplemented with additional satellite-based and onshore-based AIS to ensure comprehensive coverage.
- 19.5.2.9 Approximately half of the recreational vessels were recorded travelling to/from Arklow, with the remainder transiting either north/south inshore of the Array Area or northwest/southeast offshore of the Array Area.
- 19.5.2.10 An average of between 11 and 12 unique recreational vessels per day was recorded within the Study Area, with a total of 22 intersections through the Array Area during the survey period.

Recreational fishing

- 19.5.2.11 This section provides an overview of recreational fishing activity within the vicinity of the Proposed Development (i.e. fishing for pleasure rather than for commercial reasons).
- 19.5.2.12 Sea angling occurs along the coast from Greystones to Blackwater, including boat angling and shore angling (ERFB, 2009) (Figure 19.2). Consultation has advised that there are offshore fishing marks at Arklow Bank (inside and outside, north and south), Seven Fathom Bank, India Bank, Horseshoe Bank and Wicklow Bay; and shoreline fishing marks (i.e. between the shoreline and out to 3 nm) at Arklow South Beach, Ennereilly, Mizen Head, Brittas Bay, Jack's Hole, Magharamore, Silver Strands, Long Rock, Wicklow Head, Wicklow North Beach, Kiloughter, Five Mile Point, Kilcoole and Greystones. At Arklow, boat angling is best in the summer months from June to August. There are several good shore angling locations in the vicinity of Arklow, including at Ferrybank and at South Beach (ERFB, 2009).
- 19.5.2.13 Wicklow has been described as the best venue in Ireland for certain species (Table 19.4). It has been estimated that there are 622 angling trips per year, comprised of a number of locally based angling groups and individuals. There are two charter boats, run by Wicklow Boat Charters, and several privately owned boats that launch from Wicklow. There are shore angling marks in the

vicinity of the Landfall, including at Ennereilly beach, which is popular with anglers (Wicklow Town, 2021) (Figure 19.2).

Other recreational activities

DIVING

19.5.2.14 There is one diving club located to the north of the Proposed Development, the Wicklow Sub Aqua Club. Four dive sites were identified from the desktop review to the north of Wicklow Head, and within the Infrastructure and Other Users Study Area (Outer Area) (Irish Underwater Council, 2021) (Figure 19.2). Diving sites identified by Wicklow Sub Aqua Club include sites near Dalkey Islands, Kiloughter, some of the wrecks out on the banks (e.g. the Lanarkshire on Codling Bank), Wicklow Head, Wolf Rocks off Brittas Bay and occasionally at Arklow. Ocean Divers operates diving charters from Dun Laoghaire Harbour, also visiting sites off Dalkey Islands and the Muglins, with occasional visits to sites off Wicklow Head, however they do not operate in the vicinity of the Proposed Development. Diving generally takes place between March/May and October. Wrecks within the Infrastructure and Other Users Study Area (Outer Area) are assessed in Chapter 18: Marine Archaeology and Cultural Heritage.

WATER SPORTS

19.5.2.15 There are a number of tour operators offering water sports such as kayaking, paddle boarding, coasteering and surfing off the coast of County Wicklow. The closest operator is 1.41 km from the Infrastructure and Other Users Study Area (Inner Area). No surfing locations were identified within the Infrastructure and Other Users Study Area (Inner Area), however there are surfing locations further along the coastline to the north of the Landfall (Figure 19.2), including at Brittas Bay.

BEACH USERS

19.5.2.16 The Landfall is located 100 m south of Ennereilly beach, Johnstown North. Ennereilly beach is comprised of two sandy beaches. The beaches have been described as small and quiet (Wicklow Town, 2021), and are used by members of the public for recreation (i.e. walking/swimming). The sandy coves further south at the Landfall are not easily accessible from the shore. Other beaches further along the coastline include Brittas Bay, Maghermore, Silver Strand and Greystones these are outside the Infrastructure and Other Users Study Area (Inner Area) but are present within the Infrastructure and Other Users Study Area (Outer Area).

Harbours, marinas and dredging areas

19.5.2.17 The two main ports in proximity to the Proposed Development are Arklow and Wicklow (11.80 km and 9.90 km from the Array Area, respectively). Arklow Harbour is a small port noted for its fishing fleet and marina, and Wicklow Harbour is a small harbour mainly used by fishing vessels and coasters (Volume III, Appendix 15.1: Navigational Risk Assessment).

19.5.2.18 Arklow Harbour is located within the Infrastructure and Other Users Study Area (Outer Area). Periodic maintenance dredging is required within the port berth areas and vessel approaches to maintain sufficient draught for vessel access. This is evidenced by historic (i.e. permits expired) Dumping at Sea sites licenced by the Environmental Protection Agency (EPA) for the dumping of dredged material in the vicinity of Arklow Harbour (Figure 19.3), within the Infrastructure and Other Users Study Area (Outer Area).

Marine aggregate resource areas and coal deposits

19.5.2.19 There are high potential aggregate resource areas identified by the Irish Sea Marine Aggregates Initiative (IMAGIN) (2008) present within the Infrastructure and Other Users Study Area (Inner

area and Outer Area) as well as within the Array Area itself with an Area of 2.15 km² (Figure 19.3), however no licences have been granted for aggregate extraction.

19.5.2.20 There are no known coal deposits located within the Infrastructure and Other Users Study Area (Inner Area).

Offshore energy projects

19.5.2.21 ABWP1 is located within the Infrastructure and Other Users Study Area (Inner Area). It comprises 7 wind turbine generators (WTGs) with an export capacity of 25.2 megawatt (MW). ABWP1 is located within a sublease area (1.35 km²) in the centre of the Proposed Development's Array Area. A single export cable extends from the existing wind turbines to shore via Landfall at Arklow Harbour. The length of the cable is approximately 15.5 km from the ABWP1 Array Area to the ABWP1 Landfall (Figure 19.3). There are no other consented or operational offshore wind farms or wave and tidal energy developments within the Infrastructure and Other Users Study Area (Inner Area and Outer Area).

19.5.2.22 There is no active oil and gas infrastructure within the Infrastructure and Other Users Study Area (Inner Area and Outer area). There are five plugged and abandoned exploration wells west and southwest offshore of Arklow Bank (marineplan.ie [accessed March 2024]).

19.5.2.23 There are no active or proposed Carbon Capture and Storage, natural gas storage or Underground Coal Gasification sites within the Infrastructure and Other Users Study Area (Inner Area and Outer Area).

Offshore cables and pipelines

19.5.2.24 As noted above, the ABWP1 export cable is located within the Infrastructure and Other Users Study Area (Inner Area and Outer Area).

19.5.2.25 There are no other active cables or pipelines within the Infrastructure and Other Users Study Area (Inner Area and Outer Area). There is one operational subsea telecommunication cable located offshore of Arklow Bank beyond the 12 nm limit (Figure 19.3). There are two offshore gas pipelines that connect Ireland with Scotland located to the north of Dublin Bay (Figure 19.3).

Communications infrastructure

19.5.2.26 Communication devices considered within this chapter include offshore microwave fixed links and television signals. Vessel communications are considered within Chapter 15: Shipping and Navigation.

19.5.2.27 A Supervisory Control and Data Acquisition (SCADA) communication system is in place between the ABWP1 wind turbines and the shore. It is understood that this is transmitted through the fibre optic cables within the existing export cable to shore.

19.5.2.28 Due to the location of the Array Area at least 6 km from the shoreline and in open water, and due to the lack of existing active surface infrastructure in the vicinity of the Proposed Development which may have communications with the shoreline (with the exception of the existing ABWP1), wireless fixed telecommunication links are not anticipated to be present within 1 km of the Array Area.

19.5.2.29 The national digital terrestrial television service in Ireland is known as Saorview and is transmitted by 2RN. Digital satellite and digital cable are also widely used. The closest Saorview transmitter to the Proposed Development is located on the outskirts of Arklow. There are also Saorview transmitters located at Gorey and Wicklow. The Kippure transmission hub in County Wicklow also provides signal to households in Northern Ireland.

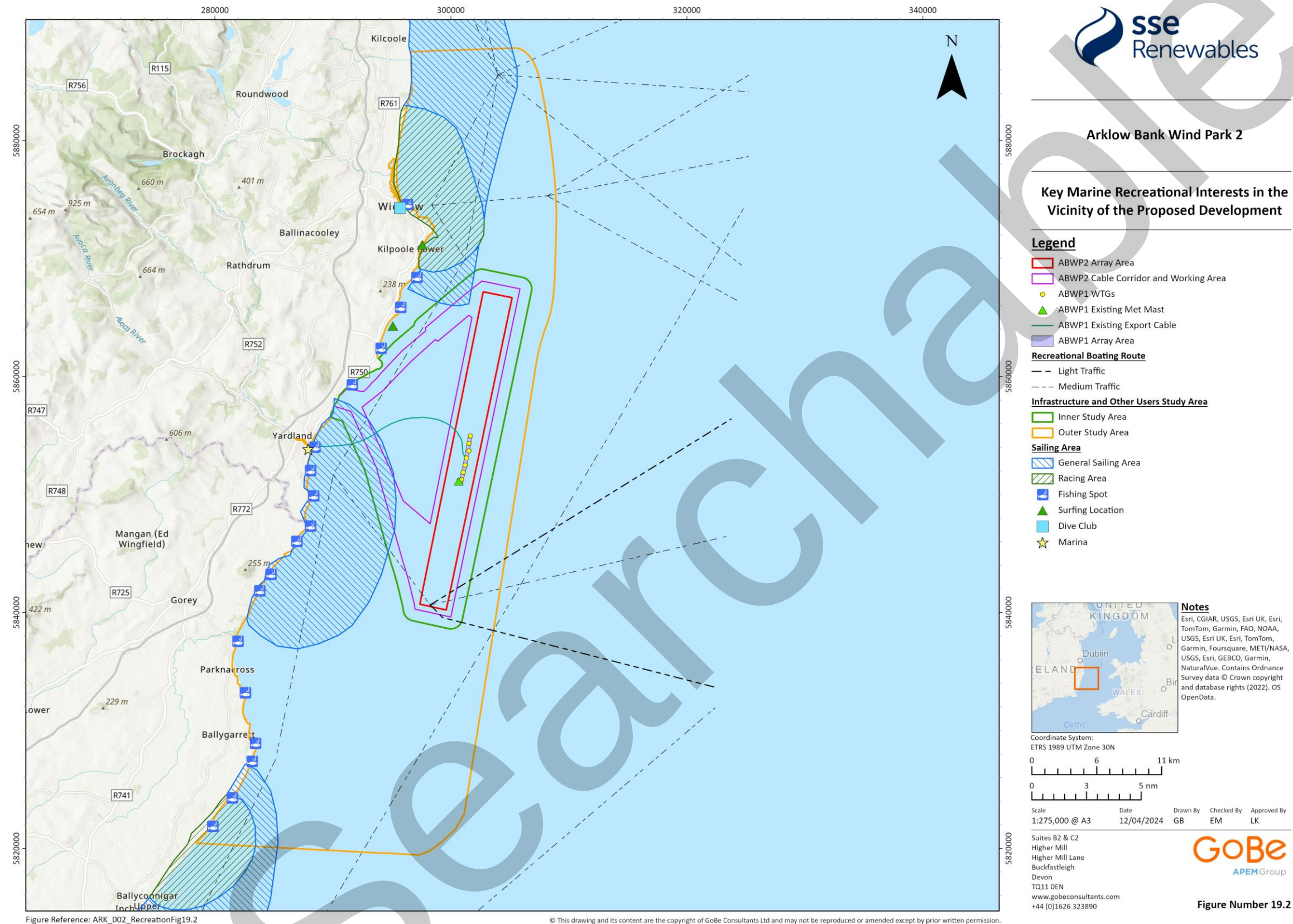


Figure 19.2: Key Marine Recreational Interests in the Vicinity of the Proposed Development

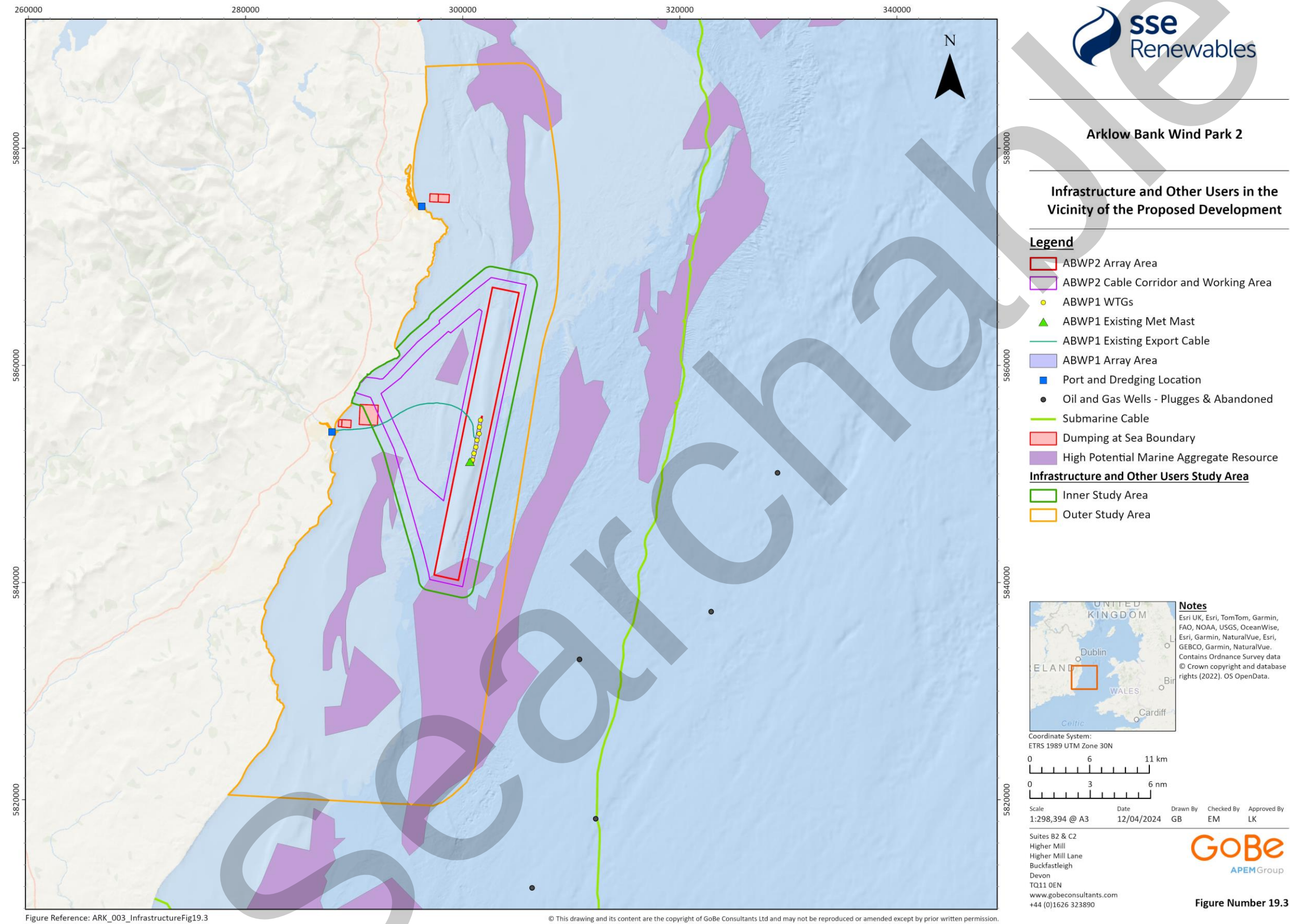


Figure 19.3: Infrastructure and Other Users in the Vicinity of the Proposed Development

19.5.3 'Do nothing' scenario

- 19.5.3.1 Annex IV of the EIA Directive sets out the information required to be included in an EIAR. This includes “a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the Proposed Development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge”. In the event that the Proposed Development does not proceed, an assessment of the future baseline conditions has been carried out and is described within this section.
- 19.5.3.2 The future baseline scenario for recreational activities is considered unlikely to change substantially from that presented in section 19.5.2 above, in the absence of the Proposed Development. The future baseline scenario for recreational sailing and motor cruising, recreational fishing and other recreational activities is likely to gradually increase in line with population growth in Ireland, however this is unlikely to represent a substantial change in the short term.
- 19.5.3.3 There is potential for significant growth in offshore wind energy within Ireland, with the Irish Government targeting at least 5 gigawatt (GW) of offshore wind by 2030¹. There are a number of sites along the east coast of Ireland at concept/early planning stage (NMPF, 2021), and a number of sites designated as 'Relevant Projects'², which are expected to come forward under the new marine planning regime. Other renewable energy sources, such as wave and tidal energy devices, are in their early research and development stage.
- 19.5.3.4 Since 2019 and 2020, the Irish Government has a policy of ending the issue of new licences for the exploration and extraction of oil and gas (Department of the Environment, Climate and Communications, 2020). Therefore, the baseline environment for oil and gas activity in the vicinity of the Proposed Development is unlikely to change.
- 19.5.3.5 There is potential for marine aggregate extraction to increase in line with increased demand for aggregates in the construction industry (DHPLG, 2019). A number of areas along the east, southeast and southwest coasts of Ireland have been identified as having potential to support marine aggregate extraction, with an estimate resource between 5 and 7 billion m³ (DHPLG, 2019).

19.5.4 Data limitations

- 19.5.4.1 The data sources used in this chapter are detailed in Table 19.5. The data used are the most up to date publicly available information which can be obtained from the applicable data sources as cited. Data has also been provided through consultation as detailed in section 19.3 above. The data are therefore limited by what is available and by what has been made available, at the time of writing the EIAR. It is considered that the data employed in the assessment are robust and sufficient for the purposes of the impact assessment presented.

¹ In June 2020, the Programme for Government included plans to achieve 5 GW capacity in offshore wind by 2030 off Ireland's eastern and southern coasts. The Climate Action Plan 2023 and 2024 set a target of 5 GW of offshore renewable energy capacity.

² The Transition Protocol, published alongside the General Scheme of the MPDM (as the Maritime Area Planning Act 2021 was then titled) in January 2020, provides guidance to the sector regarding the treatment of certain offshore wind projects ("Relevant Projects") in the context of the Maritime Area Planning Act 2021. The Protocol governs the approach for these projects and enables them to transition to the regime that was developed under the MAP Act. ABWP2 was included as a Relevant Project under the Transition Protocol.

19.6 Impact assessment methodology

19.6.1 Key parameters for assessment

- 19.6.1.1 The assessment of significance of effects has been carried out on both of the two discrete Project Design Options detailed in Volume II, Chapter 4: Description of Development. This approach has allowed for a robust and full assessment of the Proposed Development.
- 19.6.1.2 The two Project Design Options and parameters relevant to each potential impact are detailed in Table 19.6 and Table 19.7.

Table 19.6: Project design parameters and impacts assessed – Project Design Option 1

Potential impact	Phase			Project Design Option 1
	C	O	D	
Potential for damage to ABWP1 export cable	✓	✓	×	Construction phase • Installation of 110 – 122 km of inter-array cables within the Array Area; • Installation of one interconnector cable between 25-28 km in length within the Array Area; • Installation of two offshore export cables of 35-40 km length • Installation of cable crossings over existing third party export cable; and • Offshore construction may take place over a period of five years. Operational and maintenance phase <u>Cable maintenance</u> • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years). • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years). • Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years). • Operational dredging for inter-array cables (300,000 m³ every 5 years); • Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and • Operational phase 36.5 years.
Restriction of access to ABWP1 for maintenance activities	✓	✓	×	Construction phase • Installation of 58 foundations for 56 wind turbines and two offshore substation platforms (OSPs) within the Array Area; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length;

Potential impact	Phase			Project Design Option 1
	C	O	D	
				• Presence of advisory safety zones of 500 m in radius around structures undergoing installation and 500 m advisory safety zones around all structures until the point of commissioning; and advisory clearance distances of 500 m in radius around installation vessels; • Advisory clearance distances along vulnerable sections of cables (i.e. cables awaiting burial or protection); and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation may take place over a period of 12 months. Operational and maintenance phase <u>Presence of infrastructure:</u> • 56 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m from blade tip to blade tip; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and • Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance</u> • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); • Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); • Operational dredging for inter-array cables (300,000 m³ every 5 years);

Potential impact	Phase			Project Design Option 1
	C	O	D	
				- Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase 36.5 years.
Impact on ABWP1 existing cables from scour and sediment disturbance	x	✓	x	Operational and maintenance phase <u>Presence of infrastructure:</u> 56 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m; - Installation of 110 - 122 km inter-array cables within the Array Area; - Installation of one interconnector cable of 25 - 28 km length; - Installation of two offshore export cables of 35 - 40 km length; 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and - Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance</u> - For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); - For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); - Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); - Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase 36.5 years.
Displacement of other users due to the physical presence of infrastructure	✓	✓	✓	Construction phase Installation of 58 foundations for 56 wind turbines and two OSPs within the Array Area;

Potential impact	Phase			Project Design Option 1
	C	O	D	
				• Installation of 110 - 122 km inter-array cables within the Array Area; • Installation one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • Advisory clearance distances along vulnerable sections of cables (i.e. cables awaiting burial or protection); • Cable installation at the Landfall via Trenchless techniques; and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation at the Landfall may take place over a period of nine months. Operational and maintenance phase <u>Presence of infrastructure:</u> • 56 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and • Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance</u> • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); • Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years);

Potential impact	Phase			Project Design Option 1
	C	O	D	
				- Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase 36.5 years. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Displacement of other users due to increased vessel movements	✓	✓	✓	Construction phase <u>Confirmatory surveys</u> A suite of confirmatory surveys (Array Area, Cable Corridor and Working Area) will be undertaken to confirm on the seabed and geological conditions prior to the installation of the infrastructure. Complete details of the full suite of surveys proposed are provided in Volume II, Chapter 4: Description of Development. Those which are relevant to this impact are: Geotechnical survey: - Boreholes x131; - Core Penetration Tests (CPT) x431; - vibrocore/ gravity core x300; and - grab samples x240; Metocean survey: - Floating LiDAR (includes seabed anchor points); - Acoustic Doppler Current Profiler (ADCP) (deployed on a seabed frame and includes mooring structure); and - Wave buoy (includes seabed mooring); Sediment dynamics survey: - Benthic flume; and - Benthic lander (ballasted structure which requires no mooring/ anchor). <u>Construction operations</u>

Potential impact	Phase			Project Design Option 1
	C	O	D	
				• Presence of advisory safety zones of 500 m in radius around structures undergoing installation and 500 m advisory safety zones around all structures until the point of commissioning; and advisory clearance distances of 500 m in radius around installation vessels; • Maximum of 69 vessels on site at one time comprised of jack up barges, cargo, support, tug/anchor, cable installation, guard, survey, crew transfer, sand wave clearance and unexploded ordnance (UXO) clearance vessels. • Maximum of 4,150 return trips across construction period and 1,797 return trips per year.; and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation at the Landfall may take place over a period of nine months. Operational and maintenance phase • Maximum of 30 vessels on site at one time comprised of crew transfer, jack-up, cable maintenance, service operations, cable survey and excavator vessels; and • Maximum of 1,359 return trips per year. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing activities	✓	✓	✓	Construction phase <u>Site preparation:</u> Site preparation activities prior to inter-array, interconnector and offshore export cable installation to include boulder clearance and sandwave clearance: For the foundations, seabed preparation will be required: within an area of 100 m in diameter; with 5 m depth of material being relocated; and for, approximately, 20% of the WTG locations.

Potential impact	Phase			Project Design Option 1
	C	O	D	
				For the offshore export, inter-array and interconnector cabling, boulder clearance will firstly be undertaken by plough along all of the routes: along a corridor of 15 m in width; and to a depth of 0.5 m. Following a period of circa, more than 14 days, sandwave clearance will then occur: along a corridor of 70 m in width (for each cable); with 10 m depth of material being relocated; and for up to 30% of the cable length. <u>Foundation installation:</u> WTGs and OSPs installed on monopile foundations: Drilled installation of: WTGs: Number of structures: 25; Diameter: 11 m (range 7 m to 11 m); Drill depth: 37 m; Drilling duration (per pile): 88 hours; Drill arisings (per pile): 5,280 m³ Number of concurrent drilling events: 1. OSP: Number of structures: 2; Diameter: 14 m (range 7 m to 14 m); Drill depth: 45 m; Drilling duration (per pile): 88 hours; Drill arisings (per pile): 13,860 m³ Number of concurrent drilling events: 1. <u>Cable installation:</u> Cable installation techniques include: Jetting;

Potential impact	Phase			Project Design Option 1
	C	O	D	
				Ploughing; Mechanical cutting; Simultaneous lay and burial; Controlled Flow Excavator (CFE). Interconnector cables: Length between 25 km and 28 km; Burial depth between 0 m and 2.5 m; Seabed disturbance width 15 m. Inter-array cables: Length between 110 km and 122 km; Burial depth between 0 m and 1.5 m; Seabed disturbance width 15 m. Export cables: Length between 35 m and 40 km; Burial depth between 0 m and 2.5 m; Seabed disturbance width 15 m. Operational and maintenance phase <u>Cable maintenance</u> • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); • Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); and

Potential impact	Phase			Project Design Option 1
	C	O	D	
				- Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase is 36.5 years. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Restrictions to potential aggregate resource availability	✓	✓	✓	Construction phase - Installation of 58 foundations for 56 wind turbines and two OSPs within the Array Area; - Installation of 110 - 122 km of inter-array cables within the Array Area; - Installation of one interconnector cable of 25 - 28 km length; - Installation of two offshore export cables of 35 - 40 km length; - Presence of advisory safety zones of 500 m in radius around structures undergoing installation and 500 m advisory safety zones around all structures until the point of commissioning; and advisory clearance distances of 500 m in radius around installation vessels; - Advisory clearance distances along vulnerable sections of cables (i.e. cables awaiting burial or protection); - Maximum of 66 vessels on site at one time comprised of jack up barges, cargo, support, tug/anchor, cable installation, guard, survey, crew transfer, sand wave clearance and UXO clearance vessels. - Maximum of 4,150 return trips across construction period and 1,797 return trips per year. - Cable installation at the Landfall via Trenchless techniques; and - Offshore construction may take place over a period of five years. Within this period, offshore export cable installation at the Landfall may take place over a period of nine months. Operational and maintenance phase <u>Presence of infrastructure:</u>

Potential impact	Phase			Project Design Option 1
	C	O	D	
				56 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m; - Installation of 110 - 122 km inter-array cables within the Array Area; - Installation of one interconnector cable of 25 - 28 km length; - Installation of two offshore export cables of 35 - 40 km length; 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and - Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance</u> - For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); - For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); - Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); - Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase is 36.5 years; - Maximum of 30 vessels on site at one time comprised of crew transfer, jack-up, cable maintenance, service operations, cable survey and excavator vessels; - Maximum of 1,359 return trips per year; - Presence of advisory safety zones of 500 m in radius around structures undergoing major maintenance; and advisory clearance distances of 500 m in radius around cable maintenance vessels and jack-up vessels; and - Operational phase 36.5 years.

Potential impact	Phase			Project Design Option 1
	C	O	D	
				Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Reduced production of ABWP1 due to proximity of Proposed Development.	x	✓	x	Operational and maintenance phase <u>Presence of infrastructure:</u> • 56 wind turbines within the Array Area, with minimum spacing between turbines of 500 m tip to tip; • Operational phase 36.5 years; • Rotor diameter 236 m; • Upper blade tip height 273 m (above lower astronomical latitude (LAT)); and • Lower blade tip height 37 m (above LAT).

Table 19.7: Project design parameters and impacts assessed - Project Design Option 2

Potential impact	Phase			Project Design Option 2
	C	O	D	
Potential for damage to ABWP1 export cable	✓	✓	✗	Construction phase • Installation of 110 – 122 km of inter-array cables within the Array Area; • Installation of one interconnector cable between 25-28 km in length within the Array Area; • Installation of two offshore export cables of 35-40 km length; • Installation of cable crossings over existing third party export cable; and Offshore construction may take place over a period of five years. Operational and maintenance phase <u>Cable maintenance</u> • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); • Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); • Operational dredging for inter-array cables (300,000 m³ every 5 years); • Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and • Operational phase 36.5 years.
Restriction of access to ABWP1 for maintenance activities	✓	✓	✗	Construction phase • Installation of 49 foundations for 47 wind turbines and two OSPs within the Array Area; • Installation of 110 - 122 km inter-array cables within the Array Area;

Potential impact	Phase			Project Design Option 2
	C	O	D	
				• Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • Presence of advisory safety zones of 500 m in radius around structures undergoing installation and 500 m advisory safety zones around all structures until the point of commissioning; and advisory clearance distances of 500 m in radius around installation vessels; • Advisory clearance distances along vulnerable sections of cables (i.e. cables awaiting burial or protection); and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation may take place over a period of 12 months. Operational and maintenance phase <u>Presence of infrastructure:</u> • 47 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m from blade tip to blade tip; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and • Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance activities:</u> • Cable maintenance; • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance

Potential impact	Phase			Project Design Option 2
	C	O	D	
				of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); • Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); • Operational dredging for inter-array cables (300,000 m³ every 5 years); • Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and • Operational phase 36.5 years.
Impact on ABWP1 existing cables from scour and sediment disturbance	x	✓	x	Operational and maintenance phase <u>Presence of infrastructure:</u> • 47 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and • Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance</u> • For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); • For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years);

Potential impact	Phase			Project Design Option 2
	C	O	D	
				• Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); • Operational dredging for inter-array cables (300,000 m³ every 5 years); • Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and • Operational phase 36.5 years.
Displacement of other users due to the physical presence of infrastructure	✓	✓	✓	Construction phase • Installation of 49 foundations for 47 wind turbines and two OSPs within the Array Area; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • Advisory clearance distances along vulnerable sections of cables (i.e. cables awaiting burial or protection); • Cable installation at the Landfall via Trenchless techniques; and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation at the Landfall may take place over a period of nine months. Operational and maintenance phase <u>Presence of infrastructure:</u> • 47 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and

Potential impact	Phase			Project Design Option 2
	C	O	D	
				- Cable protection over cable crossings total footprint of 750-24,000 m². <u>Cable maintenance</u> - For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); - For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); - Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 – 2.5 m deep trench (cable maintenance once every 3 years); - Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase is 36.5 years. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Displacement of other users due to increased vessel movements	✓	✓	✓	Construction phase <u>Confirmatory Surveys</u> A suite confirmatory surveys (Array Area, Cable Corridor and Working Area) will be undertaken to confirm on the seabed and geological conditions prior to the installation of the infrastructure. Complete details of the full suite of surveys proposed are provided in Volume II, Chapter 4: Description of Development. Those which are relevant to this impact are:

Potential impact	Phase			Project Design Option 2
	C	O	D	
				• Geotechnical survey: – Boreholes x131; – Core Penetration Tests (CPT) x431; – vibrocore/ gravity core x300; and – grab samples x240. • Metocean survey: – Floating LiDAR (includes seabed anchor points); – Acoustic Doppler Current Profiler (ADCP) (deployed on a seabed frame and includes mooring structure); and – Wave buoy (includes seabed mooring). • Sediment dynamics survey: – Benthic flume; and – Benthic lander (ballasted structure which requires no mooring/ anchor). <u>Construction operations</u> • Presence of advisory safety zones of 500 m in radius around structures undergoing installation and 500 m advisory safety zones around all structures until the point of commissioning; and advisory clearance distances of 500 m in radius around installation vessels; • Maximum of 69 vessels on site at one time comprised of jack up barges, cargo, support, tug/anchor, cable instillation, guard, survey, crew transfer, sand wave clearance and unexploded ordnance (UXO) clearance vessels; • Maximum of 4,150 return trips across construction period and 1,797 return trips per year; and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation at the Landfall may take place over a period of nine months. Operational and maintenance phase

Potential impact	Phase			Project Design Option 2
	C	O	D	
				- Maximum of 30 vessels on site at one time comprised of crew transfer, jack-up, cable maintenance, service operations, cable survey and excavator vessels; and - Maximum of 1,359 return trips per year. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Increased suspended sediment concentrations and associated deposition affecting recreational diving sites	✓	✓	✓	Construction phase <u>Site preparation:</u> Site preparation activities prior to inter-array, interconnector and offshore export cable installation to include boulder clearance and sandwave clearance: For the foundations, seabed preparation will be required: within an area of 100 m in diameter; with 5 m depth of material being relocated; and for, approximately, 20% of the WTG locations. For the offshore export, inter-array and interconnector cabling, boulder clearance will firstly be undertaken by plough along all of the routes: along a corridor of 15 m in width; and to a depth of 0.5 m. Following a period of circa, more than 14 days, sandwave clearance will then occur: along a corridor of 70 m in width (for each cable); with 10 m depth of material being relocated; and for up to 30% of the cable length. <u>Foundation installation:</u> WTGs and OSPs installed on monopile foundations: Drilled installation of:

Potential impact	Phase	Project Design Option 2
	C O D	
		WTGs: Number of structures: 25; Diameter: 11 m (range 7 m to 11 m); Drill depth: 37 m; Drilling duration (per pile): 88 hours; Drill arisings (per pile): 7,040 m³ Number of concurrent drilling events: 1. OSPs: Number of structures: 2; Diameter: 14 m (range 7 m to 14 m); Drill depth: 45 m; Drilling duration (per pile): 88 hours; Drill arisings (per pile): 13,860 m³ Number of concurrent drilling events: 1. <u>Cable installation:</u> Cable installation techniques include: Jetting; Ploughing; Mechanical cutting; Simultaneous lay and burial; Controlled Flow Excavator (CFE). Interconnector cables: Length between 25 km and 28 km; Burial depth between 0 m and 2.5 m; Seabed disturbance width 15 m. Inter-array cables:

Potential impact	Phase	Project Design Option 2
	C O D	Length between 110 km and 122 km; Burial depth between 0 m and 1.5 m; Seabed disturbance width 15 m. Export cables: Length between 35 m and 40 km; Burial depth between 0 m and 2.5 m; Seabed disturbance width 15 m. Operational and maintenance phase <u>Cable maintenance</u> - For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); - For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); - Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 3 years); - Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase 36.5 years. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).

Potential impact	Phase			Project Design Option 2
	C	O	D	
Restrictions to potential aggregate resource availability	✓	✓	✓	Construction phase • Installation of 49 foundations for 47 wind turbines and two OSPs within the Array Area; • Installation of 110 - 122 km of inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • Presence of advisory safety zones of 500 m in radius around structures undergoing installation and 500 m advisory safety zones around all structures until the point of commissioning; and advisory clearance distances of 500 m in radius around installation vessels; • Advisory clearance distances along vulnerable sections of cables (i.e. cables awaiting burial or protection); • Maximum of 66 vessels on site at one time comprised of jack up barges, cargo, support, tug/anchor, cable installation, guard, survey, crew transfer, sand wave clearance and UXO clearance vessels; • Maximum of 4,150 return trips across construction period and 1,797 return trips per year. • Cable installation at the Landfall via Trenchless techniques; and • Offshore construction may take place over a period of five years. Within this period, offshore export cable installation at the Landfall may take place over a period of nine months. Operational and maintenance phase <u>Presence of infrastructure:</u> • 47 wind turbines and two OSPs within the Array Area, with minimum spacing between turbines of 500 m; • Installation of 110 - 122 km inter-array cables within the Array Area; • Installation of one interconnector cable of 25 - 28 km length; • Installation of two offshore export cables of 35 - 40 km length; • 18,300 m of inter-array cables, 8000 m of export cables and 14,000 m of interconnector cables may require protection, cable protection height will be between 1.5 – 1.8 m; and • Cable protection over cable crossings total footprint of 750-24,000 m².

Potential impact	Phase	Project Design Option 2		
	C	O	D	
				<u>Cable maintenance</u> - For inter-array cables, maintenance of cables between 110 km - 122 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 1.5 m deep trench (cable maintenance once every 3 years); - For export cables, repair, reburial and excavation of excess material of cables between 35 km - 40 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 5 years); - Interconnector cables: repair and reburial and excavation of excess material of cables of between 25 km - 28 km in length over the lifetime of the Proposed Development with disturbance of seabed material 15 m wide and 0 - 2.5 m deep trench (cable maintenance once every 3 years); - Operational dredging for inter-array cables (300,000 m³ every 5 years); - Operational dredging for Interconnector and Export Cables (100,000m³ every 3 years); and - Operational phase 36.5 years. Decommissioning phase As above, however removal rather than installation for the construction phase. Inter-array, interconnector, offshore export cables, scour protection and cable protection left in situ (Volume III, Appendix 4.1: Rehabilitation Schedule).
Reduced production of ABWP1 due to proximity of Proposed Development.	x	✓	x	Operational and maintenance phase <u>Presence of infrastructure:</u> 47 wind turbines within the Array Area, with minimum spacing between turbines of 500 m tip to tip; - Operational phase 36.5 years; - Rotor diameter 250 m; - Upper blade tip height 287 m (above LAT); and - Lower blade tip height 37 m (above LAT).

19.6.2 Impacts scoped out of the assessment

19.6.2.1 On the basis of the baseline environment and the description of development outlined in Volume II, Chapter 4: Description of Development, a number of impacts are proposed to be scoped out of the assessment for Infrastructure and Other Users. These impacts are outlined, together with a justification for scoping them out, in Table 19.8.

Table 19.8: Impacts scoped out of the assessment for Other Users and Infrastructure

Potential impact	Justification
Changes to wave climate	Potential for changes to wave climate affecting the surfing waves and surf breaks recreational resource has been scoped out from further assessment due to the distance of the Array Area from the shoreline (6 km) and as the effects are unlikely to be measurable at the shoreline.
Increased airborne noise	Potential for airborne noise during construction and decommissioning phases to interfere with recreational sailing and motor cruising, recreational fishing and other recreational activities has been scoped out from further assessment on the basis that such users will likely avoid the area. Advisory safety distances will also be implanted during the construction phase of the Proposed Development.
Impact on communications infrastructure	Previous consultation with 2RN has confirmed that there will be no impact on any of 2RN's broadcast or telecoms services (see Table 18.3). There is a risk of interference to a small number of TV viewers along the coast who receive United Kingdom (UK) free to air TV services from transmitters in Wales, but alternative free to air service is available via Freesat and therefore potential effects are considered unlikely to be significant. Due to the location of the Array Area 6 km to 15 km from the shoreline and in open water, and due to the lack of existing active surface infrastructure in the vicinity of the Proposed Development which may have communications with the shoreline (with the exception of the existing ABWP1), wireless fixed telecommunication links are not anticipated to be present within 1 km of the Array Area. The design of the Proposed Development will be such that there will be no impact on communications infrastructure associated with ABWP1 (i.e. SCADA systems). Potential for interference with marine navigational equipment is addressed within Volume II, Chapter 15: Shipping and Navigation.

19.7 Methodology for assessing the significance of effects

19.7.1 Overview

19.7.1.1 The Infrastructure and Other Users impact assessment has followed the methodology set out in Volume II, Chapter 5: EIA Methodology. Specific to the Infrastructure and Other Users impact assessment, the following guidance documents have also been considered:

- European Boating Association (EBA) Position Statement, Offshore Wind Farms (EBA, 2019);
- European Subsea Cables UK Association (ESCA) Guideline No 6, The Proximity of Offshore Renewable Energy Installations and Submarine Cable Infrastructure in UK Waters (ESCA, March 2016);
- The International Cable Protection Committee (ICPC) recommendations;
- Recommendation No.2. Recommended Routing and Coordinating Criteria for Submarine Telecommunications Cables in Proximity to Other Such Cables (ICPC, 2023a);

- Recommendation No.3. Telecommunications Cable and Oil Pipeline / Power Cables Crossing Criteria (ICPC, 2023b);
- Recommendation No.13. The Proximity of Offshore Renewable Wind Energy Installations and Submarine Cable Infrastructure in National Waters (ICPC, 2023c);
- Guidance on Environmental Impact Assessment of Offshore Renewable Energy Development on Surfing Resources and Recreation (Surfers against Sewage (SAS), 2009); and
- EIAR Guidelines for the Consideration of Tourism and Tourism Related Projects (Fáilte Ireland, no date).

19.7.2 Impact assessment criteria

19.7.2.1 The criteria for determining the significance of effects is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in Volume II Chapter 5: EIA Methodology.

SENSITIVITY

19.7.2.2 The criteria for defining sensitivity in this chapter are outlined in Table 19.9.

Table 19.9: Definitions of sensitivity of the receptor

Receptor sensitivity	Definition
High	Receptor or the activities of the receptor is of high value to the local, regional or national economy and/or the receptor or the activities of the receptor is generally vulnerable to impacts that may arise from the Proposed Development and/or recoverability is slow and/or costly.
Medium	Receptor or the activities of the receptor is of moderate value to the local, regional or national economy and/or the receptor or the activities of the receptor is somewhat vulnerable to impacts that may arise from the Proposed Development and/or has moderate to high levels of recoverability.
Low	Receptor or the activities of the receptor is of low value to the local, regional or national economy and/or the receptor or the activities of the receptor is not generally vulnerable to impacts that may arise from the Proposed Development and/or has high recoverability.
Negligible	Receptor or the activities of the receptor is of negligible value to the local, regional or national economy and/or the receptor or the activities of the receptor is not vulnerable to impacts that may arise from the Proposed Development and/or has high recoverability.

MAGNITUDE

19.7.2.3 The criteria for defining magnitude in this chapter are outlined in Table 19.10.

Table 19.10: Definition of terms relating to the magnitude of an impact

Magnitude	Definition
High	Total loss of ability to carry on activities and/or impact is of extended physical extent and/or long-term duration (i.e. total life of Proposed Development) and/or frequency of

Magnitude	Definition
	repetition is continuous and/or effect is not reversible for Proposed Development) (Adverse).
Medium	Loss or alteration to significant portions of key components of current activity and/or physical extent of impact is moderate and/or medium-term duration (i.e. operational period) and/or frequency of repetition is medium to continuous and/or effect is not reversible for Proposed Development phase (Adverse).
Low	Minor shift away from baseline, leading to a reduction in level of activity that may be undertaken and/or physical extent of impact is low and/or short to medium-term duration (i.e. construction period) and/or frequency of repetition is low to continuous and/or effect is not reversible for Proposed Development phase (Adverse).
Negligible	Very slight change from baseline condition and/or physical extent of impact is negligible and/or short-term duration (i.e. less than two years) and/or frequency of repetition is negligible to continuous and/or effect is reversible (Adverse).

SIGNIFICANCE OF EFFECT

19.7.2.4 The significance of the effect upon Infrastructure and Other Users is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in Table 19.11. Where a range of significance of effect is presented in Table 19.11, the final assessment for each effect is based upon expert judgement.

Table 19.11: Significance of effect matrix

			Baseline Environment - Sensitivity			
			High	Medium	Low	Negligible
Description of Impact - Magnitude	Adverse Impact	High	Profound or Very Significant (significant)	Significant	Moderate*	Imperceptible
		Medium	Significant	Moderate*	Slight	Imperceptible
		Low	Moderate*	Slight	Slight	Imperceptible
	Neutral Impact	Negligible	Not Significant	Not Significant	Not Significant	Imperceptible
	Positive Impact	Low	Moderate*	Slight	Slight	Imperceptible
		Medium	Significant	Moderate*	Slight	Imperceptible
		High	Profound or Very Significant	Significant	Moderate*	Imperceptible

			(significant)			
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**Moderate levels of effect have the potential, to be significant or not significant. Moderate will be considered as significant or not significant in EIA terms, depending on the sensitivity and magnitude of change factors evaluated. These evaluations are explained as part of the assessment, where they occur.*

19.7.3 Factored-in measures

19.7.3.1 The Project Design Options detailed in Volume II, Chapter 4: Description of Development include a number of designed-in measures and management measures (or controls) which have been factored into the Proposed Development and are committed to be delivered by the Developer as part of the Proposed Development. These factored-in measures are standard measures applied to offshore wind development, including lighting and marking of the Proposed Development, use of 'soft-starts' for piling operations etc, to reduce the potential for impacts.

19.7.3.2 Factored in-measures relevant to the assessment on Infrastructure and Other Users are presented in Table 19.12. These measures are integrated into the description of development and have therefore been considered in the assessment presented in section 19.8 (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development. This approach is in line with EPA guidance which states that 'in an EIAR it may be useful to describe avoidance measures that have been integrated into the proposed proposal' (EPA, 2022).

Table 19.12: Factored-in measures

Factored-in measures	Justification
Ongoing consultation with Arklow Energy Limited throughout the remaining lifetime of ABWP1. If ABWP1 is still in operation when the Proposed Development is constructed, the Developer will enter into an agreement with Arklow Energy Limited to account for any wake impact on ABWP1.	To promote and maximise cooperation between the Developer and Arklow Energy Limited and to minimise both spatial and temporal interactions.
Use of 'rolling'/temporary 500 m advisory safety zones surrounding the location of all proposed/fixed structures where work is being undertaken by a construction or maintenance vessel. Use of 50 m advisory safety zones around all surface structures up until the point of commissioning. Use of 'rolling'/temporary 500 m advisory clearance distances around installation/maintenance vessels (Volume III, Appendix 15.1: Navigational Risk Assessment (NRA)).	In the interests of safety to Infrastructure and Other Users receptors.
Promulgation of information advising on the nature, timing and location of activities, including through Notices to Mariners. Information and notices will also be posted near Landfall. Creation of a database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing	To ensure that as many interested parties as possible are aware of Proposed Development activities.

Factored-in measures	Justification
list for direct issue of Notices to Mariners. (Volume III, Appendix 25.7: Vessel Management Plan (VMP)).	
Appointment of a Community Engagement Manager during the pre-construction and construction phase (Volume III, Appendix 25.1: Environmental Management Plan (EMP)).	To ensure that as many interested parties as possible are aware of Proposed Development activities.
Adherence to a Lighting and Marking Plan (LMP) Volume III: Appendix 25.6. Navigational aids and marine charting, also to be agreed with the Commissioners of Irish Lights.	To ensure other marine users are aware of the location of the Proposed Development (Chapter 15: Shipping and Navigation). The LMP will confirm compliance with legal requirements with regards to shipping, navigation and aviation marking and lighting.
Adherence to a Vessel Management Plan (VMP) (Volume III, Appendix 25.7).	The VMP will confirm the types and numbers of vessels that will be engaged on the proposed development, and consider vessel coordination including indicative transit route planning (Marine Coordination)
Implementation of a buoyed construction/decommissioning area around the Array Area during the appropriate phases	To ensure other marine users are aware of the location of the Proposed Development.
Charting of all structures associated with the Proposed Development on relevant nautical and electronic charts (Volume III, Appendix 25.6 Lighting and Marking Plan (LMP)).	To ensure other marine users are aware of the location of the Proposed Development.
Adherence to a Rehabilitation Schedule (RS) (Volume III, Appendix 4.1).	The RS will outline measures for the decommissioning of the Proposed Development.
The implementation of the ABWP1 cable crossings will be coordinated with Arklow Energy Limited in order to minimise the potential for any impact on the ABWP1 export cables, in accordance with recognised industry good practice.	To reduce potential conflict at cable crossing locations.
Minimum lower blade tip height of 37 m above Lowest Astronomical Tide (LAT).	To minimise risk of allision with sailing vessels and in line with UK guidance (Marine and Coastguard Agency MGN 372). The Proposed Development will have a minimum lower blade tip height of 37 m above LAT
The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence for Site Investigations (FS007339).	The Developer was granted a Foreshore Licence (FS007339) for Site Investigations (associated with the Proposed Development) from the Minister for Housing, Local Government and Heritage in May 2022. The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning

Factored-in measures	Justification
	permission (if granted) at the same time as any activities the subject of the Foreshore Licence for Site Investigations (FS007339) being carried out. As such there is no temporal overlap between the activities consented in this Foreshore Licence and the Proposed Development and there will be no potential for cumulative effects.
The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence Application for Site Surveys FS007555 (should a licence be granted) are being carried out.	The Developer submitted a Foreshore Licence Application for Site Surveys to the Minister for Housing, Local Government and Heritage in April 2023 (FS007555) and this application is pending determination. The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence Application for Site Surveys FS007555 (should a licence be granted) are being carried out. As such there is no temporal overlap between the activities proposed in the Foreshore Licence Application and the Proposed Development.

19.8 Assessment of the significance of effects

- 19.8.1.1 The impacts of the construction, operational and maintenance and decommissioning phases of both Project Design Options forming the Proposed Development have been assessed on Infrastructure and Other Users. The potential impacts arising from the Proposed Development are listed in Table 19.6 and

- 19.8.1.3 Table 19.7, along with the parameters against which each impact has been assessed. A description of the potential effect on Infrastructure and Other Users receptors caused by each identified impact is provided in section 19.9 and section 19.10.

19.9 Assessment of Project Design Option 1

19.9.1 Impact 1 – Potential for damage to ABWP1 export cable

- 19.9.1.1 Construction and maintenance activities associated with the Proposed Development may lead to the potential for damage to the existing ABWP1 export cable. As the cables and cable protection associated with the Proposed Development will remain in situ upon decommissioning, this impact is not applicable for the decommissioning phase.

SENSITIVITY OF THE RECEPTOR

- 19.9.1.2 The ABWP1 export cable transmits electricity from the existing seven wind turbines to the onshore grid infrastructure (OGI). Integrity of the cables is crucial to securing ongoing power supply and Arklow Energy Limited's ongoing commercial operation. Disturbance or damage to the existing offshore wind farm (OWF) export cables could lead to efficiency reduction, cable de-burial or potential failure of the assets, which would be expensive to repair and has the potential to cause disruption to power distribution.

- 19.9.1.3 The existing ABWP1 export cable is deemed to be of low vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be Medium.

Construction phase

MAGNITUDE OF IMPACT

- 19.9.1.4 The installation of infrastructure associated with the Proposed Development in proximity to the ABWP1 export cable may lead to the potential for damage to third party infrastructure. The existing ABWP1 export cable will be crossed. This will be facilitated by the installation of standard cable crossing designs, likely to be comprised of ducting, concrete mattresses or rock (Volume II, Chapter 4: Description of Development).
- 19.9.1.5 Cable crossing installations will be coordinated with Arklow Energy Limited to minimise the potential for any impact on cables in accordance with recognised industry good practice (Table 19.12). Discussions between the Developer and Arklow Energy Limited are already underway. This ongoing consultation will ensure that both parties agree on the detailed crossing design to be employed and that the risks have been managed to acceptable standards. This close communication and planning between both parties will minimise potential for damage.
- 19.9.1.6 The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

- 19.9.1.7 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.1.8 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.1.9 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.9.1.10 The maintenance of infrastructure associated with the Proposed Development in proximity to the ABWP1 export cable may lead to the potential for damage to third party infrastructure. Maintenance activities may include the need to carry out repairs at cable crossing locations, in the unlikely event of a cable failure.

19.9.1.11 As described in paragraph 19.9.1.5, cable crossing installations will be coordinated with Arklow Energy Limited to minimise the potential for any impact on cables. Ongoing consultation between the Developer and Arklow Energy Limited will ensure that both parties agree on the repair methods to be employed in the unlikely event of a cable failure, and that the risks have been managed to acceptable standards. This close communication and planning between both parties will minimise potential for damage.

19.9.1.12 The impact is predicted to be of local spatial extent, long term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.9.1.13 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.1.14 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.1.15 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

19.9.2 Impact 2 – Restriction of access to ABWP1 for maintenance activities

19.9.2.1 The potential for restriction of access to ABWP1 is applicable to the construction and operational and maintenance phases of the Proposed Development only. It is likely that ABWP1 will be decommissioned before the Proposed Development is decommissioned, and therefore this impact is not applicable for the decommissioning phase. In the unlikely event that this is not the case, the same precautions as referred to in relation to the construction phase assessment below will ensure that the potential effects are the same or similar to that assessed for the construction phase.

SENSITIVITY OF THE RECEPTOR

19.9.2.2 Ongoing inspection and maintenance of the ABWP1 wind turbines and cables is crucial to ensuring the integrity of the infrastructure and securing ongoing power supply and Arklow Energy Limited's ongoing commercial operation.

19.9.2.3 ABWP1 is deemed to be of medium vulnerability, high recoverability and high value. The sensitivity of the receptor is therefore, considered to be Medium.

Construction phase

MAGNITUDE OF IMPACT

19.9.2.4 The installation of Proposed Development infrastructure and associated presence of advisory safety zones and advisory clearance distances may restrict access to the ABWP1 wind turbines, inter-array cables and export cable for repair or maintenance.

19.9.2.5 Any restriction of access to the existing wind turbines and cables associated with any advisory safety zones around an individual wind turbine undergoing installation or advisory clearance distances around individual vessels carrying out installation activities is considered to be temporary and limited in spatial extent. As described in paragraph 19.9.1.5, cable crossing installations will be coordinated with Arklow Energy Limited and ongoing consultation will ensure close communication and planning between both parties to ensure disruption of activities is minimised. Furthermore, no infrastructure will be located within the ABWP1 sublease boundary (Chapter 4: Description of Development), therefore minimising the potential for any restriction of access to the existing wind turbines.

19.9.2.6 The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.9.2.7 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.2.8 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.2.9 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.9.2.10 During the operational and maintenance phase, major maintenance activities associated with the Proposed Development (for example, component replacement activities, cable maintenance activities) and associated presence of advisory safety zones and advisory clearance distances, may restrict access to the ABWP1 wind turbines, inter-array cables and export cable for repair or maintenance.

19.9.2.11 Any restriction of access to the existing wind turbines and cables due to maintenance activities associated with the Proposed Development is considered to be temporary, limited in spatial extent, and infrequent over the lifetime of the Proposed Development. As described in paragraph 19.9.1.5, crossing and proximity agreements will be established between the Developer and Arklow Energy Limited, which will ensure close communication and planning between both parties to ensure disruption of activities is minimised. As described above, no

infrastructure will be located within the ABWP1 sublease boundary, therefore minimising the potential for any restriction of access to the existing wind turbines.

19.9.2.12 The impact is predicted to be of local spatial extent, long term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.9.2.13 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.2.14 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.2.15 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

19.9.3 Impact 3 – Impact on the ABWP1 existing cables from scour and sediment disturbance

19.9.3.1 The presence of infrastructure associated with the Proposed Development in proximity to the ABWP1 export cable may lead to impacts on marine processes (e.g. changes to tidal currents, wave climate, sediment transport and seabed morphology), resulting in the potential for scour and associated sediment disturbance in the vicinity of the ABWP1 export cable. This impact is applicable to the operational and maintenance phase of the Proposed Development only. It is likely that ABWP1 will be decommissioned before the Proposed Development is decommissioned, and therefore this impact is not applicable for the decommissioning phase.

SENSITIVITY OF THE RECEPTOR

19.9.3.2 The ABWP1 export cable transmits electricity from the existing seven wind turbines to the OGI. Integrity of the cables is crucial to securing ongoing power supply and Arklow Energy Limited's ongoing commercial operation. Changes to tidal currents, wave climate, sediment transport and seabed morphology as a result of the Proposed Development could lead to ABWP1 cable exposure, which could cause potential failure of the assets, would be expensive to repair, and has the potential to cause disruption to power distribution.

19.9.3.3 The existing ABWP1 export cable is deemed to be of low vulnerability, medium recoverability and high value. The sensitivity of the receptor is therefore, considered to be Medium.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.9.3.4 As outlined in Section 6.10.2 of Chapter 6: Coastal Processes, the presence of installed infrastructure (WTGs and OSPs) and cable protection will cause some localised changes in tide and wave climate. The magnitude of these changes has been quantified in terms of the influence of individual structures and also the potential for interaction of effects. The impact of the Proposed Development on the hydrodynamic regime has been assessed by undertaking numerical modelling for four tidal events (peak spring flood; peak neap flood; peak spring ebb; peak neap ebb) and four wave conditions (1 in 1 year (195deg); 1 in 50 year (195deg; 105deg;

15deg)). Comparison was then undertaken between the wave climate and tidal currents distribution within the Array Area and surrounding area with and without the presence of the Proposed Development.

- 19.9.3.5 The presence of cable protection structures will result in some localised changes to near-bed processes. This has been considered in the context of the baseline seabed conditions and processes, alongside the proportion of the total length of protection currently considered to be required.
- 19.9.3.6 Changes in tidal flow and wave climate have the potential to alter sediment transport regimes both in the vicinity of the Proposed Development and closer inshore.
- 19.9.3.7 The full assessment of the presence of infrastructure leading to changes to tidal currents, wave climate, sediment transport and seabed morphology is presented in Section 6.10.2 of Chapter 6: Coastal Processes and as such, is not presented in detail here. The magnitude of impact is considered to be Low for the impact within Chapter 6: Coastal Processes (Tables 6.32 and 6.33), and as such, the magnitude of the impact on the ABWP1 existing cables from scour and sediment disturbance is also deemed to be Low.
- 19.9.3.8 Consultation with Arklow Energy Limited regarding the potential risk to the existing ABWP1 cables will be undertaken throughout the construction and operation of the Proposed Development. In the unlikely event of a cable failure caused by scour or sediment mobilisation, both parties would agree on repair methods to be employed, and the risks would be managed to acceptable standards. This close communication and planning between both parties will minimise potential for damage along with the embedded mitigation already in place for the ABWP1 export cable.

SIGNIFICANCE OF THE EFFECT

- 19.9.3.9 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.3.10 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

- 19.9.3.11 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

19.9.4 Impact 4 – Displacement of other users due to the physical presence of infrastructure

SENSITIVITY OF THE RECEPTOR

- 19.9.4.1 It is anticipated that recreational boating and sea angling vessels will be able to alter their route or transit past installation activities given the adequate sea room around the Proposed Development. There are other locations available for sailing, sea angling and diving activities such that alternatives are available if required during installation works.
- 19.9.4.2 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

Construction phase

MAGNITUDE OF IMPACT

- 19.9.4.3 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area may displace recreational activities from the footprint of the development resulting in a loss of recreational resource.
- 19.9.4.4 As described in section 19.5.2, there are a number of recreational activities occurring in the vicinity of the Proposed Development, although with most activities occurring closer to shore and overlapping with the nearshore sections of the Cable Corridor and Working Area rather than within the Array Area. There is a general sailing area located along the coastline to the south of the Landfall, and both a general sailing area and a racing area located to the northwest of the Array Area. Sea angling takes place in the vicinity of the Proposed Development, including shore angling at Ennereilly beach in the vicinity of the cable Landfall. Other activities occurring inshore of Arklow Bank include diving, watersports, and beach activities.
- 19.9.4.5 The spatial extent of the physical presence of infrastructure on boating activities will be relatively small in the context of the available sailing and sea angling area in the vicinity of Arklow and Wicklow, with the potential for localised displacement of recreational craft from the individual 500 m advisory safety zones around structures being installed within the Array Area and along the Cable Corridor and Working Area. The spatial extent of potential displacement will be greater along the Cable Corridor compared with the Array Area, due to most recreational activity taking place inshore of Arklow Bank, although a small number of vessels and sailing events may be displaced from the Array Area and the immediate vicinity temporarily during the construction phase.
- 19.9.4.6 The sandy coves at the Landfall are not easily accessible from the shore and there would be no restrictions on access associated with trenchless activities. Therefore, there will be no displacement of recreational activities from cable installation activities at the Landfall.
- 19.9.4.7 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase, advising of the location, nature and timing of activities, and information and notices will be posted at the Landfall, ensuring that recreational activities can be planned accordingly. The Developer has created a database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing list for direct issue of Notices to Mariners. This database will continue to be updated as new users become known.
- 19.9.4.8 The impact is predicted to be of local spatial extent, short to medium term duration, continuous (Array Area)/intermittent (Cable Corridor and Working Area) and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

- 19.9.4.9 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.4.10 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

- 19.9.4.11 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Operational and maintenance phase

MAGNITUDE OF IMPACT

- 19.9.4.12 The presence of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area may displace recreational activities from the footprint of the development resulting in a loss of recreational resource.
- 19.9.4.13 As described in section 19.5.2, there are a number of recreational activities occurring in the vicinity of the Proposed Development, although with most activities occurring closer to shore and overlapping with the nearshore sections of the Cable Corridor and Working Area rather than within the Array Area.
- 19.9.4.14 The spatial extent of the impact on boating activities will be relatively small in the context of the available sailing and sea angling area in the vicinity of Arklow and Wicklow, with the potential for localised displacement of recreational craft around installed structures. Recreational activity overlapping with the Cable Corridor and Working Area will be able to resume during the operational and maintenance phase, and there will be no long-term exclusion of navigation within the Array Area during the lifetime of the Proposed Development (assessment of impacts on navigation is presented in Chapter 15: Shipping and Navigation).
- 19.9.4.15 The impact is predicted to be of local spatial extent, long term duration, continuous (Array Area)/intermittent (Cable Corridor and Working Area) and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

- 19.9.4.16 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.4.17 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

- 19.9.4.18 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Decommissioning phase

MAGNITUDE OF IMPACT

- 19.9.4.19 The effects of decommissioning activities within the Array Area are expected to be the same or similar to the effects from construction. Decommissioning activities are not anticipated along the Cable Corridor and Working Area as the cables and cable protection will remain in situ.

SIGNIFICANCE OF EFFECT

- 19.9.4.20 The significance of effect is therefore **Slight adverse**, which is **not significant** in EIA terms.

19.9.5 Impact 5 – Displacement of other users due to increased vessel movements

SENSITIVITY OF THE RECEPTOR

- 19.9.5.1 There is potential for temporary disruption of some sailing routes and general boating in the area. The greatest potential for impact will be on the general sailing area through which the southern part of the Cable Corridor and Working Area pass, however, this will be limited spatially to the locations where construction vessels are present and of temporary duration.
- 19.9.5.2 It is anticipated that recreational boating and sea angling vessels will be able to alter their route or transit past increased vessels due to installation activities. There are other locations available for sailing, sea angling and diving activities such that alternatives are available if required during installation works. The Developer will have continuous consultation with the relevant clubs in order to minimise the potential for disturbance, and the adoption of the VMP. On the basis of the high level of vessel activity that already uses the area (Volume II, Chapter 15: Shipping and Navigation), and the minor increase in vessel traffic arising from the construction of the Proposed Development, the recreational boating and sailing communities are unlikely to be sensitive to this impact.
- 19.9.5.3 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

Construction phase

MAGNITUDE OF IMPACT

- 19.9.5.4 The construction of the Proposed Development will increase vessel movements within the Infrastructure and Other Users Study Area and from any areas subject to temporary advisory safety zones and advisory clearance distances, over the five-year construction period.
- 19.9.5.5 As described in section 19.5.2, there are a number of recreational activities occurring in the vicinity of the Proposed Development, although with most activities occurring closer to shore and overlapping with the nearshore sections of the Cable Corridor and Working Area rather than within the Array Area. There is a general sailing area located along the coastline to the south of the cable Landfall, and both a general sailing area and a racing area located to the northwest of the Array Area. Sea angling takes place in the vicinity of the Proposed Development, including shore angling at Ennereilly beach in the vicinity of the cable Landfall. Other activities occurring inshore of Arklow Bank include diving, watersports, and beach activities.
- 19.9.5.6 The anticipated confirmatory surveys will slightly increase vessel movements within the Infrastructure and Other Users Study Area during the survey period. The spatial extent of the impact of increased vessels will be small in the context of the available sailing and sea angling area in the vicinity of Arklow and Wicklow.
- 19.9.5.7 The spatial extent of the impact of increased vessels and safety zones on Infrastructure and Other Users receptors will be relatively small in the context of the available sailing and sea angling area in the vicinity of Arklow and Wicklow, with the potential for localised displacement of recreational craft from the individual 500 m advisory safety zones around structures being installed within the Array Area and advisory clearance distances around installation vessels operating within the Array Area and within the Cable Corridor and Working Area. The increase in vessels from the construction of the Proposed Development will be tolerable against baseline levels of vessel movements within the area, with a relatively minor increase in baseline vessel numbers as a result of the construction phase works. The impact of advisory safety zones is mostly reversible as once each structure has been installed and commissioned these will be

removed. Advisory clearance distances around cable installation vessels operating along the Cable Corridor and Working Area will be transient as the vessel progressively installs the cable along the route from the Array Area to the Landfall. The spatial extent of potential displacement will be greater along the Cable Corridor and Working Area compared with the Array Area, due to most recreational activity taking place inshore of Arklow Bank, although a small number of vessels and sailing events may be displaced from the Array Area and the immediate vicinity temporarily during the construction phase.

19.9.5.8 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase, advising of the location, nature and timing of activities, and information and notices will be posted at the Landfall, ensuring that recreational activities can be planned accordingly. The Developer has created a database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing list for direct issue of Notices to Mariners. This database will continue to be updated as new users become known.

19.9.5.9 The impact is predicted to be of local spatial extent, short to medium term duration, continuous (Array Area)/intermittent (Cable Corridor and Working Area) and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.9.5.10 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.5.11 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.5.12 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.9.5.13 Operational and maintenance activities within the Array Area and along the Cable Corridor and Working Area may displace recreational activities from any areas subject to temporary advisory safety zones or advisory clearance distances, resulting in a loss of recreational resource. Increases in vessel movements during the operational and maintenance phase will be smaller than those for construction and are of a lesser magnitude.

19.9.5.14 As described in section 19.5.2, there are a number of recreational activities occurring in the vicinity of the Proposed Development, although with most activities occurring closer to shore and overlapping with the nearshore sections of the Cable Corridor and Working Area rather than within the Array Area.

19.9.5.15 The spatial extent of the impact on boating activities will be relatively small in the context of the available sailing and sea angling area in the vicinity of Arklow and Wicklow, with the potential for localised displacement of recreational craft around the individual 500 m advisory safety zones and/or advisory clearance distances temporarily and infrequently established around major maintenance activities.

19.9.5.16 As described in Table 19.12, Notices to Mariners will be issued regularly during the operational and maintenance phase, advising of the location, nature and timing of any maintenance activities, ensuring that recreational activities can be planned accordingly. The Developer has created a database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing list for direct issue of Notices to Mariners. This database will continue to be updated as new users become known.

19.9.5.17 The impact is predicted to be of local spatial extent, long term duration, continuous (Array Area)/intermittent (Cable Corridor and Working Area) and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.9.5.18 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.5.19 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.5.20 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Decommissioning phase

MAGNITUDE OF IMPACT

19.9.5.21 The effects of decommissioning activities within the Array Area are expected to be the same or similar to the effects from construction. Decommissioning activities are not anticipated along the Cable Corridor and Working Area as the cables and cable protection will remain in situ.

SIGNIFICANCE OF EFFECT

19.9.5.22 The significance of effect is therefore **Slight adverse**, which is **not significant** in EIA terms.

19.9.6 Impact 6 – Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing

Construction phase

MAGNITUDE OF IMPACT

19.9.6.1 The installation of Proposed Development infrastructure has the potential to increase suspended sediment concentrations and associated sediment deposition within the Infrastructure and Other Users Study Area (Outer Area), which may affect recreational diving activities as well as recreational fishing activities. The results of the numerical modelling study used to inform consideration of this potential impact are described in detail in Volume II, Chapter 6: Coastal Processes, and are summarised here.

19.9.6.2 For seabed preparation activities within the Array Area, the suspended sediment concentrations (SSC) during the course of the operations are predicted to be generally below 2,000 mg/l,

reducing to less than 5 mg/l after four hours, and by five hours the plume has further reduced such that it will only slightly be discernible from background concentrations (less than 2.5 mg/l). Disposal of the trailer suction hopper dredging (TSHD) load to the south of the Array area results in the maximum suspended sediment concentration of 2,000 mg/l at the disposal location. Rapid dispersion is such that the discrete plume (circa 2 km by 1 km) is less than 5 mg/l, and by five hours the plume has further reduced such that it will be discernible from background concentrations (less than 2.5 mg/l). For seabed preparation activities within the Cable Corridor and Working Area, the SSC during the course of operations are predicted to be generally below 2,000 mg/l and occurs immediately adjacent to the TSHD location. After four hours, the plume has further reduced such that it is discernible from background concentrations (less than 2.5 mg/l).

- 19.9.6.3 Elevated SSC above background concentrations is not predicted after 10 hours following the initial sandwave clearance. The plumes are roughly orientated north-south due to the tidal axis. Under all tidal flow simulations (speeds and direction), elevated SSC (above background concentration) are not shown to disperse beyond 8 km from the Cable Corridor and Working Area that surrounds the Array Area. Sediment deposition is greatest in the vicinity of the installation works, with thicknesses between 100 and 500 mm occurring within 1 km. Beyond this, the thickness of deposited sediment rapidly reduces such that at 10 km from the active disturbance, the deposited thickness is of the order of 2.5 mm. Beyond this, the thickness of deposited sediment becomes immeasurable. Continual re-working of the deposited sediment will occur as under the action of both tides and waves, acting to rapidly incorporate deposited sediment into the active sediment transport regime.
- 19.9.6.4 For pre-lay cable trenching at the seabed for the export cables, the spatial distribution of elevated SSC will be observed immediately adjacent to the active works (with levels circa 500 mg/l), whilst levels above background (2.5 mg/l) are observed up to 8 km from the point of disturbance. Following completion of the active seabed disturbance, the elevated suspended sediment concentrations rapidly reduce such that levels are comparative to background concentrations. Sediment deposition will be greatest in the vicinity of the disturbance activity, with thicknesses up to 25 mm occurring within 1 km. Beyond this, the thickness of deposited sediment rapidly reduces such that at 10 km from the active disturbance, the deposited thickness is less than 2.5 mm. Further still, the thickness of deposited sediment becomes immeasurable. In reality, deposited sediment will become re-worked and entrained back into the sediment transport system under the action of both tides and waves.
- 19.9.6.5 For pre-lay cable trenching at the seabed for inter-array cables, the spatial distribution of elevated SSC will be observed immediately adjacent to the active works (with levels circa 2,000 mg/l within 1 km of the activity) Given the rectilinear tidal flows within the Array Area, elevated SSC typically occur in a narrow plume extending from the point of disturbance. The plume length is dependent upon the tidal direction and current speeds, such that a northerly flow with greater speeds results in the most elongated plume (elevated SSC within the natural variability of the system, circa less than 2.5 mg/l, are observed up to 17 km north and 9 km south of the seabed activities under a high northerly and high southerly current, respectively).
- 19.9.6.6 For drilling fluid release during trenchless technique operations, elevated suspended sediment concentrations will be of localised extent and temporary duration, with maximum concentrations of 50 mg/l occurring only at the location of the punch-out horizontal directional drilling (HDD) exit pit and during the installation works. Rapid dispersion by tides and waves will result in the immediate dispersion and dilution of these concentrations. SSC will be advected along the coast along the tidal axis to distances of up to 4 km, although concentrations at this distance are limited to below 25 mg/l. Of note is that dispersion to the south, following a release during a high spring southerly current is, approximately, 1 km less than under the equivalent northerly release. Away from the landfall works and outside the Cable Corridor and Working Area, but within the ZOI, suspended sediment concentrations are comparable/ less than background levels, shown

to be no greater than 2.5 mg/l. Sediment deposition following cessation of HDD activities that is measurable in practice occurs within the immediate proximity of the landfall works, remaining within the Cable Corridor and Working Area. Maximum deposition occurs during the activity as a result of the active release of the bentonite. Following cessation of the works, any deposited sediment will be re-worked by the tide and wave regimes, reducing its area and depth. Here, 6.5 days following the commencement of installation works, a maximum deposition of 7.5 mm is predicted within a coastal extent of 0.3 km within the Cable Corridor and Working Area. A similar pattern of deposition is predicted for releases during a northerly and southerly tidal flow. Therefore, any measurable increases in suspended sediment concentrations and deposition are small-scale, highly localised and is expected to be rapidly redistributed by wave action.

- 19.9.6.7 For foundation drilling at the WTGs the greatest SSC is predicted to occur in the plume centre (circa 25 mg/l), this rapidly dissipates such that prior to drilling at the OSP, there are no noticeable increases in SSC within the Coastal Processes Zone of Influence. For the foundation drilling at OSPs, average SSC are predicted to be over 100 mg/l at the point of activity only. Beyond the drilling location, SSC rapidly reduces to less than 25 mg/l. Movement along the tidal axis, to the (approximately) north and south is such that concentrations less than 25 mg/l are predicted 18 km to the north of the release in a narrow, 1 km, plume and 6 km to the south. 12 hours following the completion of the OSP drilling, elevated SSC of up to 2.5 mg/l are predicted 7 km to the south of the array, with a maximum elevation of 10 mg/l within an area of hundreds of metres from the location of the works. Nearly two days following completion, elevated SSC will be indiscernible from background concentrations.
- 19.9.6.8 There is therefore potential for increased SSC up to 18 km from the Array Area, but these levels would be of much lower concentration compared with that at the release site and would persist over a short duration. There is potential for increased SSC during offshore export cable installation activities up to 8 km from the Cable Corridor and Working Area. Where wrecks are located to the north or the south of the array, the sediment plumes remain relatively linear to the bank, whereas, if is a wreck between the array and coast, only the installation at the Cable Corridor and Working Area to the north (or south) of the wreck is likely to affect it.
- 19.9.6.9 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase, advising of the location, nature and timing of any installation activities, ensuring that recreational activities can be planned accordingly. The Developer will also create a database of known users (including local dive clubs and angling clubs) to act as a mailing list for direct issue of Notices to Mariners, and a Community Engagement Manager will be appointed to ensure that as many interested parties as possible are aware of Proposed Development activities.
- 19.9.6.10 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptors directly, however there no potential for the impact to threaten the long-term viability of recreational fishing and diving. The magnitude is therefore, considered to be Low.

SENSITIVITY OF THE RECEPTOR

- 19.9.6.11 Recreational divers rely on there being sufficient visibility in the water column to be able to carry out their activities. Typically, this can be carried out with visibilities >2 m. Although there may be increased suspended sediment concentrations at dive sites in the vicinity of Wicklow Head and Brittas Bay during offshore export cable installation activities, this would persist over only a short duration, and there are alternative dive sites available in the local area which will not be affected by the sediment plume.
- 19.9.6.12 Impacts from the temporary increases in SSC have the potential to affect recreational fishing via smothering of important habitats, thus affecting fish species targeted by anglers (Volume II Chapter 10: Fish, Shellfish and SeaTurtle Ecology).

19.9.6.13 The receptor is deemed to be of medium vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Medium.

SIGNIFICANCE OF THE EFFECT

19.9.6.14 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.6.15 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.6.16 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.9.6.17 The maintenance of Proposed Development infrastructure has the potential to increase suspended sediment concentrations and sediment deposition within the Infrastructure and Other Users Study Area (Outer Area), which may affect recreational diving activities and recreational fishing activities. The scenario assessed for the operational and maintenance phase is comprised of inter-array, interconnector and offshore export cable maintenance activities and any associated jack-up vessel and vessel anchoring activities. These activities will disturb the seabed, resulting in sediment being released into the water column and subsequently redeposited. Activities resulting in seabed disturbance will occur intermittently throughout the up to 36.5-year operational lifetime of the Proposed Development.

19.9.6.18 Any suspended sediments and associated deposition will be lower than, that assessed for the construction phase. For the purposes of this assessment, the impacts of the operational and maintenance activities (i.e. cable maintenance) are predicted to be no greater than those for construction, as set out above.

19.9.6.19 As described in Table 19.12, Notices to Mariners will be issued during the operational and maintenance phase, advising of the location, nature and timing of any cable maintenance activities, ensuring that recreational activities can be planned accordingly. The Developer will also create a database of known users (including local dive clubs and angling clubs) to act as a mailing list for direct issue of Notices to Mariners.

19.9.6.20 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Negligible.

SENSITIVITY OF THE RECEPTOR

19.9.6.21 Recreational divers rely on there being sufficient visibility in the water column to be able to carry out their activities. Typically, this can be carried out with visibilities >2 m. Although there may be increased suspended sediment concentrations at dive sites in the vicinity of Wicklow Head and Brittas Bay during any offshore export cable maintenance, this would persist over only a short duration, and there are alternative dive sites available in the local area which will not be affected by the sediment plume.

19.9.6.22 Impacts from the temporary increases in SSC have the potential to affect recreational fishing via smothering of important habitats, thus affecting fish species targeted by anglers on a very temporary basis (Volume II Chapter 10 Fish, Shellfish and Sea Turtle Ecology).

19.9.6.23 The receptor is deemed to be of low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.9.6.24 Overall, the magnitude of the impact is deemed to be **Negligible**, and the sensitivity of the receptor is considered to be **Low**. The effect will, therefore, be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.9.6.25 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.6.26 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Decommissioning phase

19.9.6.27 The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The significance of effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

Future monitoring

19.9.6.28 No Infrastructure and Other Users monitoring to test the predictions made within the impact assessment is considered necessary.

19.9.7 Impact 7 - Restrictions to potential aggregate resource availability

19.9.7.1 Within the Infrastructure and Other Users Study Area (Inner and Outer Area), there have been identified potential aggregate resources which are currently not in use. The Proposed Development could potentially affect other users by restricting the potential ability to exploit these aggregate resources.

SENSITIVITY OF THE RECEPTOR

19.9.7.2 No commercial extraction is currently permitted in Irish waters, the receptor is deemed to be of low vulnerability, high recoverability and medium value. The sensitivity of the receptor is therefore, considered to be Low.

Construction Phase

MAGNITUDE OF IMPACT

19.9.7.3 The IMAGIN project (2008) has identified areas of high potential for marine aggregates around Ireland, through a geological, benthic assessments and modelling. Marine aggregates can be defined as sedimentary material - sand or gravel of various grain and class sizes (grades). Extraction of marine aggregates typically involves dredging of the deposit to remove it from the seabed. Aggregates may be screened at sea before being transported to a port or wharf facility for unloading and then further processing, if required, and subsequent transportation. This study identified areas of high potential for marine aggregates present within the Infrastructure and Other Users Study Area. Within the Array Area, 2.15 km² of high potential aggregate resource

was identified by the IMAGIN study. However, there are no currently commercial marine aggregate extraction licences in the Infrastructure and Other Users Study Area (Inner and Outer Area) or any future proposals.

- 19.9.7.4 As it is not expected for the five-year construction phase to overlap with any future marine aggregate extraction proposals as the IMAGIN study concluded that land-based sources are likely to be the main supply option for primary aggregates in the medium to long term (IMAGIN, 2008). The impact is predicted to be of local spatial extent, long term duration, continuous (Array Area)/continuous (Cable Corridor and Working Area) and high reversibility. It is predicted that the impact will not affect the receptor directly. The magnitude is therefore, considered to be Negligible.

SIGNIFICANCE OF THE EFFECT

- 19.9.7.5 Overall, the magnitude of the impact is deemed to be **Negligible**, and the sensitivity of the receptor is considered to be **Low**. The effect will, therefore, be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.7.6 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

- 19.9.7.7 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Operational and maintenance phase

MAGNITUDE OF IMPACT

- 19.9.7.8 During operation, the presence of the Proposed Development infrastructure, may impact future marine aggregate extraction proposals in the long term if these are approved. The Proposed Development may create an obstacle for dredging vessels during active dredging works or from turning into or out of the area, which may occur outside of the licensed dredging area, the vessel at that time being limited in its ability to manoeuvre.

- 19.9.7.9 The potential for impact on dredging vessel operations will be mitigated through future consultation with aggregate operators in relation to active dredging areas. As described in Table 19.12, Notices to Mariners will be issued regularly during the operational and maintenance phase, advising of the location, nature and timing of activities, and information and notices will be posted at the Landfall, ensuring that dredging works can be planned accordingly. The Developer will also create a database of known users to act as a mailing list for direct issue of Notices to Mariners.

- 19.9.7.10 The impact of the presence of structures leading to an increased collision risk for aggregate vessels is therefore considered to be Low.

SIGNIFICANCE OF THE EFFECT

- 19.9.7.11 Overall, the magnitude of the impact is deemed to be **Low**, and the sensitivity of the receptor is considered to be **Low**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.7.12 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.7.13 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

Decommissioning phase

MAGNITUDE OF IMPACT

19.9.7.14 The effects of decommissioning activities are expected to be the same or similar to the effects from the operational and maintenance phase.

SIGNIFICANCE OF EFFECT

19.9.7.15 The significance of effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.9.8 Impact 8 – Reduced production of ABWP1 due to proximity of Proposed Development.

- 19.9.8.1 An existing wind farm, Arklow Bank Wind Park 1 (ABWP1) consisting of seven turbines with a capacity of 25.2 MW that was constructed on Arklow Bank in 2003/04, is owned and operated by Arklow Energy Limited. It remains the first and only operational offshore wind farm in Ireland. ABWP1 is located within a sublease area and is surrounded by the Proposed Development, ABWP1 does not form part of the Proposed Development.
- 19.9.8.2 Given that the existing ABWP1 WTGs will be surrounded by the Proposed Development, there is a risk of reduced energy production of ABWP1 due to the proximity of the Proposed Development during the operational phase.
- 19.9.8.3 It is important to note that ABWP1 is likely coming to the end of its operational life as the WTGs have now been in operation for approximately 20 years and is therefore likely to be decommissioned over the coming years.
- 19.9.8.4 The assessment has been carried out on a precautionary basis and assumes that all seven of the ABWP1 WTGs are operational over the entire operational phase of the Proposed Development.

Operational Phase

SENSITIVITY OF THE RECEPTOR

- 19.9.8.5 The existing seven ABWP1 WTGs have a capacity of 3.6 MW per WTG, with a hub height of 74 m. The installed capacity of ABWP1 is 25 MW.
- 19.9.8.6 The existing ABWP1 WTGs are deemed to be of moderate value and somewhat vulnerable to the impacts of the Proposed Development. The sensitivity of the receptor is therefore, considered to be Medium.

MAGNITUDE

- 19.9.8.7 The reduction in productivity of ABWP1 due to the proximity of the Proposed Development has been calculated conservatively as 17.38% for Project Design Option 1.
- 19.9.8.8 The loss in production of ABWP1 is due to the wake effects generated by the Proposed Developments WTGs, which have a higher hub height and a larger rotor diameter of that than the ABWP1 WTGs.
- 19.9.8.9 Although the loss of production may be considered significant, the assessment is highly precautionary as it assumes that all seven of the ABWP1 WTGs are in operation and that ABWP1 will remain operational during the operational phase of the Proposed Development.
- 19.9.8.10 The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

- 19.9.8.11 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

- 19.9.8.12 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.9.8.13 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

19.10 Assessment of Project Design Option 2

19.10.1 Impact 1 – Potential for damage to ABWP1 export cable

19.10.1.1 Construction and maintenance activities associated with the Proposed Development may lead to the potential for damage to the existing ABWP1 export cable. As the cables and cable protection associated with the Proposed Development will remain in situ upon decommissioning, this impact is not applicable for the decommissioning phase.

SENSITIVITY OF THE RECEPTOR

19.10.1.2 The sensitivity of the receptor for this impact is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.1.

Construction phase

MAGNITUDE

19.10.1.3 Both Project Design Options share the same Array Area boundary, and the same number of cable crossings is also expected between the two Project Design Options (see Section 19.9.1). On this basis, the magnitude of Project Design Option 1 on potential for damage to ABWP1 export cable, is considered directly applicable to Project Design Option 2 therefore the magnitude of the receptor for this impact is equal to the magnitude for Project Design Option 1 and is set out in Section 19.9.1.

SIGNIFICANCE OF THE EFFECT

19.10.1.4 The assessment of Project Design Option 1 is applicable for Project Design Option 2 for a consideration of Impact 1, therefore the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

Operational and maintenance phase

MAGNITUDE

19.10.1.5 The maintenance of infrastructure associated with the Proposed Development in proximity to the ABWP1 export cable may lead to the potential for damage to third party infrastructure. Maintenance activities may include the need to carry out repairs at cable crossing locations, in the unlikely event of a cable failure. Both Project Design Options share the same Array Area boundary, and the same number of cable crossings is also expected between the two Project Design Options (see Section 19.9.1). Therefore the magnitude of Project Design Option 1 is applicable to Project Design Option 2 and set out in Section 19.9.1.

SIGNIFICANCE OF THE EFFECT

19.10.1.6 The assessment of Project Design Option 1 is applicable for Project Design Option 2 for a consideration of Impact 1, therefore, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.10.2 Impact 2 – Restriction of access to ABWP1 for maintenance activities

19.10.2.1 The potential for restriction of access to ABWP1 is applicable to the construction and operational and maintenance phases of the Proposed Development only. It is likely that ABWP1 will be decommissioned before the Proposed Development is decommissioned, and therefore this impact is not applicable for the decommissioning phase. In the unlikely event that this is not the case, the same precautions as referred to in relation to the construction phase assessment below will ensure that the potential effects are the same or similar to that assessed for the construction phase.

SENSITIVITY OF THE RECEPTOR

19.10.2.2 The sensitivity of the receptor for this impact is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.2.

Construction phase

MAGNITUDE OF IMPACT

19.10.2.3 The installation of Proposed Development infrastructure and associated presence of advisory safety zones and advisory clearance distances may restrict access to the ABWP1 wind turbines, inter-array cables and export cable for repair or maintenance. The advisory safety zones and advisory clearance distances will be the same for both Project Design Options as they share the same Array Area boundary. Therefore the magnitude of impact is set out in Section 19.9.2.

SIGNIFICANCE OF THE EFFECT

19.10.2.4 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.10.3 Impact 3 – Impact on the ABWP1 existing cables from scour and sediment disturbance

19.10.3.1 The presence of infrastructure associated with the Proposed Development in proximity to the ABWP1 export cable may lead to impacts on marine processes (e.g. changes to tidal currents, wave climate, sediment transport and seabed morphology), resulting in the potential for scour and associated sediment disturbance in the vicinity of the ABWP1 export cable. This impact is applicable to the operational and maintenance phase of the Proposed Development only. It is likely that ABWP1 will be decommissioned before the Proposed Development is decommissioned, and therefore this impact is not applicable for the decommissioning phase.

SENSITIVITY OF THE RECEPTOR

19.10.3.2 The sensitivity of the receptor for this impact is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.3.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.10.3.3 As outlined in Section 6.11.2 of Chapter 6: Coastal Processes, the presence of installed infrastructure (WTGs and OSPs) and cable protection will cause some localised changes in tide and wave climate. The full assessment of the presence of infrastructure leading to changes to tidal currents, wave climate, sediment transport and seabed morphology is presented in Section

6.11.2 of Chapter 6: Coastal Processes and as such, is not presented in detail here. The magnitude of impact is considered to be Low for the impact within Chapter 6: Coastal Processes (Tables 6.34 and 6.35), and as such, the magnitude of the impact on the ABWP1 existing cables from scour and sediment disturbance is also deemed to be Low.

SIGNIFICANCE OF THE EFFECT

19.10.3.4 The significance of effect for this impact is the same for Project Design Option 1 therefore, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.10.4 Impact 4 – Displacement of other users due to the physical presence of infrastructure

SENSITIVITY OF THE RECEPTOR

19.10.4.1 The sensitivity of the receptor for this impact is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.4.

Construction phase

MAGNITUDE OF IMPACT

19.10.4.2 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area may displace recreational activities from the footprint of the development resulting in a loss of recreational resource. As both Project Design Options share the same Array Area boundary, and Cable Corridor and Working Area, the magnitude of impact for Project design Option 2 is alike to that of Project Design Option 1. Therefore, for a consideration of Impact 4 for Project Design Option 2, the magnitude of the impact is presented in Section 19.9.4.

SIGNIFICANCE OF THE EFFECT

19.10.4.3 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

Operational and maintenance phase

MAGNITUDE OF IMPACT

19.10.4.4 The magnitude of impact for the operational phase is considered equal to that of Project Design Option 1 from the motives displayed in Paragraph 19.10.4.2. Therefore, the magnitude of impact for Impact 4, is presented in 19.9.4.

SIGNIFICANCE OF THE EFFECT

19.10.4.5 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

Decommissioning phase

MAGNITUDE OF IMPACT

19.10.4.6 The magnitude of impact for the decommissioning phase is considered equal to that of Project Design Option 1 from the motives displayed in Paragraph 19.10.4.2. Therefore the magnitude of impact for Impact 4, is presented in 19.9.4.

19.10.4.7 The significance of effect is therefore **Slight adverse**, which is **not significant** in EIA terms.

19.10.5 Impact 5 – Displacement of other users due to increased vessel movements

SENSITIVITY OF THE RECEPTOR

19.10.5.1 The sensitivity of the receptor for this impact is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.5.

Construction, operational and maintenance, and decommissioning phases

MAGNITUDE OF IMPACT

19.10.5.2 The construction of the Proposed Development will increase vessel movements within the Infrastructure and Other Users Study Area and from any areas subject to temporary advisory safety zones and advisory clearance distances, over the five-year construction period. Both Project Design Options share the same Array Area boundary, and similar levels of project vessel traffic would also be expected between the two Project Design Options (see Section 19.6.1). On this basis, the assessment of the effect of Project Design Option 1 on other users due to increased vessel movements is considered directly applicable to Project Design Option 2 (see Section 19.9.5).

SIGNIFICANCE OF THE EFFECT

19.10.5.3 The Significance of the Effect is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.5.

19.10.6 Impact 6 – Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing

19.10.6.1 The assessment of Project Design Option 1 is applicable for Project Design Option 2 for a consideration of Impact 5; the Project Design Envelope for installation (seabed preparation; cable installation) for the two Proposed Developments are the same. Therefore, for a consideration of Impact 1 for Project Design Option 2, see Section 19.9.6.

19.10.7 Impact 7 - Restrictions to potential aggregate resource availability

19.10.7.1 Within the Infrastructure and Other Users Study Area (Inner and Outer Area), there have been identified potential aggregate resources which are currently not in use. The Proposed Development could potentially affect other users by restricting the potential ability to exploit these aggregate resources.

SENSITIVITY OF THE RECEPTOR

19.10.7.2 The sensitivity of the receptor is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.7.

MAGNITUDE OF IMPACT

19.10.7.3 As both Project Design Options share the same Array Area boundary, and Cable Corridor and Working Area, the magnitude of impact for Project Design Option 2 is alike to that of Project Design Option 1. Therefore, for a consideration of Impact 7 for Project Design Option 2, the magnitude of the impact is presented in Section 19.9.7.

SIGNIFICANCE OF EFFECT

19.10.7.4 The Significance of the Effect is equal to the sensitivity for Project Design Option 1 and is set out in Section 19.9.7.

19.10.8 Impact 8 – Reduced production of ABWP1 due to proximity of Proposed Development.

19.10.8.1 An existing wind farm, Arklow Bank Wind Park 1 (ABWP1) consisting of seven turbines with a capacity of 25.2 MW that was constructed on Arklow Bank in 2003/04, is owned and operated by Arklow Energy Limited. It remains the first and only operational offshore wind farm in Ireland. ABWP1 is located within a sublease area and is surrounded by the Proposed Development, ABWP1 does not form part of the Proposed Development.

19.10.8.2 Given that the existing ABWP1 WTGs will be surrounded by the Proposed Development, there is a risk of reduced energy production of ABWP1 due to the proximity of the Proposed Development during the operational phase.

19.10.8.3 It is important to note that ABWP1 is likely coming to the end of its operational life as the WTGs have now been in operation for approximately 20 years and is therefore likely to be decommissioned over the coming years.

19.10.8.4 The assessment has been carried out on a precautionary basis and assumes that all seven of the ABWP1 WTGs are operational over the entire operational phase of the Proposed Development.

Operational Phase

SENSITIVITY OF THE RECEPTOR

19.10.8.5 The existing seven ABWP1 WTGs have a capacity of 3.6 MW per WTG, with a hub height of 74 m. The rated capacity of ABWP1 is 25 MW.

19.10.8.6 The existing ABWP1 WTGs are deemed to be of moderate value and somewhat vulnerable to the impacts of the Proposed Development. The sensitivity of the receptor is therefore, considered to be Medium.

MAGNITUDE

19.10.8.7 The reduction in productivity of ABWP1 due to the proximity of the Proposed Development has been calculated conservatively as 16.26% for Project Design Option 2.

19.10.8.8 The loss in production of ABWP1 is due to the wake effects generated by the Proposed Developments WTGs, which have a higher hub height and a larger rotor diameter of that than the ABWP1 WTGs.

19.10.8.9 Although the loss of production may be considered significant, the assessment is highly precautionary as it assumes that all seven of the ABWP1 WTGs are in operation and that ABWP1 will remain operational during the operational phase of the Proposed Development.

19.10.8.10 The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF THE EFFECT

19.10.8.11 Overall, the magnitude of the impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

PROPOSED MITIGATION

19.10.8.12 The impact is deemed **not significant** in EIA terms therefore no further mitigation is necessary.

RESIDUAL EFFECT ASSESSMENT

19.10.8.13 The impact is deemed **not significant** in EIA terms therefore no residual assessment is necessary.

19.11 Cumulative impacts assessment methodology

19.11.1 Methodology

19.11.1.1 The Cumulative Impact Assessment (CIA) takes into account the impact associated with the Proposed Development together with other projects and plans. The projects and plans selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise (Volume III, Appendix 3.2: Cumulative Impact Assessment (CIA) Screening). Each project or plan has been considered on a case by case basis for screening in or out of this chapter's assessment based upon effect-receptor pathways and the spatial/temporal scales involved.

19.11.1.2 A tiered approach is adopted to provide an assessment of the Proposed Development as a whole. The tiering methodology is provided in Volume III, Appendix 3.2: CIA Screening.

19.11.1.3 The specific projects and plans scoped into this CIA, are outlined in Table 19.13.

19.11.1.4 Due to the commitments made by the Developer in respect of the Foreshore Licence FS007339 and Foreshore Licence Application FS007555 (Table 19.12), FS007339 and FS007555 have been screened out of the cumulative impact assessment.

Table 19.13: List of other projects and plans considered within the cumulative impact assessment

Project/Plan	Status	Distance from Array Area (km)	Distance from Cable Corridor and Working Area	Description of Project/Plan	Dates of construction	Dates of operation	Justification for screening in
Tier 2 – Other projects and plans							
Dredging and disposal							
Dredge disposal/dumping at sea at ABWP1 (Ref: S0027-01)	Consented	0	0.8	Disposal of sediment following seabed levelling by plough dredging in an area to the east of the ABWP1 turbines.	N/A	2017 to 2025 ³	Screened in due to potential for overlap with construction phase of the Proposed Development.
Tier 3							
Site investigation activities							
Dublin Array	Planning	25.8	30.5	Site investigation surveys to inform potential offshore wind farm development.	N/A	2020 to 2025	Screened in due to potential for survey works to coincide temporally with the construction phase of the Proposed Development.
ABWP1 decommissioning	Assumed	0	0.5				Screened in due to potential decommissioning works to coincide temporally with the

³ EPA Dumping at Sea Permit granted in 2017. It allows for the disposal of a total maximum quantity 99,000 wet tonnes of dredged material.

construction phase of the Proposed Development.

Phase 1 Projects

Codling Wind Park (formerly Codling Wind Park and Codling Wind Park II)	Planning	18.2	17.2	'Relevant Project'. Updated application expected to be made under the Maritime Area Planning (MAP) Act 2021.	2027-2028	2029	Screened in as potential for overlap with Proposed Development construction and operational and maintenance phases.
Dublin Array (formerly known as Bray and Kish)	Planning	25.8	30.5	'Relevant Project'. Updated application expected to be made under the Maritime Area Planning (MAP) Act 2021.	2028 – 2032	2032	Screened in as potential for overlap with Proposed Development construction and operational and maintenance phases.

19.11.1.5 The Project Design Options and associated parameters for the Infrastructure and Other Users Chapter are assessed simultaneously to have greatest significant effect on an identified receptor or receptor group. The cumulative impacts presented and assessed in this section have been selected from the Project parameters provided in Volume III, Chapter 4: Description of Development as well as the information available on other projects and plans. Effects of greater adverse significance are not predicted to arise should either Project Design Option be chosen. There are a number of impacts that have been screened out of this assessment as they have been assessed in the Project alone assessment (Impact 1 – Potential for damage to ABWP1 export cable; Impact 2 – Restriction of access to ABWP1 for maintenance activities; Impact 3 – Impact on the ABWP1 existing cables from scour and sediment; Impact 8 - Reduced production of ABWP1 due to proximity of Proposed Development).

Table 19.14: Cumulative assessment impacts, phases, scenarios, and projects to be considered cumulatively

Potential cumulative impact	Phase			Projects considered cumulatively	Justification for projects considered cumulatively
	C	O	D		
Displacement of other users due to the physical presence of infrastructure	✓	✓	✓	Project design scenario as described for the Proposed Development (Table 19.6 and Table 19.7) assessed cumulatively with the following other projects/plans: Tier 2 • Dredge disposal/dumping at sea at ABWP1. Tier 3 • Dublin Array Site Investigations. Phase 1 Projects • Codling Wind Park; and • Dublin Array.	Outcome of the CIA will be greatest when the activities of other projects/plans occur within the same recreational area creating the greatest area that will be restricted at any one time for any single receptor.
Displacement of other users due to increased vessel movements	✓	✓	✓	Project design scenario as described for the Proposed Development (Table 19.6 and Table 19.7) assessed cumulatively with the following other projects/plans: Tier 2 • Dredge disposal/dumping at sea at ABWP1. Tier 3 • Dublin Array Site Investigations. • ABWP1 decommissioning Phase 1 Projects • Codling Wind Park; and • Dublin Array.	Outcome of the CIA will be greatest when the activities of other projects/plans occur within the same recreational area creating the greatest area that will be restricted at any one time for any single receptor.

Potential cumulative impact	Phase			Projects considered cumulatively	Justification for projects considered cumulatively
	C	O	D		
Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing	✓	✓	✓	Project design scenario as described for the Proposed Development (Table 19.6 and Table 19.7) assessed cumulatively with the following other projects/plans: Tier 2 • Dredge disposal/dumping at sea at ABWP1. • ABWP1 decommissioning Phase 1 Projects • Codling Wind Park; and • Dublin Array.	Outcome of the CIA will be greatest when the activities of other projects/plans occur within the same recreational area creating the greatest area that may be affected by increased suspended sediments and associated deposition.
Restrictions to potential aggregate resource availability	✓	✓	✓	Project design scenario as described for the Proposed Development (Table 19.6 and Table 19.7) assessed cumulatively with the following other projects/plans: Tier 3 • ABWP1 decommissioning Phase 1 Projects • Codling Wind Park; and • Dublin Array.	Outcome of the CIA will be greatest when the activities of other projects/plans occur within the same recreational area creating the greatest area that will be restricted at any one time for access to potential aggregate resource.

19.12 Cumulative impact assessment

19.12.1.1A description of the significance of cumulative effects upon Infrastructure and Other Users arising from each identified impact is given below.

19.12.1.2The CIA for Infrastructure and Other Users assesses cumulative effects for all Infrastructure and Other Users' receptors considered within the impact assessment undertaken above. Only displacement of recreational activities and increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing has been taken forward for assessment at a cumulative level. Potential for damage to ABWP1 export cable, restriction of access to ABWP1 for maintenance activities, and reduced production of ABWP1 due to proximity of Proposed Development are specific to the Proposed Development alone, the assessment is presented in section 19.8, with no potential for cumulative effects with other projects and plans.

19.12.2 Project Design Option 1 and 2 – Impact 1 - Displacement of other users due to the physical presence of infrastructure

Construction phase

SENSITIVITY OF THE RECEPTOR

19.12.2.1 The sensitivity of the receptor is unchanged from that set out in section 19.9.4 (Medium).

TIER 2

MAGNITUDE OF IMPACT

19.12.2.2 The magnitude of the impact has been defined as Low in section 19.9.4.16 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.

19.12.2.3 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area, together with the Tier 2 projects identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the Proposed Development include the dredge disposal/dumping at sea activities at ABWP1.

19.12.2.4 Table 19.13 provides an overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There is a general sailing area with medium traffic boating routes along the coastline between Bray and Wicklow and a heavy traffic boating route between Bray and Dun Laoghaire. There are marinas and diving clubs based in Dublin and Dun Laoghaire and Greystones. Small levels of displacement may occur due to the site investigation activities associated with dredge disposal/dumping at sea activities at ABWP1.

19.12.2.5 The spatial extent of the impact on boating activities taking place along the southeast coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around structures associated with each project. Advisory safety zones will be temporary until each structure has been installed and commissioned. It is unlikely that the activities of both projects would temporally coincide to displace the same recreational vessel on multiple occasions.

19.12.2.6 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly.

19.12.2.7 The cumulative impact is predicted to be of local spatial extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be negligible. The magnitude for both Project Design Options is the same.

SIGNIFICANCE OF EFFECT

19.12.2.8 Overall, the magnitude of the cumulative impact is deemed to be **Negligible** and the sensitivity of the receptor is considered to be **Medium**. The cumulative effect will, therefore, be **Not significant** in EIA terms.

TIER 3

MAGNITUDE OF IMPACT

- 19.12.2.9 The magnitude of the impact has been defined as Low in section 19.9.4.16 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.2.10 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area, together with the Tier 3 project identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. This includes the site investigation activities associated with Dublin Array.
- 19.12.2.11 Table 19.13 provides an overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There is a general sailing area with medium traffic boating routes along the coastline between Bray and Wicklow and a heavy traffic boating route between Bray and Dun Laoghaire. There are marinas and diving clubs based in Dublin and Dun Laoghaire and Greystones. Small levels of displacement may occur due to the site investigation activities associated with Dublin Array.
- 19.12.2.12 The spatial extent of the impact on boating activities taking place along the southeast coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around structures associated with each project. Advisory safety zones will be temporary until each structure has been installed and commissioned. It is unlikely that the activities of both projects would temporally coincide to displace the same recreational vessel on multiple occasions.
- 19.12.2.13 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly.
- 19.12.2.14 The cumulative impact is predicted to be of regional spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low. The magnitude for both Project Design Options is the same.

SIGNIFICANCE OF EFFECT

- 19.12.2.15 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 2 and Tier 3 projects is expected to be **Slight adverse** which is not significant in EIA terms.

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

- 19.12.2.16 The magnitude of the impact has been defined as Low in section 19.9.4.16 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.2.17 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area, together with the Phase 1 projects identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. This includes all phases of development for Codling Wind Park and Dublin Array.
- 19.12.2.18 It is understood that updated applications for Codling Wind Park and Dublin Array are being prepared, although the impact assessments are not available at the time of writing this EIAR.

Therefore, it has been assumed for the purposes of this assessment, that the construction periods for these projects may overlap with the construction period for the Proposed Development. For the purposes of this assessment, these projects are expected to include similar construction activities as those described for the Proposed Development.

- 19.12.2.19 Table 19.13 provides an overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There is a general sailing area with medium traffic boating routes along the coastline between Bray and Wicklow and a heavy traffic boating route between Bray and Dun Laoghaire. There are marinas and diving clubs based in Dublin and Dun Laoghaire and Greystones. Recreational vessels undertaking long distance journeys traversing the east coast of Ireland may be displaced along the Proposed Development's Cable Corridor and Working Area in addition to the respective export cable corridors and/or application areas for Codling and Dublin Array.
- 19.12.2.20 The spatial extent of the impact on boating activities taking place along the southeast coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around structures associated with each project. Advisory safety zones will be temporary until each structure has been installed and commissioned. It is unlikely that the activities of all projects would temporally coincide to displace the same recreational vessel on multiple occasions.
- 19.12.2.21 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. Similar measures are likely to apply at the other offshore wind farm projects as standard practice.
- 19.12.2.22 The cumulative impact is predicted to be of regional spatial extent, short to medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low. The magnitude for both Project Design Options is the same.

SIGNIFICANCE OF EFFECT

- 19.12.2.23 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 2, Tier 3 and Phase 1 projects is expected to be **Slight adverse** which is not significant in EIA terms.

Operational and maintenance phase

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

- 19.12.2.24 The magnitude of the impact has been defined as Low in section 19.9.4.16 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.2.25 The presence of Proposed Development infrastructure and/or operational and maintenance activities within the Array Area and along the Cable Corridor and Working Area, together with the Tier 2 projects identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the Proposed Development include maintenance activities at Codling Wind Park and Dublin Array.

- 19.12.2.26 It is understood that updated applications for Codling Wind Park and Dublin Array are being prepared, although the application material is not available at this time. Therefore, it has been assumed for the purposes of this assessment, that the operational and maintenance phases for these projects may overlap with the operational and maintenance phase for the Proposed Development. However, due to the lack of project information at this stage, a qualitative assessment is provided below.
- 19.12.2.27 As described above, there are a number of recreational activities taking place along the east coast of Ireland (paragraph 19.5.3.3), with activity likely to be concentrated inshore of the projects considered in this cumulative assessment. Once the export cables have been installed for each project, only temporary and infrequent maintenance is likely to be required over the project lifetimes, which is unlikely to take place concurrently at multiple project locations. Therefore, the potential for cumulative displacement of recreational activities within the nearshore sea area is considered to be Low.
- 19.12.2.28 The spatial extent of the impact on boating activities taking place along the east coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around structures associated with maintenance activities at each project. It is unlikely that maintenance activities at all projects would temporally coincide to displace the same recreational vessel on multiple occasions.
- 19.12.2.29 As described in Table 19.12, Notices to Mariners will be issued regularly during the lifetime of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. Similar measures are likely to apply at the other offshore wind farm projects as standard practice.
- 19.12.2.30 The cumulative impact is predicted to be of regional spatial extent, long term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF EFFECT

- 19.12.2.31 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The cumulative effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

Decommissioning phase

- 19.12.2.32 The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The significance of effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.12.3 Project Design Option 1 and 2 - Impact 2 – Displacement of other users due to increased vessel movements

Construction phase

SENSITIVITY OF THE RECEPTOR

- 19.12.3.1 The sensitivity of the receptor is unchanged from that set out in section 19.9.5.0 (Medium).

TIER 2

MAGNITUDE OF IMPACT

- 19.12.3.2 The magnitude of the impact has been defined as Low in section 19.9.5.10 in the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.3.3 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area, together with the Tier 2 project identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the Proposed Development include the dredge disposal/dumping at sea activities at ABWP1.
- 19.12.3.4 Table 19.13 provides an overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There is a general sailing area with medium traffic boating routes along the coastline between Bray and Wicklow and a heavy traffic boating route between Bray and Dun Laoghaire. There are marinas and diving clubs based in Dublin and Dun Laoghaire.
- 19.12.3.5 The spatial extent of the impact on boating activities taking place along the southeast coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around vessels associated with each project. Advisory clearance distances around vessels will be transient as the vessel progressively completes the relevant installation, maintenance, survey, or dredging activity. It is unlikely that the dredge and disposal activities at ABWP1 would temporally coincide to displace the same recreational vessel on multiple occasions.
- 19.12.3.6 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly.
- 19.12.3.7 The cumulative impact is predicted to be of local spatial extent, short to medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Negligible.

SIGNIFICANCE OF EFFECT

- 19.12.3.8 Overall, the magnitude of the cumulative impact is deemed to be **Negligible** and the sensitivity of the receptor is considered to be **Medium**. The cumulative effect will, therefore, be **Not significant** in EIA terms.

TIER 3

MAGNITUDE OF IMPACT

- 19.12.3.9 The magnitude of the impact has been defined as Low in section 19.9.5.10 in the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.3.10 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area, together with the Tier 3 project identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the Proposed Development include the site investigation surveys for Dublin Array and the decommissioning of ABWP1.
- 19.12.3.11 The ABWP1 project is likely to be decommissioned during the construction of the Proposed Development overlapping with the construction of the Proposed Development and anticipated

to take up to four months between 2025 and 2027. The decommissioning strategy is anticipated to be similar to that proposed for the Proposed Development, i.e. removal of above surface infrastructure, removal of foundations to seabed level, with cables and any scour/cable protection to be left in situ. Contingency in ABWP2 vessel movements mean that the vessels used for ABWP1 decommissioning are accounted for in our vessel movements.

- 19.12.3.12 Table 19.13 provides an overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There is a general sailing area with medium traffic boating routes along the coastline between Bray and Wicklow and a heavy traffic boating route between Bray and Dun Laoghaire. There are marinas and diving clubs based in Dublin and Dun Laoghaire.
- 19.12.3.13 The spatial extent of the impact on boating activities taking place along the southeast coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around vessels associated with each project. Advisory clearance distances around vessels will be transient as the vessel progressively completes the relevant installation, maintenance, survey, or dredging activity. It is unlikely that the activities of all projects would temporally coincide to displace the same recreational vessel on multiple occasions.
- 19.12.3.14 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly.
- 19.12.3.15 The cumulative impact is predicted to be of regional spatial extent, short term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF EFFECT

- 19.12.3.16 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 2, Tier 3 is expected to be **Slight adverse** which is not significant in EIA terms.

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

- 19.12.3.17 The magnitude of the impact has been defined as Low in section 19.9.5.10 in the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.3.18 The installation of Proposed Development infrastructure within the Array Area and along the Cable Corridor and Working Area, together with the Phase 1 project identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the Proposed Development include construction activities at Codling Wind Park and Dublin Array.
- 19.12.3.19 It is understood that updated applications for Codling Wind Park and Dublin Array are being prepared, although the impact assessments are not available at the time of writing this EIAR. Therefore, it has been assumed for the purposes of this assessment, that the construction periods for these projects may overlap with the construction period for the Proposed Development. For the purposes of this assessment, these projects are expected to include similar construction activities as those described for the Proposed Development, including similar types of vessels.

- 19.12.3.20 Table 19.13 provides an overview of the location of other projects screened into the cumulative assessment in relation to recreational interests. There is a general sailing area with medium traffic boating routes along the coastline between Bray and Wicklow and a heavy traffic boating route between Bray and Dun Laoghaire. There are marinas and diving clubs based in Dublin and Dun Laoghaire.
- 19.12.3.21 The spatial extent of the impact on boating activities taking place along the southeast coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around vessels associated with each project. Advisory clearance distances around vessels will be transient as the vessel progressively completes the relevant installation, maintenance, survey, or dredging activity. It is unlikely that the activities of all projects would temporally coincide to displace the same recreational vessel on multiple occasions.
- 19.12.3.22 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. Similar measures are likely to apply at the other offshore wind farm projects as standard practice.
- 19.12.3.23 The cumulative impact is predicted to be of regional spatial extent, short to medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF EFFECT

- 19.12.3.24 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 2, Tier 3 and Phase 1 projects is expected to be of **Slight adverse** significance, which is **not significant** in EIA terms.

Operational and maintenance phase

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

- 19.12.3.25 The magnitude of the impact has been defined as Low in section 19.9.5.17 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.
- 19.12.3.26 The presence of Proposed Development infrastructure and/or operational and maintenance activities within the Array Area and along the Cable Corridor and Working Area, together with the Tier 2 projects identified in Table 19.13, may displace recreational activities, resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the Proposed Development include maintenance activities at Codling Wind Park and Dublin Array.
- 19.12.3.27 It is understood that updated applications for Codling Wind Park and Dublin Array are being prepared, although the application material is not available at this time. Therefore, it has been assumed for the purposes of this assessment, that the operational and maintenance phases for these projects may overlap with the operational and maintenance phase for the Proposed Development. However, due to the lack of project information at this stage, a qualitative assessment is provided below. For the purposes of this assessment, these projects are expected to include similar maintenance activities as those described for the Proposed Development, including similar types of vessels.

19.12.3.28 As described above, there are a number of recreational activities taking place along the east coast of Ireland (paragraph 19.5.3.3), with activity likely to be concentrated inshore of the projects considered in this cumulative assessment. There is potential for recreational vessels undertaking long distance journeys further offshore to be displaced by the presence of infrastructure within each application area, however less activity is anticipated in these areas due to the presence of sandbanks, particularly at Arklow Bank. Therefore, the potential for cumulative displacement of recreational activities within the nearshore sea area is considered to be Low.

19.12.3.29 The spatial extent of the impact on boating activities taking place along the east coast of Ireland will be relatively small in the context of the available sailing, boating and sea angling area in the wider vicinity, with the potential for localised displacement of recreational craft from the individual advisory safety zones and advisory clearance distances around vessels associated with maintenance activities at each project. It is unlikely that maintenance activities at all projects would temporally coincide to displace the same recreational vessel on multiple occasions.

19.12.3.30 As described in Table 19.12, Notices to Mariners will be issued regularly during the lifetime of the Proposed Development, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. Similar measures are likely to apply at the other offshore wind farm projects as standard practice.

19.12.3.31 The cumulative impact is predicted to be of regional spatial extent, long term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF EFFECT

19.12.3.32 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. The cumulative effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

Decommissioning phase

19.12.3.33 The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The significance of effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.12.4 Project Design Option 1 and 2 - Impact 3 – Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing activities

Construction phase

SENSITIVITY OF THE RECEPTOR

19.12.4.1 The sensitivity of the receptor is unchanged from that set out in section 19.9.6.

TIER 2

MAGNITUDE OF IMPACT

19.12.4.2 The Proposed Development, together with the projects and plans identified in Table 19.13, may lead to increased suspended sediment concentrations and associated deposition, which may affect recreational diving activities. Other projects and plans screened into the assessment include ABWP1 dredge disposal/dumping at sea works.

- 19.12.4.3 There is potential for cumulative impacts to arise in the event that the ABWP1 dredge disposal/dumping at sea works coincide with the construction phase of the Proposed Development when site preparation, foundation or cable laying activities occur within the vicinity of the ABWP1 turbines. In the unlikely event that these activities coincide, the use of plough dredging will mobilise sediment at the bed and a proportion will be brought into suspension and increase the suspended sediment concentrations in an integrated plume. However, the initial ploughing activity will constitute the movement of circa 5,500 m³ in close proximity to the ABWP1 structures; this presents the same volume of material which may be mobilised in 20 m of cable trenching and would therefore be insignificant.
- 19.12.4.4 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of any installation activities, ensuring that recreational activities can be planned accordingly. The Developer will also create a database of known users (including local dive clubs) to act as a mailing list for direct issue of Notices to Mariners, and a Community Engagement Manager will be appointed to ensure that as many interested parties as possible are aware of Proposed Development activities.
- 19.12.4.5 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Negligible.

SIGNIFICANCE OF EFFECT

- 19.12.4.6 Overall, the magnitude of the cumulative impact is deemed to be **Negligible** and the sensitivity of the receptor is considered to be **Medium**. The cumulative effect will, therefore, be **Not significant** in EIA terms.

TIER 3

- 19.12.4.7 The Proposed Development, together with the projects and plans identified in Table 19.13, may lead to increased suspended sediment concentrations and associated deposition, which may affect recreational diving activities. Other projects and plans screened into the assessment include the decommissioning of ABWP1.
- 19.12.4.8 The ABWP1 project is likely to be decommissioned during the construction of the Proposed Development overlapping with the construction of the Proposed Development and anticipated to take up to four months between 2025 and 2027. The decommissioning strategy is anticipated to be similar to that proposed for the Proposed Development, i.e. removal of above surface infrastructure, removal of foundations to seabed level, with cables and any scour/cable protection to be left in situ. The inter-array cables are assumed to be cut in the WTG location and buried below 2 m. The majority of the cable will be in-situ. The monopile area will be backfilled with local material from scour protection area and then overtrawled to level.
- 19.12.4.9 There is potential for a number of dive sites to be affected by sediment plumes arising from the Proposed Development alongside ABWP1 decommissioning, should these activities be carried out at the same time. These plumes may overlap but are likely to persist over a short duration.
- 19.12.4.10 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of any installation activities, ensuring that recreational activities can be planned accordingly. The Developer will also create a database of known users (including local dive clubs) to act as a mailing list for direct issue of Notices to Mariners, and a Community Engagement Manager will be appointed to ensure that as many interested parties as possible are aware of Proposed Development activities. Similar measures are likely to be in place for other projects and plans.

- 19.12.4.11 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF EFFECT

- 19.12.4.12 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 2 and Tier 3 is expected to be of **Slight adverse** significance, which is **not significant** in EIA terms.

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

- 19.12.4.13 The Proposed Development, together with the projects and plans identified in Table 19.13, may lead to increased suspended sediment concentrations and associated deposition, which may affect recreational diving activities. Other projects and plans screened into the assessment include Codling Wind Park, and Dublin Array.
- 19.12.4.14 There is potential for cumulative impacts to arise in the event that the construction phases of the Codling Wind Park and Dublin Array coincide with the construction phase of the Proposed Development.
- 19.12.4.15 The Codling Wind Park works are anticipated to be undertaken in a series of construction phases over a two year period from 2027 (Codling Wind Park Limited, 2020) whilst for Dublin Array there may be 12 months of construction carried out over a 5 year period (RWE, 2020). Therefore, it has been assumed for the purposes of this assessment, as a precautionary assessment, that the construction periods for these projects may overlap with the construction period for the Proposed Development. However, as the impact assessments for these projects are not yet publicly available, a qualitative assessment is provided here.
- 19.12.4.16 The scheme is likely to involve similar activities to those required for the Proposed Development, such as seabed preparation, piling and trenching. Each of these activities has varying impacts on suspended sediment concentration depending on the activity and prevailing tidal currents. It should be noted that although sediment plumes may extend one tidal excursion from each site, the plumes themselves will not interact (Chapter 6: Coastal Processes). There is a potential for a small overlap in sedimentation for deposition on low water slack from Codling Wind Park construction activities and high water slack from the Proposed Development, however this is an area of high tidal currents and sediment would not accumulate (Chapter 6: Coastal Processes).
- 19.12.4.17 There is potential for a number of dive sites to be affected by sediment plumes arising from the Proposed Development alongside Codling Wind Park and Dublin Array, should these activities be carried out at the same time. However, these plumes would not overlap and are likely to persist over a short duration.
- 19.12.4.18 As described in Table 19.12, Notices to Mariners will be issued regularly during the construction phase of the Proposed Development, advising of the location, nature and timing of any installation activities, ensuring that recreational activities can be planned accordingly. The Developer will also create a database of known users (including local dive clubs) to act as a mailing list for direct issue of Notices to Mariners, and a Community Engagement Manager will be appointed to ensure that as many interested parties as possible are aware of Proposed Development activities. Similar measures are likely to be in place for other projects and plans.

- 19.12.4.19 The impact is predicted to be of regional spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be Low.

SIGNIFICANCE OF EFFECT

- 19.12.4.20 Overall, the magnitude of the cumulative impact is deemed to be **Low** and the sensitivity of the receptor is considered to be **Medium**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 2, Tier 3 and Phase 1 projects is expected to be of **Slight adverse** significance, which is **not significant** in EIA terms.

Operational and maintenance phase

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

- 19.12.4.21 The Proposed Development, together with the projects and plans identified in Table 19.13, may lead to increased suspended sediment concentrations and associated deposition, which may affect recreational diving activities. Other projects and plans screened into the assessment include Codling Wind Park and Dublin Array.
- 19.12.4.22 There is potential for cumulative impacts to arise in the event that maintenance activities associated with Codling Wind Park and Dublin Array coincide with maintenance activities at the Proposed Development.
- 19.12.4.23 Any cumulative increase in suspended sediments and associated deposition during the operational and maintenance phase of the Proposed Development is likely to be lower, of shorter duration and more intermittent than that assessed for the construction phase above. It should be noted that although sediment plumes may extend one tidal excursion from each site, the plumes themselves will not interact (Chapter 6: Coastal Processes).
- 19.12.4.24 As described in Table 19.12, Notices to Mariners will be issued during the operational and maintenance phase of the Proposed Development, advising of the location, nature and timing of any installation activities, ensuring that recreational activities can be planned accordingly. The Developer will also create a database of known users (including local dive clubs) to act as a mailing list for direct issue of Notices to Mariners. Similar measures are likely to be in place for other projects and plans.
- 19.12.4.25 The cumulative impact is predicted to be of regional spatial extent, short term duration, intermittent and high reversibility. The magnitude is therefore, considered to be Negligible.

SIGNIFICANCE OF EFFECT

- 19.12.4.26 Overall, the magnitude of the cumulative impact is deemed to be **Negligible** and the sensitivity of the receptor is considered to be **Low**. The effect will, therefore, be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

Decommissioning phase

- 19.12.4.27 The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The significance of effect will, therefore, be of **Slight adverse** significance, which is **not significant** in EIA terms.

19.12.5 Project Design Option 1 and 2 - Impact 4 – Restrictions to potential aggregate resource availability

Construction phase

SENSITIVITY OF THE RECEPTOR

19.12.5.1 The sensitivity of the receptor is unchanged from that set out in section 19.9.7.2 (Low).

TIER 3

19.12.5.2 The magnitude of the impact has been defined as Negligible in section 19.9.7.4 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.

19.12.5.3 The IMAGIN study concluded that land-based sources are likely to be the main supply option for primary aggregates in the medium to long term (IMAGIN, 2008), therefore it is not expected for the five-year construction phase of the Proposed Development to overlap with any future marine aggregate extraction proposals. There should not be cumulative impacts associated with ABWP1 decommissioning. The impact is therefore predicted to be of local spatial extent, long term duration, continuous (Array Area)/continuous (Cable Corridor and Working Area) and high reversibility. It is predicted that the impact will not affect the receptor directly. The magnitude is therefore, considered to be Negligible.

SIGNIFICANCE OF EFFECT

19.12.5.4 Overall, the magnitude of the impact is deemed to be **Negligible**, and the sensitivity of the receptor is considered to be **Low**. The effect will, therefore, be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

19.12.5.5 The magnitude of the impact has been defined as Negligible in section 19.9.7.4 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.

19.12.5.6 The IMAGIN study concluded that land-based sources are likely to be the main supply option for primary aggregates in the medium to long term (IMAGIN, 2008), therefore it is not expected for the five-year construction phase of the Proposed Development to overlap with any future marine aggregate extraction proposals. There should not be cumulative impacts associated with Codling Wind Park; and Dublin Array construction and operations phases. The impact is therefore predicted to be of local spatial extent, long term duration, continuous (Array Area)/continuous (Cable Corridor and Working Area) and high reversibility. It is predicted that the impact will not affect the receptor directly. The magnitude is therefore, considered to be Negligible.

SIGNIFICANCE OF EFFECT

19.12.5.7 Overall, the magnitude of the cumulative impact is deemed to be **Negligible** and the sensitivity of the receptor is considered to be **Low**. Therefore, the significance of effect from the installation of either Project Design Option 1 or Project Design Option 2, cumulatively with the Tier 3 and Phase 1 projects is expected to be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

Operational and maintenance phase

PHASE 1 PROJECTS

MAGNITUDE OF IMPACT

19.12.5.8 The magnitude of the impact has been defined as Low in section 19.9.7.10 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.

SIGNIFICANCE OF EFFECT

19.12.5.9 The effects of operational and maintenance activities are expected to be the same or similar to the effects from the construction phase. The significance of effect will, therefore, be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

Decommissioning phase

MAGNITUDE OF IMPACT

19.12.5.10 The magnitude of the impact has been defined as Low in section 19.9.7.14 of the project alone assessment. The magnitude does not differ between Project Design Option 1 and 2.

SIGNIFICANCE OF EFFECT

19.12.5.11 The effects of decommissioning activities are expected to be the same or similar to the effects from the construction phase. The significance of effect will, therefore, be of **Imperceptible adverse** significance, which is **not significant** in EIA terms.

19.13 Transboundary effects

19.13.1.1 A screening of transboundary impacts has been carried out and has identified that there is no potential for significant transboundary effects with regard to Infrastructure and Other Users from the Proposed Development upon the interests of other states.

19.13.1.2 This is due to the potential impacts on Infrastructure and Other Users receptors being limited to the immediate vicinity of the Proposed Development and up to one tidal excursion from the Proposed Development. Any impacts will not extend into other states.

Table 19.15: Matrix of potential interactive effects on Infrastructure and Other Users from project lifetime effects and receptor-led effects.

Impact type	Residual effects			Interactions assessment
	C	O	D	Project lifetime effects
Potential for damage to ABWP1 export cable	Slight adverse	Slight adverse	N/A	The ABWP1 export cable will be crossed by the Proposed Development cables. In addition, the installation and presence of infrastructure, advisory safety zones and advisory clearance distances may restrict access to the ABWP1 export cable during the construction and operational and maintenance phases. Cable crossing and proximity agreements will be developed and implemented with Arklow Energy Limited to minimise the potential for any impact. Therefore, across the Project lifetime, the effects are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.
Restriction of access to ABWP1 for maintenance activities	Slight adverse	Slight adverse	N/A	The installation and presence of infrastructure, advisory safety zones and advisory clearance distances during the construction and operational and maintenance phases may result in restricted access to ABWP1 for maintenance activities. As described above, detailed design and implementation of ABWP1 cable crossings will be coordinated with Arklow Energy Limited, to minimise the potential for any impact on access to ABWP1 for maintenance, in accordance with recognised industry good practice. Therefore, across the Project lifetime, the effects are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.
Impact on the ABWP1 existing cables from scour and sediment mobilisation	N/A	Slight adverse	N/A	The presence of infrastructure associated with the Proposed Development in proximity to the ABWP1 export cable may lead to impacts on marine processes (e.g. changes to tidal currents, wave climate, sediment transport and seabed morphology), resulting in the potential for scour and associated sediment disturbance in the vicinity of the ABWP1 export cable. This impact is applicable to the operational and maintenance phase of the Proposed Development only, therefore, across the Project lifetime, the effects are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.
Displacement of other users due to the physical presence of infrastructure	Slight adverse	Slight adverse	Slight adverse	The installation and presence of infrastructure, during the construction, operational and maintenance and decommissioning phases may result in the displacement of recreational craft and recreational fishing vessels from the Array Area and along the offshore Cable Corridor and Working Area. Across the Project lifetime, the effects on recreational activities are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.
Displacement of other users due to increased vessel movements	Slight adverse	Slight adverse	Slight adverse	The installation infrastructure, advisory safety zones and advisory clearance distances during the construction, operational and maintenance and decommissioning phases may result in the displacement of recreational craft and recreational fishing vessels from the Array Area and along the offshore Cable Corridor and Working Area. Across the Project lifetime, the effects on recreational activities are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.
Increased suspended sediment concentrations and associated deposition affecting recreational diving sites	Slight adverse	Imperceptible adverse	Slight adverse	The installation, maintenance and decommissioning of the Proposed Development may result in increased suspended sediment concentrations and associated deposition affecting recreational diving sites. Across the Project lifetime, the effects on recreational diving activities are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase.
Receptor-led effects				
Potential exists for spatial and temporal interactions between impacts to Infrastructure and Other Users receptors. The greatest scope for potential interactions between impacts is predicted to arise from the interaction of the displacement of recreational activities and the potential for damage to ABWP1 export cable. In the unlikely event that damage to the ABWP1 export cable occurs, the resulting maintenance/repair required may result in a further displacement of recreational activities due to advisory clearance distances around vessels. Through early promulgation of maintenance/repair works through Notices to Mariners, which is likely to apply to any works required at ABWP1, recreational activity would be able to be planned to avoid interactions with the works, and due to the proportionately small amount of sea area restricted in comparison to area available, it is unlikely that any interactions between these impacts will be of any greater significance than already assessed in isolation (i.e. slight adverse).				

19.14 Summary of effects

19.14.1.1 Information on Infrastructure and Other Users within the Infrastructure and Other Users Study Area was collected through desktop review and consultation.

19.14.1.2 Table 19.16 presents a summary of the potential impacts, mitigation measures and residual effects in respect to Infrastructure and Other Users. The impacts assessed include; potential for damage to ABWP1 export cable, restriction of access to ABWP1 for maintenance activities, displacement of recreational activities, and increased suspended sediment concentrations and associated deposition affecting recreational diving sites. Overall, it is concluded that there will be no significant effects arising from the Proposed Development during the construction, operational and maintenance or decommissioning phases.

19.14.1.3 Table 19.16 presents a summary of the potential cumulative impacts, mitigation measures and residual effects. The cumulative impacts assessed include; displacement of recreational activities, increased suspended sediment concentrations, and associated deposition affecting recreational diving sites. Overall, it is concluded that there will be no significant cumulative effects from the Proposed Development alongside other projects/plans.

19.14.1.4 No potential transboundary impacts have been identified in regard to effects of the Proposed Development.

Table 19.16: Summary of potential environmental impacts, mitigation and monitoring for Project Design Option 1 & 2

Description of impact	Phase			Factored-in measures	Magnitude of impact	Sensitivity of Receptors	Significance of effect	Additional measures	Residual effect	Proposed monitoring
	C	O	D							
Potential for damage to ABWP1 export cable.	✓	✓	✗	Coordination of cable crossing installations and ongoing consultation with Arklow Energy Limited	C: Low O: Low	C: Medium O: Medium	C: Slight adverse O: Slight adverse	N/A	C: Slight adverse O: Slight adverse	N/A
Restriction of access to ABWP1 for maintenance activities	✓	✓	✗	Coordination of cable crossing installations and ongoing consultation with Arklow Energy Limited	C: Low O: Low	C: Medium O: Medium	C: Slight adverse O: Slight adverse	N/A	C: Slight adverse O: Slight adverse	N/A
Impact on the ABWP1 existing cables from scour and sediment mobilisation	✗	✓	✗	Ongoing consultation with Arklow Energy Limited	O: Low /Negligible	O: Medium	O: Slight adverse	N/A	O: Slight adverse	N/A
Displacement of other users due to the physical presence of infrastructure	✓	✓	✓	Notices to Mariners advising of the location, nature and timing of activities; information and notices posted at the Landfall; database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing list for direct issue of Notices to Mariners;	C: Low O: Low D: Low	C: Medium O: Medium D: Medium	C: Slight adverse O: Slight adverse D: Slight adverse	N/A	C: Slight adverse O: Slight adverse D: Slight adverse	N/A

Description of impact	Phase			Factored-in measures	Magnitude of impact	Sensitivity of Receptors	Significance of effect	Additional measures	Residual effect	Proposed monitoring
	C	O	D							
Displacement of other users due to increased vessel movements	✓	✓	✓	Notices to Mariners advising of the location, nature and timing of activities; information and notices posted at the Landfall; database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing list for direct issue of Notices to Mariners; appointment of a Community Engagement Manager during the pre-construction and construction phase	C: Low O: Low D: Low	C: Medium O: Medium D: Medium	C: Slight adverse O: Slight adverse D: Slight adverse	N/A	C: Slight adverse O: Slight adverse D: Slight adverse	N/A
Increased suspended sediment concentrations and associated deposition affecting recreational diving sites and recreational fishing activities	✓	✓	✓	Notices to Mariners advising of the location, nature and timing of activities; database of known users (including local dive clubs) to act as a mailing list for direct issue of Notices to Mariners; appointment of a Community Engagement Manager during the pre-construction and construction phase	C: Low O: Negligible D: Low	C: Medium O: Low D: Medium	C: Slight adverse O: Imperceptible adverse D: Slight adverse	N/A	C: Slight adverse O: Imperceptible adverse D: Slight adverse	N/A

Description of impact	Phase			Factored-in measures	Magnitude of impact	Sensitivity of Receptors	Significance of effect	Additional measures	Residual effect	Proposed monitoring
	C	O	D							
Restrictions to potential aggregate resource availability	✓	✓	✓	Notices to Mariners advising of the location, nature and timing of activities; information and notices posted at the Landfall; database of known users.	C: Negligible O: Low D: Low	C: Low O: Low D: Low	C: Imperceptible adverse O: Slight adverse D: Slight adverse	N/A	C: Imperceptible adverse O: Slight adverse D: Slight adverse	N/A
Reduced production of ABWP1 due to proximity of Proposed Development.	✗	✓	✗	N/A	O: Low	O: Medium	O: Slight Adverse	N/A	O: Slight Adverse	N/A

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