

Chapter 16

Infrastructure, Marine Recreation and Other Users





ORIEL WIND FARM PROJECT

Environmental Impact Assessment Report Chapter 16: Infrastructure, Marine Recreation and Other Users

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16 CHAPTER 16 - INFRASTRUCTURE, MARINE RECREATION AND OTHER USERS

16.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Oriel Wind Farm Project (hereafter referred to as “the Project”) on infrastructure, marine recreation and other users. Specifically, this chapter considers the potential impact of the Project below the High-Water Mark (HWM) during the construction, operational and maintenance, and decommissioning phases.

The assessment presented has been informed by the following technical chapters and appendices:

- Chapter 7: Marine Processes;
- Appendix 13-1: Navigation Risk Assessment;
- Chapter 15: Marine Archaeology; and
- Chapter 25: Noise (Airborne) and Vibration (see volume 2C).

Article 3 of Directive 2011/92/EU requires that the EIAR identifies, describes and assesses the direct and indirect significant effects of a project on material assets. The EPA guidance (EPA, 2022) cites these assets to mean transportation assets (such as roads), built services such as utilities and waste management such as construction and operational waste.

Terrestrial transportation assets are addressed in volume 2C, chapter 28: Traffic and Transport while the marine based transport and commercial assets are mainly addressed within chapter 12: Commercial Fisheries and in chapter 13: Shipping and Navigation. This chapter relates to other material asset infrastructure within the marine area. Waste management is addressed in volume 2C, chapter 30: Resource and Waste Management.

Many of the potential impacts upon infrastructure, marine recreation and other users are related to navigational safety and collision risk. To avoid duplication, navigational safety and risk to all vessel types from the Project are considered in chapter 13: Shipping and Navigation. Therefore, the following assessment only considers impacts that will potentially affect the undertaking of a marine activity or the operational effectiveness of marine infrastructure in the relevant Infrastructure, Marine Recreation and Other Users Study Area.

Indirect effects on visual amenity for nearshore recreational receptors are considered in volume 2C, chapter 27: Seascape, Landscape and Visual Amenity. The effects of airborne noise due to activities associated with the Project for receptors at the coastline are considered in volume 2C, chapter 25: Noise (Airborne) and Vibration.

The details and competencies of the specialist who prepared this chapter can be found in volume 2A, chapter 1: Introduction.

16.2 Purpose of this chapter

The primary purpose of the EIAR chapter is to provide an assessment of the likely direct and indirect significant effects of the Project on Infrastructure, Marine Recreation and Other Users. In particular, this EIAR chapter:

- Presents the existing environmental baseline established from desk studies (see section 16.7);
- Identifies any assumptions and limitations encountered in compiling the environmental information (see section 16.7.5);

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- Presents an assessment of the potential likely significant effects on infrastructure, marine recreation and other users arising from the Project, based on the information gathered and the analysis and assessments undertaken (see section 16.10). An assessment of potential cumulative impacts is provided in section 16.11 and assessment of transboundary effects is outlined in section 16.12; and
- Highlights any necessary monitoring (see section 16.10.5) and/or measures (see section 16.8.2 and 16.10.4) to prevent, minimise, reduce or offset the likely significant environmental effects identified in the assessment (section 16.10).

This chapter has specifically considered and assessed (in section 16.10) the following Project elements on the below receptors:

- Infrastructure:
 - Offshore energy projects (offshore wind farms, oil and gas projects); and
 - Offshore cables and pipelines.
- Marine Recreation:
 - Recreational sailing and motor cruising;
 - Recreational fishing (boat angling, shore angling and game angling); and
 - Other recreational activity (diving, boarding water sports, kayaking and canoeing and beach users).
- Other Users:
 - Carbon capture and storage, natural gas storage and underground coal gasification;
 - Coal deposits; and
 - Aggregate extraction and disposal sites.

16.3 Study area

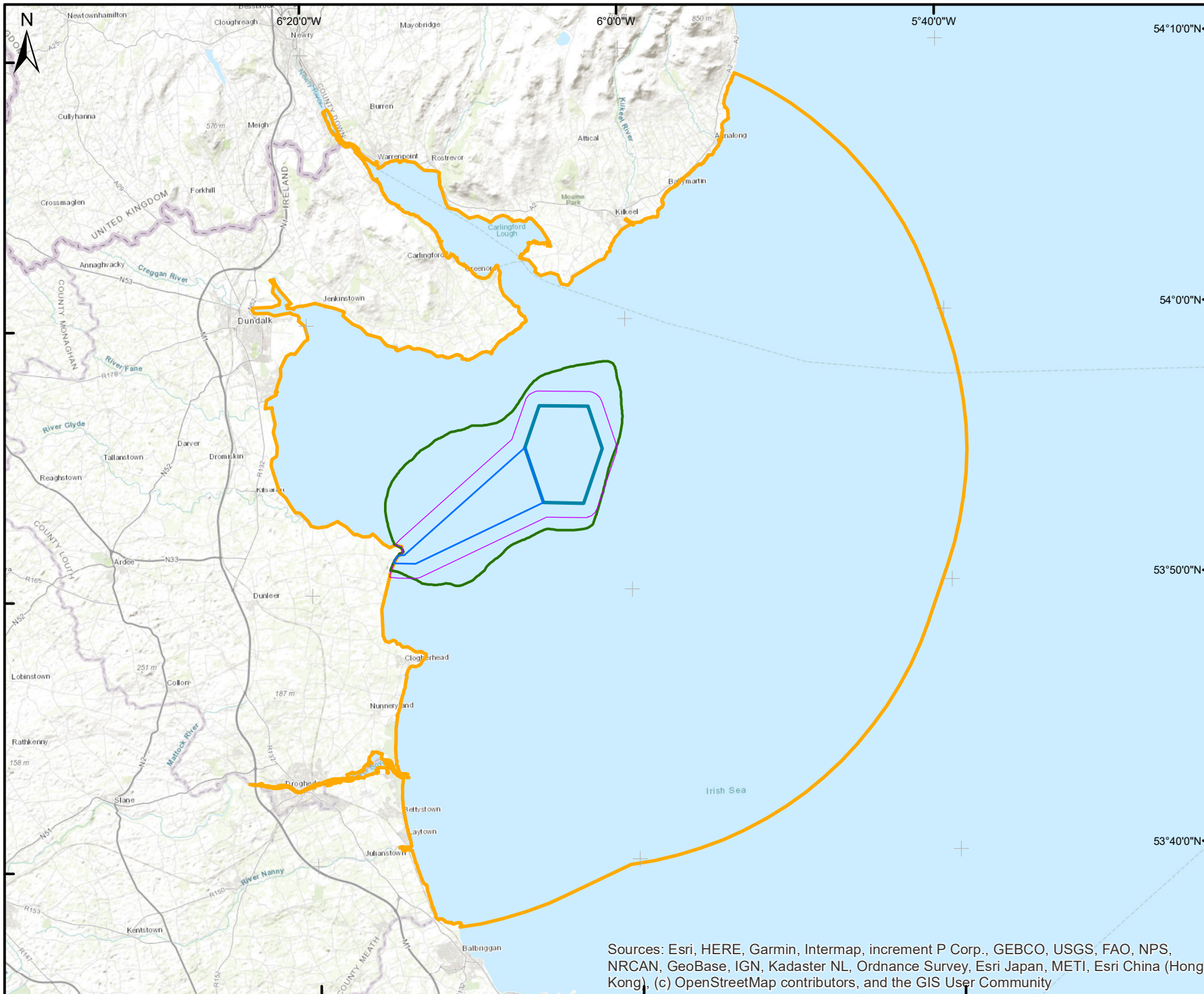
The Infrastructure, Marine Recreation and Other Users Study Area is shown in Figure 16-1. This includes the offshore wind farm area and offshore cable corridor as well as all infrastructure, marine recreation and other users' receptors within an area which has the potential to be affected by the Project up to the HWM.

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

- Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. This area includes the offshore wind farm area and offshore cable corridor plus 1 km buffer to examine the potential direct physical overlap between the Project activities and the following receptors:
 - Infrastructure:
 - Offshore energy projects (e.g. offshore wind farms, oil and gas projects); and
 - Cable and pipeline operators;
 - Marine Recreation:
 - Fishing;

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- Sailing and motor cruising;
- Kite surfing;
- Surfing;
- Windsurfing; and
- Sea/surf kayaking and canoeing; and
- Beach users, including sea swimming;
- Other Users;
- Carbon capture and storage, natural gas storage and underground coal gasification; and
- Coal deposits.
- Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area. This area is based on one tidal excursion of the Project (see chapter 7: Marine Processes) as this represents the extent of potential impact resulting from Suspended Sediment Concentrations (SSC). The Tidal Excursion Study Area is considered for the following receptors:
 - Marine Recreation:
 - Diving sites
 - Other Users:
 - Heavy mineral deposits; and
 - Aggregate extraction and disposal sites.



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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16.4 Policy context

Planning policy on renewable energy infrastructure is presented in volume 2A, chapter 2: Policy and Legislation. This section presents planning policy that specifically relates to infrastructure, marine recreation and other users, which is contained in the Offshore Renewable Energy Development Plan (OREDPP) (Department of Communications, Energy and Natural Resources (DECC, 2022b) and the National Marine Planning Framework (NMPF) (Department of Housing, Local Government and Heritage (DHLGH), 2021). The OREDPP and NMPF include guidance on what matters are to be considered in the preparation of an EIAR assessment. These are summarised in Table 16-1 and Table 16-2.

In February 2023, the 'OREDPP II - National Spatial Strategy for the transition to the Enduring Regime' was published in draft and subject to consultation. The draft OREDPP II does not define specific provision similar to OREDPP I. The key objectives of OREDPP II are:

- “Assess the resource potential for ORE in Ireland’s maritime area;
- Provide an evidence base to facilitate the future identification of Broad Areas of Interest most suitable for the sustainable deployment of ORE in Ireland’s maritime area; and
- Identify critical gaps in marine data or knowledge and recommend prioritised actions to close these gaps”.

The OREDPP II will provide an evidence base to facilitate the future identification of Broad Areas of Interest most suitable for the sustainable deployment of ORE in Ireland’s maritime area, to be assessed in greater detail at regional scale. This assessment will subsequently inform the identification of more refined areas as part of the designation process for Designated Maritime Area Plans (DMAP).

When published, the OREDPP II will update the original OREDPP published in 2014.

Table 16-1: Summary of OREDPP provisions relevant to infrastructure, marine recreation and other users.

Summary of OREDPP provision – project level mitigation measures	How and where considered in the EIAR
Infrastructure	
Cables and Pipelines	
<p>Direct Damage: Use of recommended 500 m avoidance zone; use of crossing agreements in accordance with The International Cable Protection Committee (ICPC) guidelines; observing the offshore wind farm area for existing infrastructure when selecting sites for devices and offshore cables.</p> <p>Access Restrictions: Use of recommended 500 m avoidance zone, use of crossing agreements in accordance with ICPC guidelines; observing the offshore wind farm area for existing infrastructure when selecting sites for devices and offshore cables.</p>	<p>A baseline review of existing cables and pipelines was undertaken and is presented in section 16.7.1. No cables or pipelines were identified within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area.</p>
Existing Renewable Energy Infrastructure	
<p>Access restrictions: Careful site selection to factor in access needs of existing infrastructure to ensure that the proposed sites do not conflict with the activities of existing renewable energy infrastructure; communication with existing wind farm operators.</p> <p>Removal of energy resource: Careful site selection taking into account resource assessment and modelling to determine if and how commercial-scale arrays could co-exist with renewable energy infrastructure.</p>	<p>A baseline review of existing renewable offshore energy projects was undertaken and is presented in section 16.7.1. No offshore energy projects were identified within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. The site selection process for the offshore wind farm area and offshore cable corridor took into consideration the avoidance of existing marine infrastructure) see volume 2A, chapter 4: Consideration of Alternatives).</p>

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Summary of ORDEP provision – project level mitigation measures	How and where considered in the EIAR
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.	A baseline review of offshore energy projects was undertaken and is presented in section 16.7.1. No oil and gas exploration or extraction projects were identified within the Infrastructure, Marine Recreation and Other Users – Physical Overlap Study Area.
Marine Recreation	
Recreation and Tourism	
Access restriction: Undertake construction, where possible, outside of peak tourist seasons (June to September) to minimise disruption to visitors and local people; identify and avoid popular routes for sailing or other water sports such as kayaking; where possible, facilitate safe access through arrays for sailing or other water sports.	A baseline review of existing marine recreation was undertaken and is presented in section 16.7.2. The potential effects of the construction, operational and maintenance and decommissioning phases of the Project on marine recreation receptors have been assessed in section 16.10.
Noise: Avoid key recreational periods for installation works; identify and avoid popular recreational areas when possible.	Noise is assessed in volume 2C, chapter 25: Noise (Airborne) and Vibration. Measures included in the Project are discussed in section 16.8.2 and include safety measures to prevent and avoid collision risk. Safety and collision risk is assessed in chapter 13: Shipping and Navigation.
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.	
Other Users	
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.	A baseline review of existing dredging and disposal areas was undertaken and is presented in section 16.7.3. No open dredge dump site overlaps with the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area. Two inactive sites exist to the north of the area covered by the tidal excursion area and one overlaps in the very north of the area covered by the tidal excursion.
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 16.7.

Table 16-2: Summary of NMPF provisions relevant to infrastructure, marine recreation and other users.

Summary of NMPF provision	How and where considered in the EIAR
Infrastructure	
Energy – Petroleum	
Petroleum Policy 1: Proposals in areas where petroleum activities or petroleum production infrastructure have already been approved, or where applications consistent with the Government's prohibition on new exploration activity are under consideration, should only be authorised where compatibility with the existing, authorised or proposed activity can be satisfactorily demonstrated or the proposal is clearly of strategic or national importance. Compatibility should be achieved, in order of preference, through:	A baseline review of offshore energy projects was undertaken and is presented in section 16.7.1. No oil and gas exploration or extraction projects were identified within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area.
a. avoiding, or	

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Summary of NMPF provision	How and where considered in the EIAR
<ul style="list-style-type: none"> b. minimising, or c. mitigating adverse impacts. d. If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding. <p>Petroleum Policy 2: Proposals potentially affecting future potential activity in areas (blocks) subject to existing petroleum authorisations should avoid sterilisation of that area for future petroleum-related activity consistent with Government policy, and demonstrate how they, in order of preference:</p> <ul style="list-style-type: none"> a. avoiding, or b. minimising, or c. mitigating adverse impacts. d. If it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding. 	
Energy – Offshore Renewable Energy (ORE)	
<p>ORE Policy 1: Proposals that assist the State in meeting the Government’s offshore renewable energy targets, including the target of achieving 5GW of capacity in offshore wind by 2030 and proposals that maximise the long-term shift from use of fossil fuels to renewable electricity energy, in line with decarbonisation targets, should be supported. All proposals will be rigorously assessed to ensure compliance with environmental standards and seek to minimise impacts on the marine environment, marine ecology and other maritime users.</p> <p>ORE Policy 4: Proposals Decisions on ORE developments should be informed by consideration of space required for other activities of national importance described in the NMPF.</p> <p>ORE Policy 8: Proposals for ORE must demonstrate consideration of existing cables passing through or adjacent to areas for development, making sure ability to repair and carry out cable-related remedial work is not significantly compromised. This consideration should be included as part of statutory environmental assessments where such assessments are required.</p>	<p>A baseline review of existing renewable offshore energy projects was undertaken and is presented in section 16.7.1. No offshore energy projects were identified within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. The site selection process for the offshore wind farm area and offshore cable corridor took into consideration the avoidance of existing marine infrastructure (see volume 2A, chapter 4: Consideration of Alternatives).</p> <p>A baseline review of existing cables and pipelines was undertaken and is presented in section 16.7.1. No cables or pipelines were identified within the Infrastructure, Marine Recreation and Other Users – Physical Overlap Study Area.</p>
Marine Recreation	
Sport and Recreation	
<p>Sport and Recreation Policy 2: Proposals should demonstrate the following in relation to potential impact on recreation and tourism:</p> <ul style="list-style-type: none"> • 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; and • The extent to which the proposal is likely to adversely impact on the natural environment. 	<p>A baseline review of existing marine recreation was undertaken and is presented in section 16.7.2.</p> <p>The potential effects of the construction, operational and maintenance and decommissioning phases of the Project on marine recreation receptors have been assessed in section 16.10.</p> <p>Noise is assessed in volume 2C, chapter 25: Noise (Airborne) and Vibration.</p> <p>Measures included in the Project are discussed in section 16.10 and include safety measures to prevent and avoid collision risk. Safety and collision risk is assessed in chapter 13: Shipping and Navigation.</p>
<p>Safety at Sea Policy 1: Proposals for installation, operation, and decommissioning of Offshore Wind Farms must demonstrate how they will:</p> <ul style="list-style-type: none"> • Minimise navigational risk between commercial vessels arising from an increase in the density of vessels in maritime space as a result of wind farm layout; and • Allow for recreational vessels within the Offshore Wind Farm (including consideration of turbine height) or redirect recreational vessels, minimising navigational risk arising between recreational and commercial vessels. 	<p>A Navigation Risk Assessment is included in appendix 13-1 of this EIAR and referenced through this chapter.</p>

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16.5 Consultation

Table 16-3 summarises the issues raised relevant to infrastructure, marine recreation and other users, which have been identified during consultation activities undertaken to date together with how these issues have been considered in the production of this EIAR chapter. Volume 2A, chapter 6: Consultation provides details on the types of consultation activities undertaken for the Project between 2019 and 2024 and the consultees that were contacted.

Table 16-3: Summary of key consultation issues raised during consultation activities undertaken for the Project relevant to infrastructure, marine recreation and other users.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this chapter
September 2019	Irish Sailing – Email	Advised that Irish Sailing supports the European Boating Association (EBA) position statement on wind farms.	EBA used to inform impact assessment methodology (section 16.8.1).
September 2019	Irish Sailing – Email	Provided the Coastal Atlas of Recreational Boating Ireland 2018. Advised that the Carlingford Sailing Club has 216 members.	The information provided was used to inform the baseline presented in section 16.7.2.
September 2019	Warrenpoint Harbour – Meeting	There are three yacht clubs in Carlingford Lough. Little recreational activity outside of the Lough and yacht visitors are few and far between.	The information provided was used to inform the baseline presented in section 16.7.2.
September 2019	Inland Fisheries Ireland – Email	Provided further information on sea angling within the Dundalk Bay area. Identified that Dundalk Bay is promoted as an angling venue for dogfish, tope, bull huss, mackerel, codling, spurdog, flounder, whiting, coalfish, ling, gurnard, wrasse and pollack. Also identified important fishing rivers (e.g. the rivers Dee, Glyde, Fane, Castletown and Flurry).	The information provided was used to inform the baseline presented in section 16.7.2.
February 2021	Celtic Adventures Ltd- Email	Provided further information on their operations. No issues raised.	The information provided was used to inform the baseline presented in section 16.7.2.
February 2021	Carlingford Sailing Club- Email	Provided further information on their operations. No issues raised.	The information provided was used to inform the baseline presented in section 16.7.2.
February 2021	Carlingford Lough Yacht Club – Email	Provided further information on their operations. No issues raised.	The information provided was used to inform the baseline presented in section 16.7.2.
March 2021	Skerries Sailing Club – Email	Provided further information on their operations. Concerns regarding: the use of AIS data to assess marine traffic and interruption to offshore racing; visibility and lighting, fog horns and anchoring in case of emergency; impacts to recreational sailing during construction; and concerns that recreational sailing will not be permitted within the offshore wind farm area during the operational phase of the Project.	AIS data is used to inform assessment in chapter 13: Shipping and Navigation and within the desktop study provided in section 16.7 of this chapter. Lighting, marking, and emergency response are covered in volume 2A, appendix 5-7: Emergency Response and Co-operation Plan and volume 2A, appendix 5-8: Lighting and Marking Plan. Displacement of recreational sailing during construction and operation is addressed in section 16.10.1.
January / February 2023	Members of the public during public consultation.	How will swimming communities be affected during construction activities?	The potential for the Project to affect recreational activities, including sea swimming, is addressed in sections 16.10.2 and 16.10.3.

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16.6 Methodology to inform the baseline

16.6.1 Desktop study

Information on infrastructure, marine recreation and other users within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area and Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area was collected through a detailed desktop review of existing studies and datasets. The key sources (i.e. data and reports) used to inform the baseline characterisation of the above mentioned study areas are summarised in Table 16-4 below. These sources provide the most up to date data for this assessment.

Table 16-4: Summary of data sources.

Title	Source	Year	Author
Republic of Ireland			
Dredge Spoil Dumping	EMODnet	2016	EMODnet
Ireland's Marine Atlas	Atlas.marine.ie	2024	Marine Institute
Offshore Wind Farms	Gov.ie	2023	Gov.ie
Pipelines	DAERA	2021	DAERA
Cables	DAERA	2021	DAERA
Oil and Gas infrastructure	Marine Institute	2022	Marine Institute
Recreational sailing AIS tracks	Coastal Atlas of Recreational Boating	2019	Coastal Atlas of Recreational Boating
Wrecks (recreational sites)	INFOMAR	2019	INFOMAR
Wrecks (recreational sites)	DiveNI.com	2021	DiveNI.com
Marine Irish Digital Atlas – Webmap Service <ul style="list-style-type: none"> • Diving and Sub-aqua Clubs; • Fishing Spots; • Surf Spots; • Marines and Pontoons; and • ISA Sailing Clubs. 	International Coastal Atlas Network (ICAN)	2021	ICAN
Walking and hiking	Tourism Ireland	2023	Tourism Ireland
Webmap service <ul style="list-style-type: none"> • Offshore Wind Farms 	4COffshore	2023	4COffshore
Possibilities for commercial mineral deposits in the Irish Offshore Area	Marine Mining	1989	Geoghegan <i>et al.</i>
Feasibility study on the establishment of a large-scale inshore resource mapping project	Marine Institute	2004	Parsons <i>et al.</i>
A Guide to Sea Angling in the Eastern Fisheries Region by Norman Dunlop	Eastern Regional Fisheries Board	2009	Eastern Regional Fisheries Board
Coasts and Beaches in Louth	VisitLouth	2017	VisitLouth
A Coastal Atlas of Recreational Boating in Ireland	Irish Cruising Club	2018	Irish Cruising Club
Clogher Head Surf Report and Forecast	Magic Seaweed	2021	Magic Seaweed
Oil and Gas - Concession Map	DCCAE	2019a	DCCAE
Oil and Gas (Exploration and Production)	DCCAE	2019b	DCCAE
Strangford Lough Canoe Trail	CanoeNI	2021	CanoeNI
Material Assets <ul style="list-style-type: none"> • Carbon Capture and Storage; • Marine Aggregates; and • Energy. 	National Marine Planning Framework SEA Environmental Report	2019	Department of Housing, Planning and Local Government

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Title	Source	Year	Author
<ul style="list-style-type: none"> 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	2021	Department of Housing, Local Government and Heritage
AIS data	Appendix 13-1: Navigation Risk Assessment	2023	NASH
Northern Ireland			
Northern Ireland Marine Mapviewer – Webmap Service	Department of Agriculture, Environment and Rural Affairs (DAERA)	2020	DAERA
<ul style="list-style-type: none"> Dredging; Cable and pipelines; and Oil and Gas infrastructure. 			

16.6.2 Site-specific surveys

No site-specific surveys have been undertaken to inform this assessment as the baseline characterisation developed through existing data sources is considered sufficient to inform the assessment.

16.7 Baseline environment

16.7.1 Infrastructure

Offshore energy projects

There are no existing offshore wind farms or wave and tidal energy developments within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1).

Two Foreshore Licences have been granted for site investigation activities at to the south and east of the offshore wind farm area and the offshore cable corridor (Foreshore licence applications: FS007373 and FS007392)

Licences for the exploration and extraction of oil and gas are awarded by the Petroleum Affairs Division. These licences are granted for identified geographical licence option areas (blocks and sub-blocks) in rounds. The Project is located within the Celtic Sea/ Irish Sea open-door licensing area and under frontier exploration licence option area (DCCA, 2019a). There is currently no licenced acreage that is within or adjacent to the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1). There are no hydrocarbon fields, wells or gas platforms within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1).

Offshore cables and pipelines

This section provides an overview of cables and pipelines within the Infrastructure, Marine Recreation and Other Users Physical Overlap Study Area (Figure 16-1).

There are no active cables within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. There is one historic (out of service) submarine power cable, which partially extends from the north of Dundalk Bay towards the centre of the bay. However this cable does not overlap with the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-2).

There are no pipelines located within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. The nearest pipeline is the Gas Interconnector II located approximately 15 km southeast of the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area.

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16.7.2 Marine recreation

Recreational sailing and motor cruising

This section provides an overview of recreational sailing and motor cruising within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1).

In general, recreational boating associated with general sailing areas, racing areas, sailing school and sailing clubs is highly seasonal, with a greater density of vessels found throughout summer, as well as highly diurnal with boating occurring usually during the daytime (ICC, 2018).

Dinghies, sailboards, watercraft and small cruisers are used for general day-to-day use by all recreational boating users. 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 offshore wind farm area overlaps with a general sailing area by 2.1 km² (Figure 16-2). This general sailing area is an area defined by the coastal atlas of recreational boating in Ireland, 2018, and is considered as an area that has higher densities of general sailing vessel movements; however, it is also possible for recreational sailing to occur outside this area.

The nearest marina to the Project is Carlingford Marina, which is on the west bank of Carlingford Lough (12 km northwest of the offshore wind farm area), has a total of 170 berths and is mainly used for recreational vessels and sailing. Sailing usually takes place within the immediate vicinity of the marina; recreational vessels may exit Carlingford Lough however they quickly disperse and there are no defined routes of transit from Carlingford Marina (EMODnet) into the Irish Sea.

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). Skerries Sailing club schedules an annual offshore race on the May bank holiday weekend from Skerries to Carlingford that passes through the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. Racing areas are located within Carlingford Lough, 6.7 km to the north of the offshore wind farm area and off the coast of Dublin, 24 km to the south of the offshore wind farm area.

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 power-boating, all of which are open to members of the public (ICC, 2018). There are no sailing schools within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area. There are a number of sailing clubs which may use the Infrastructure, Marine Recreation and Other Users – Physical Overlap Study Area, with Carlingford Sailing Club (216 members, see Table 16-3) located 12 km northwest of the offshore wind farm area. Others include the Carlingford Lough Yacht Club (15.3 km northwest of the offshore wind farm area; Figure 16-2) and Skerries Sailing Club (33.8 km south of the offshore wind farm area). Carlingford Lough Yacht Club activities are generally restricted to within Carlingford Lough and usually involve 12 boats. Limited numbers of offshore races occur in the summer season only (consultation communications). Skerries Sailing Club has both dinghy and cruiser racing. Additional sailing clubs can be found further south, with an increase in sailing clubs around Dublin. Automatic Identification System¹ (AIS) data for recreational craft for the months January and July in years 2019 and 2022 identifies recreational vessel tracks originating from Carlingford Lough, likely associated with the sailing clubs and schools referred to above (see appendix 13-1: Navigation Risk Assessment). AIS data for the period January to July 2022 shows a minor increase in the number of recreational tracks crossing the offshore wind farm area in a north/south direction compared to the period January to July 2019 (appendix 13-1: Navigation Risk Assessment).

There are light and medium traffic recreational boating routes that intersect with the offshore wind farm area and offshore cable corridor, with a number of offshore routes fanning out from the sailing clubs identified

¹ Recreational vessels are not mandated to carry an AIS transponder and as such AIS data may under report recreational vessels. For further information, see appendix 13-1: Navigation Risk Assessment.

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above (ICC, 2018; Figure 16-2). As noted further above, recreational boating generally does not involve point-to-point passage and therefore these routes are likely to be indicative. Light traffic routes are defined as known routes in common use and which are likely to be important to local users, with medium traffic routes defined as popular routes on which some recreational craft will be seen at most times during summer daylight hours (ICC, 2018). AIS data for recreational craft for the period January and July 2019 (see appendix 13-1: Navigation Risk Assessment) identifies vessels transiting north-south to/from Carlingford Lough, including through the offshore wind farm area and less so through the offshore cable corridor, broadly corresponding with the indicative light and medium traffic routes presented in Figure 16-2 and with information available from the Irish Sailing Association (ICC, 2018).

Recreational Fishing

This section provides an overview of recreational fishing activity within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1) (i.e. fishing for pleasure rather than for commercial reasons).

Boat Angling

Recreational sea angling locations can be found around the coast of County Lough, ranging from Carlingford Lough, south through Dundalk Bay and onwards towards Dublin. Inshore boat fishing is popular on Carlingford Lough from April through to September with tope and ray regularly caught (ERFB, 2009). Along the coast south through Dundalk Bay, the inshore waters become very shallow, broken only by Dunany Point where there is shore fishing in summer. Small boats can be launched from the slipway at Annagassan, subject to high water conditions, whereby boats can transit to Dunany point. Anglers can expect to catch tope, ray, spurdog and dogfish between May to September (ERFB, 2009). Therefore, it is likely that boat angling may overlap with the nearshore section of the offshore cable corridor (Figure 16-2).

Shore angling

A shore angling mark at Dunany Point is located to the north of the offshore cable corridor at the landfall (Figure 16-2). The shallow beach extends for three miles broken up by rock patches and crossed by a stream from Dunany Point, south to Cruisetown (ERFB, 2009). Bass and flounder are often caught via shore angling. Hacketts Cross, near Clogherhead and outside the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area, can be found at the southern point of the beach where lugworm and ragworm can be found at low tide (ERFB, 2009). Shore angling is therefore likely to occur within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area, and within the offshore cable corridor at the landfall (Figure 16-2).

Game angling

No game angling rivers overlap with the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area.

Other recreational activities

This section provides an overview of other recreational activity within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area and Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area (Figure 16-1). Activities include diving, boarding water sports, kayaking and canoeing, sea swimming and beach users.

Diving

There is one diving club in County Louth, known as Dundalk Sub Aqua Club, located 18 km from the offshore wind farm area. Dive sites frequented by the Dundalk Sub Aqua Club are unknown as no response to consultation was received. However, club members are likely to dive at wreck sites, reefs and geological areas of interest. Divers are likely to transit to a site via a small cruiser vessel, most likely following the light traffic routes (Figure 16-3).

There are three known wreck sites that lie within the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area (Figure 16-1), two within the offshore cable corridor and one located to the southeast of the offshore wind farm area. One site, located within the offshore cable corridor, is a known

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wreck the Topaz, a Glasgow registered iron steamship lost in 1891. The other two wrecks are unidentified wrecks. All wrecks are protected under the National Monuments Act (see chapter 15: Marine Archaeology).

There are ten other dive sites in Northern Ireland around the entrance to Carlingford Lough and just to the northeast of Carlingford Lough. None of these dive sites are within the Infrastructure and Other Users – Tidal Excursion Study Area (Figure 16-3).

Boarding water sports

Kite surfing, surfing and windsurfing occur almost entirely in coastal waters, generally within 1 km of the shore. Usually one shop/club will offer all three services to members of the public, provided that conditions are suitable for the sport. Additionally, members of the public are free to use their equipment wherever wind and wave conditions are optimal, all along the coast.

Celtic Adventures is located in the town of Dunleer, located approximately 8.5 km southwest of the offshore cable corridor and landfall, and provides stand up paddle boarding rentals, which can either be used on nearby rivers or at sea. Celtic Adventures operates out of Annagassan harbour, Annagassan Strand, Salterstown pier, Port Oriel and Clogherhead beach. In peak season they operate daily from April until October and can have 30 boards operating at one time (see Table 16-3).

There is a windsurfing club located approximately 14 km north of the offshore wind farm area, within Carlingford Lough. It is likely that windsurfing activity is largely confined to Carlingford Lough and therefore highly unlikely that this activity overlaps with the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1).

A surfing location has been identified within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (see Figure 16-2 inset map). The identified surfing location overlaps with the offshore cable corridor at the landfall. Surfing is dependent on swell conditions, with surfers moving up and down a beach to find the best waves and as such, the entire beach from Dunany Point south to Clogherhead may be surfed. Kite surfing, surfing and windsurfing all have the potential to occur within the nearshore and inshore sections of the offshore cable corridor (Gibbons, 2006; Figure 16-2).

Kayaking and canoeing

There are no physical restrictions on the offshore range of kayaks and canoes, however, for logistical and safety reasons most will stay relatively close to the shore, undertaking coastal rather than seaward trips.

Celtic Adventures, as mentioned above, also provides stand up canoes and kayaks rentals, which can either be used on nearby rivers or at sea.

The Strangford to Newry Canoe Trail is located approximately 11 km northeast of the offshore wind farm area, outside the Infrastructure, Marine Recreation and Other Users – Physical Overlap Study Area (CanoeNI, 2021).

Kayaking and canoeing have the potential to occur within the nearshore and inshore sections of the offshore cable corridor.

Sea swimming

The COVID-19 pandemic has led to an increase in sea swimming as outdoor exercise has been relatively unaffected by restrictions. There are various locations in the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area where sea swimming has been documented, including Dunany Beach, Port Beach, Slip, Clogherhead Beach, Templetown Beach, Gyles Quay, Carlingford, Priests beach, Cranfield Beach Blackrock and Salterstown Pier (Figure 16-2). Due to the nature of sea swimming, the activity is likely to be restricted to nearshore areas and not extend far out to sea, and therefore only has the potential to occur within the nearshore sections of the offshore cable corridor.

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Beach users

Dundalk Bay and associated beaches are likely to be used by members of the public for beach activities, hiking and dog walking. The popular beaches of Port Beach and Annagassan are located approximately 2.5 km south and 7 km west of the landfall, respectively.

The landfall is located at Dunany Bay Beach, which is located along a stretch of sandy shoreline extending from Dunany Point to Clogherhead. Members of the public use this beach for recreational activities (Figure 16-2). However, Dunany Bay Beach is not recognised as a popular tourism beach by the VisitLouth tourist information site (VisitLouth, 2017). To the south of Dunany Bay Beach is Port Beach, a Blue Flag beach with tourist facilities including lifeguard and swimming areas (with the bathing area 2,300 m in length), parking and toilets (Louth County Council, 2018).

Templetown Beach, located in Carlingford, is a Blue Flag Beach and is used by members of the public for swimming, walking and multiple water sports including kite surfing (Discover Ireland, 2021). Gyles Quay Beach is likely to be utilised by the public due to the caravan and camping parks overlooking the beach with usage likely to be seasonal with peak usage in summer. Similarly, Cranfield Beach will be utilised by visitors of the caravan and camping sites and is used for water sports and swimming, with lifeguarded areas in the summer (RNLI, 2021).

Recommended coastal walks in the area include Blackrock Slí Na Sláinte, approximately 14 km northwest from the landfall, Dundalk Slí na Sláinte, approximately 19 km northwest, and The Táin Way, approximately 19.5 km northwest (Tourism Ireland, 2023) none of which cross the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area.

16.7.3 Other users

This section provides an overview of other users, including aggregate extraction and disposal, coal deposits, heavy mineral deposits and carbon capture storage, natural gas storage and underground coal gasification within the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area (Figure 16-1).

Marine aggregate extraction and disposal sites

Sand and gravel extraction

There are currently no aggregate extraction sites within the Infrastructure, Marine Recreation and Other Users – Tidal Excursion Study Area (Figure 16-3). The nearest marine aggregate extraction point is Kish Bank, located 84 km south of the offshore wind farm area.

Areas of high potential marine aggregate resource have been identified within the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area (EMODnet, 2016). This includes fragmented patches of sand within the offshore wind farm area and offshore cable corridor (see Figure 16-3). Wider areas of high potential marine aggregate resource have been identified further south along the east and southeast coasts of Ireland, and offshore of the southwest coast of Ireland.

Disposal sites

The nearest open dredge disposal sites are the two Drogheda Port Company dredge disposal sites to the south, the closest (termed A2) is located over 8 km to the south of the offshore cable corridor and the second (termed A1) is located 11.2 km to the south of the offshore cable corridor. The sites do not overlap with the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area (Figure 16-3).

Coal deposits

There are no known coal deposits located off Dundalk Bay and therefore within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1).

Heavy mineral deposits

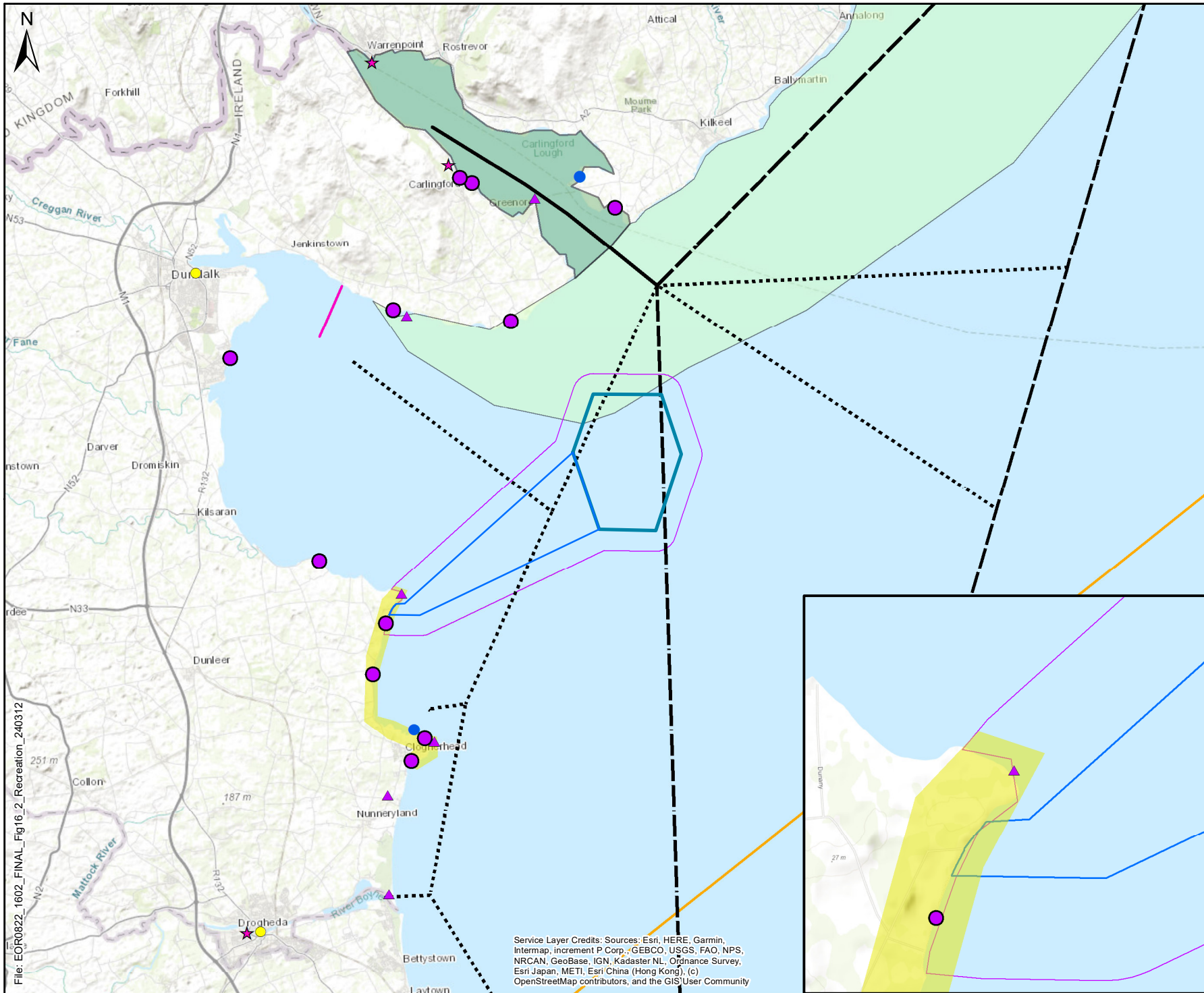
Sandy deposits can contain valuable heavy minerals such as gold, diamonds, platinum and tin (Parsons *et al.*, 2004). Such deposits are found on continental shelves worldwide from the beach to the outer shelf.

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During the 1980's Geological Survey Ireland carried out a series of joint industry reconnaissance surveys which identified several potentially viable deposits (Geoghegan, Gardiner and Keary, 1989), however, none are located within or close to the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area.

Carbon capture and storage, natural gas storage and underground coal gasification

There are no active or proposed carbon capture and storage, natural gas storage or underground coal gasification sites within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-1).



Legend

- Offshore Wind Farm Area
- Offshore Cable Corridor
- Infrastructure, Marine Recreation and Other Users Physical Overlap Study Area
- Recreational Activities
 - Surf Beach
 - Fishing Spot
 - Diving Club
 - Sea Swimming Location
 - Marina/pontoon
- Anchorage or pier/harbour
- Recreational Boating Routes
 - Heavy Traffic
 - Medium Traffic
 - Light Traffic
- Recreational Boating Areas
 - Racing areas
 - General Sailing areas
- Cables & Pipelines
 - Subsea Power Cable
 - Pipeline

Data Sources: JICAN (2021), INFOMAR (2019), 4COffshore (2023), EMOdnet (2019), Northern Ireland Marine Mapviewer (2019) The Sea App

Client

Project

Oriel Wind Farm Project

Title **Figure 16-2**

Recreational activities, cables and pipelines

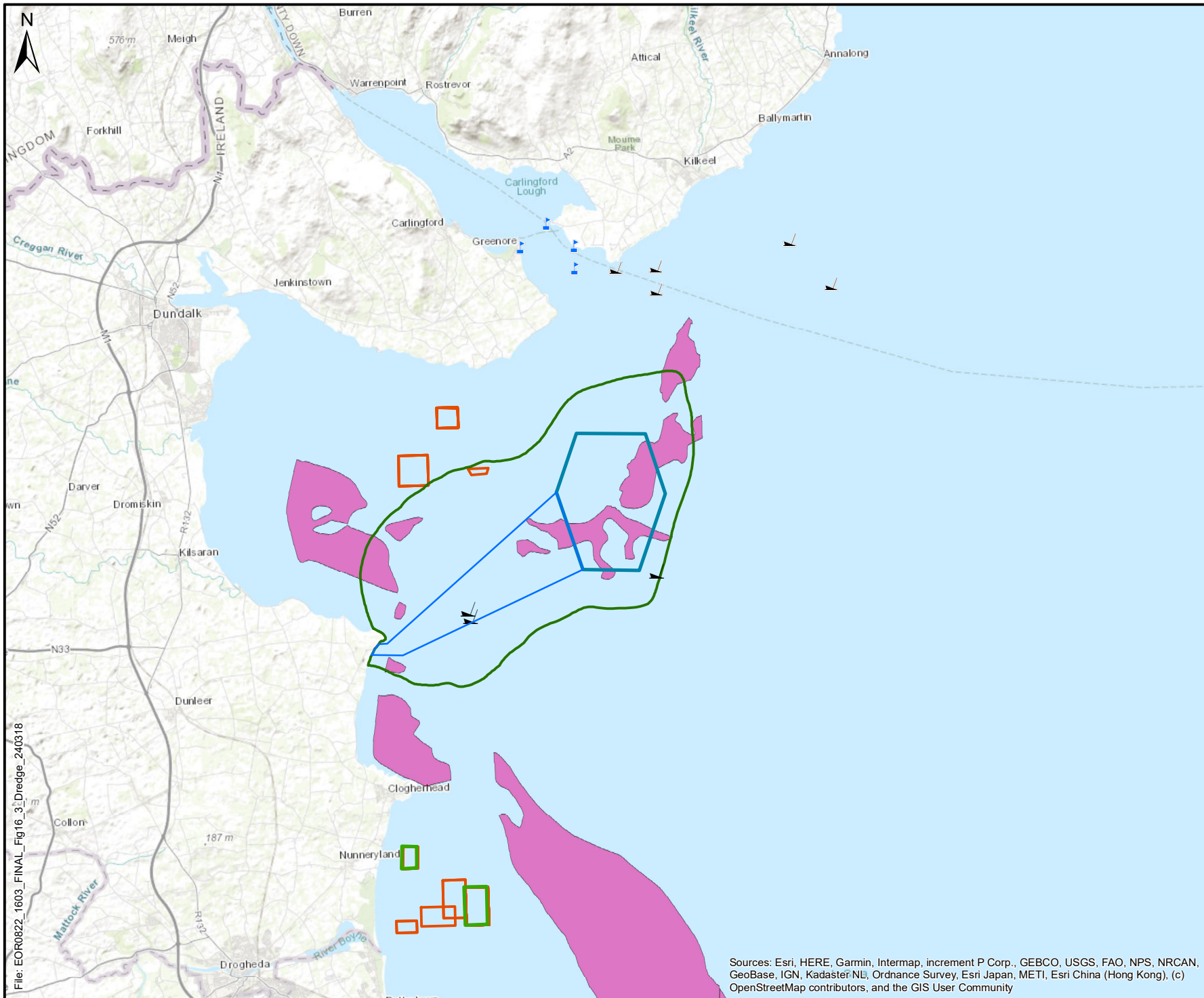
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Issue Details	
Drawn By: NG	Project No. EOR0822 (MDR1520B)
Checked By: NG	File Ref:
Approved By: AOS	EO0822_I0U_E_1602_FINAL
Scale: 1:250,000 @A4	Projection: ITM (IRENET95)
Date: 12/03/2024	Geographic Co-ordinates: ETRS89

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File: EOR0822_1602_FINAL_Fig16_2_Recreation_240312

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File: EOR0822_1603_FINAL_Fig16_3_Dredge_240318

Legend

- Project Offshore Wind Farm Area
- Project Offshore Cable Corridor
- Infrastructure, Marine Recreation and Other Users Tidal Excursion Study Area

Recreational dive sites

- Wreck
- Other/Non-wreck dive site

Dredge disposal sites

- Active Dump Sites
- Inactive Dump Sites

Marine aggregate resource

- High potential marine aggregate resource area

Data Sources: EPA, dive-ni.com



Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title **Figure 16-3**
Recreational dive sites, aggregate resource areas and dredge disposal sites

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16.7.4 Future baseline scenario

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (hereafter the EIA Regulations 2018) require that ‘a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without 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’ is included within the EIAR.

In the event that the Project is not constructed, an assessment of the future baseline conditions has been carried out and is described below.

The future baseline scenario for recreational activities is considered unlikely to change substantially from that presented in section 16.7 above, in the absence of the Project. 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.

The Department of the Environment, Climate and Communications (DECC) has stopped accepting new applications for exploration licences for natural gas or oil from September 2019 and that authorisations dropped 45% to the end of 2020. This commitment has been legislated for through the Climate Action and Low Carbon Development (Amendment) Act 2021 which commenced on 7th September 2021 (DECC, 2022a). Therefore it is unlikely that there will be an increase oil and gas activity in Ireland and the area in the vicinity of the offshore wind farm area (see section 16.7.3).

There is potential for growth in offshore wind energy within Ireland. Ireland’s Climate Action Plan 2023 sets out a target for at least 3.5 GW of electricity generated from offshore renewable sources by 2030 (DECC, 2023a). The *Climate Action Plan 2024* (CAP 2024) was published by the DECC in December 2023 and is approved by Government, subject to Strategic Environmental Assessment and Appropriate Assessment. CAP 2024 builds upon CAP 2023 by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings.

Other renewable energy sources, such as wave and tidal energy devices, are in their early research and development stage. A number of sites around Ireland have been identified as having the potential for the development of tidal energy through the OREDP II Strategic Environmental Assessment Scoping (DECC, 2022b) and draft OREDP II (DECC, 2023b), including within Carlingford Lough, to the north of the Project. As the technology is still in its infancy it is unlikely to represent a substantial change to the baseline in the near future.

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).

16.7.5 Data validity and limitations

The data sources used in this chapter are detailed in Table 16-4 and section 16.7. 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 16.5 above. It is therefore considered that the data used in the assessment is robust and sufficient for the purposes of the impact assessment presented.

16.8 Key parameters for assessment

16.8.1 Project design parameters

The project description is provided in volume 2A, chapter 5: Project Description. Table 16-5 outlines the project design parameters that have been used to inform the assessment of potential impacts of the construction, operation and maintenance and decommissioning phases of the Project on infrastructure, marine recreation and other users.

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Due to the potential for unexpected ground conditions and obstructions, the final route and length of the offshore export cable and offshore inter array cables will be confirmed during construction (see design flexibility details in chapter 5: Project Description (volume 2A)). For the purposes of the assessment presented in section 16.10, the maximum length of cables has been considered to ensure the potential for maximum impact is assessed. Should the lengths of cables be less than those specified or alternative routes be used within the offshore wind farm area or offshore cable corridor, then the potential for effects outlined in section 16.10 will not change the assessment.

Table 16-5: Project design parameters used for the assessment of potential impacts on infrastructure, marine recreation and other users.

Potential impact	Phase ¹			Project design parameters	Justification
	C	O	D		
Displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities (diving vessels), resulting in a loss of recreational resource.	✓	✓	✓	<p>Construction Phase</p> <ul style="list-style-type: none"> Installation of 25 wind turbine generators (WTGs) and one offshore substation (OSS) with monopile foundations (pile diameter of 9.6 m) within the offshore wind farm area of 27.7 km²; Minimum spacing approximately 944 m; Installation of 41 km inter-array cables and 16 km of offshore cable; 475 vessel round trips comprised of jack-up barge/DP vessels, tug/anchor handlers, cable installation vessels, guard vessels, survey vessels, crew transfer vessels, and scour/cable protection installation vessels; Cable installation at the landfall via open trench: <ul style="list-style-type: none"> Installation of approximately 800 m of offshore cable; vessels comprise of jack-up barge/DP vessel, tug/anchor handler, cable installation vessel, guard vessel, survey vessel and crew transfer vessel. Installation duration over a period of three months. Presence of advisory Marine Safety Zones of 500 m in radius around structures undergoing installation; and advisory clearance distances of 500 m in radius around cable installation vessels and equipment. Offshore construction will take place over a period of 15 months. <p>Operational and Maintenance Phase</p> <ul style="list-style-type: none"> Presence of 25 WTGs and one OSS with monopile foundations (base diameter 9.6 m) and associated scour protection within the offshore wind farm area of 27.7 km²; Minimum spacing 944 m; Presence of cable protection associated with 41 km of inter-array cables and 16 km of offshore cable. Assumes 50% of inter-array and offshore cables may require cable protection; 352 vessel round trips per year during the operational and maintenance phase; Presence of advisory Marine Safety Zones of 500 m in radius around structures undergoing major maintenance (approximately three events per year); and advisory clearance distances of approximately 500 m in radius around cable repair/reburial vessels (seven inter-array cable 	<p>Construction Phase</p> <p>The assessment considers the infrastructure and associated minimum spacing, the greatest number of vessels and the greatest extent of advisory Marine Safety Zones and advisory clearance distances, over the construction programme.</p> <p>Operational and Maintenance Phase</p> <p>The assessment considers the infrastructure and associated minimum spacing, the greatest number of vessels and the greatest extent of advisory Marine Safety Zones and advisory clearance distances, over the lifetime of the project.</p> <p>Decommissioning Phase</p> <p>Parameters are assumed to be identical to the construction phase.</p>

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Potential impact	Phase ¹ C O D	Project design parameters	Justification
		repair and seven inter-array cable reburial events and 3 offshore cable repair and reburial events over the Project lifetime). <ul style="list-style-type: none"> Operational phase of 40 years. Decommissioning Phase <ul style="list-style-type: none"> Decommissioning activities will involve similar types and numbers of vessels and equipment to that for the construction phase. WTGs and the OSS will be removed, foundations removed/cut below seabed, removal of cables, scour/cable protection to be left in situ; Presence of advisory Marine Safety Zones of 500 m in radius around structures undergoing decommissioning; and advisory clearance distances of 500 m in radius around cable vessels. 	
Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource	✓ X ✓	Construction Phase <ul style="list-style-type: none"> 475 vessel round trips comprised of jack-up barge/DP vessels, tug/anchor handlers, cable installation vessels, guard vessels, survey vessels, crew transfer vessels, and scour/cable protection installation vessels; Installation of 16 km of offshore cable: Cable installation at the landfall via open trench: <ul style="list-style-type: none"> Installation of 800 m of offshore cable via open trench; Installation duration over a period of three months. Presence of advisory clearance distances of 500 m in radius around cable installation vessels. Operational and Maintenance Phase <ul style="list-style-type: none"> 352 vessel round trips per year during the operational and maintenance phase; Presence of advisory clearance distances of approximately 500 m in radius around offshore cable intertidal repair/reburial vessels (6 intertidal offshore cable repair and reburial events over the lifetime of the Project). Operational phase of 40 years. Decommissioning Phase <p>Decommissioning activities will involve similar types and numbers of vessels and equipment to that for the construction phase. Cables will be removed.</p>	Construction Phase <p>The assessment considers the greatest number of vessels movements and greatest extent of advisory clearance distances, over the construction programme.</p> Decommissioning <p>Parameters are assumed to be similar to the construction phase.</p>
Potential for increased suspended sediment concentrations and associated deposition affecting other recreational activities (swimming, diving and angling)	✓ ✓ ✓	Construction Phase <p>WTGs and OSS installed on monopile foundations:</p> <ul style="list-style-type: none"> Drilled installation of 9.6 m diameter pile. Installation of inter-array and offshore cables: Disturbance of seabed material from a 3 m wide and 3 m deep trench for cables and 1 m wide and 3 m deep for inter-array cables; and Modelled cable lengths over areas of sand and muddy sand. 	<p>The assessment considers the greatest volume of sediment released into the water column – see chapter 7: Marine Processes for further justification.</p>

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Potential impact	Phase ¹ C O D	Project design parameters	Justification
		<p>Operational and Maintenance Phase Cable repair/reburial activities:</p> <ul style="list-style-type: none"> • Inter-array cables: 7 repair events and 7 reburial events; and • Offshore cable: three repair events three reburial events <p>Decommissioning Phase WTGs and OSS on monopile foundations:</p> <ul style="list-style-type: none"> • Cutting and removal of monopile foundations to approximately 2 m below seabed; <p>Removal of inter-array and offshore cables:</p> <ul style="list-style-type: none"> • Disturbance of seabed material from a 3 m wide and 3 m deep trench for cables and 1 m wide and 3 m deep for inter-array cables. 	

1. C= Construction, O = Operation, D = Decommissioning.

16.8.2 Measures included in the Project

As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on infrastructure, marine recreation and other users (see Table 16-6). These measures include designed-in and management measures (controls). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Project and have therefore been considered in the assessment presented in section 16.10 below (i.e. the determination of magnitude assumes implementation of these measures). These measures are considered standard industry practice for this type of development.

Table 16-6: Measures included in the Project.

Measures included in the Project	Justification
<p>The Applicant will implement advisory Marine Safety Zones of 500 m in radius around individual structures undergoing installation or decommissioning.</p> <p>Advisory Marine Safety Zones of 50 m will be implemented for incomplete structures at which construction activity may be temporarily paused.</p> <p>During the operational and maintenance phase, the Applicant will also apply for advisory Marine Safety Zones of approximately 500 m in radius around infrastructure undergoing major maintenance (for example a blade replacement).</p>	<p>In the interests of safety to infrastructure, marine recreation and other users receptors.</p>
<p>The Applicant will implement an advisory clearance distance of 500 m in radius around cable installation vessels and cable repair vessels.</p>	
<p>Notice to Mariners will be issued through the Marine Survey Office in advance of construction and maintenance activities to inform all marine users of the location, time period and safety and navigational requirements for the planned activity.</p>	
<p>Promulgation of information advising on the nature, timing and location of activities, including through Notices to Mariners. Information and notices will also be posted at the landfall location.</p> <p>The Applicant will directly issue Notices to Mariners</p>	<p>To ensure that as many interested parties as possible are aware of Project activities.</p>
<p>Provision of suitable Navigational aids and marine charting, to be agreed with the Commissioner of Irish Lights (CIL). To include charting of all structures associated with the Project on relevant nautical and electronic charts and implementation of a buoyed construction/decommissioning area for the offshore wind farm area during each phase.</p>	<p>To ensure other marine users are aware of the Project location.</p>

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Measures included in the Project	Justification
Lighting and marking to be agreed with CIL via a Lighting and Marking Plan (see volume 2A, appendix 5-8: Lighting and Marking Plan). Requirements align with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation O-139 (IALA, 2013).	
The Applicant will use guard vessels during installation and major maintenance activities such as during cable repair activities or during use of jack up vessels.	In the interests of safety to infrastructure, marine recreation and other users receptors.

16.8.3 Impacts scoped out of the assessment

On the basis of the baseline environment and the project description outlined in volume 2A, chapter 5: Project Description, a number of impacts are proposed to be scoped out of the assessment for infrastructure, marine recreation and other users. These impacts are outlined, together with a justification for the scoping out decision, in Table 16-7.

Table 16-7: Impacts scoped out of the assessment for infrastructure, marine recreation and other users.

Potential impact	Justification
Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource.	Operational and maintenance phase effects have been scoped out due to the low frequency of cable inspection, repair or reburial activities associated with the offshore cable. Any effects are likely to be limited to the presence of a temporary advisory clearance distance around the vessels carrying out maintenance activities. Notices to Mariners will be issued to advise other users of the nature, location and timing of any major maintenance activities.
Potential for airborne noise to interfere with recreational sailing and motor cruising, recreational fishing and other recreational activities	Airborne noise generated during all phases of the Project causing interference with identified recreational activities has been scoped out. Piling during construction is the loudest source of noise; however, there are high baseline noise levels due to surf/wave noise and construction noise will cease after the construction phase. Impacts from noise as a result of the installation of turbines and offshore substation will not interfere with recreational activities and this impact has been scoped out. Further detail can be found in chapter 25: Noise (Airborne) and Vibration.
Potential for changes to wave climate affecting the surfing waves and surf breaks recreational resource	Potential for changes in wave climate to affect surfing waves and surf breaks has been scoped out due to the low change in wave climate as a result of the Project (see chapter 7: Marine Processes). The wave climate will only change within the close vicinity of the turbines, and this will only be a very small change in wave height (40 mm reduction (i.e. less than 2%) – see appendix 7-1: Marine Processes Technical Report). Wave heights at the coast will not be altered as a result of the Project therefore surfing waves and surf breaks will not be affected.
Potential impact on high potential aggregate resource areas	The NMPF (2021) has identified an area of high potential marine aggregate resource within the Infrastructure, Marine Recreation and Other Users - Tidal Excursion Study Area. It will not be possible to avoid, minimise or mitigate the potential impact on the resource areas which directly overlap with the offshore wind farm area or offshore cable corridor. In this instance, policy states that proposals should state the case for proceeding. The need for offshore renewable energy in the context of national policy is set out in volume 2A, chapter 2: Policy and Legislation. Furthermore, there are wider areas of high potential marine aggregate resource further south along the east and southeast coasts of Ireland, and offshore of the southwest coast of Ireland. Due to the need for the Project and considering the wider resource available elsewhere and the absence

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Potential impact	Justification
	of any existing applications for aggregate dredging in the vicinity of the Project, this impact has been scoped out of the EIAR.

16.9 Impact assessment methodology

16.9.1 Overview

The assessment on infrastructure, marine recreation and other users has followed the methodology set out in chapter 3: EIA Methodology. Specific to this assessment, the following guidance documents have also been considered:

- European Boating Association (EBA) Position Statement, Offshore Wind Farms (EBA, 2019);
- Assessment and Monitoring of Ocean Noise in Irish Waters (Beck *et al.*, 2013);
- Assessment of Impact of Offshore Wind Energy Structures on the Marine Environment (Marine Institute, 2000);
- Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects, Department of Communications, Climate Action and Environment (Barnes, 2017);
- Guidance on Environmental Impact Assessment of Offshore Renewable Energy Development on Surfing Resources and Recreation (SAS, 2009); and
- Guidelines on the Treatment of Tourism in an Environmental Impact Statement (Fáilte Ireland, 2011).

16.9.2 Impact assessment criteria

Determining the significance of effects is a 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 chapter 3: EIA Methodology.

The criteria for defining impact magnitude in this chapter are outlined in Table 16-8 below.

Table 16-8: Definition of terms relating to the magnitude of an impact.

Magnitude of impact	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 project) and/or frequency of repetition is continuous and/or effect is not reversible for project) (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 project 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 project 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).

The criteria for defining receptor sensitivity in this chapter are outlined in Table 16-9 below.

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Table 16-9: Definition of terms relating to the sensitivity of the 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 project 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 project 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 project 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 project and/or has high recoverability.

The significance of the effect upon infrastructure, marine recreation 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 16-10. Where a range of significance of effect is presented in Table 16-10, the final assessment for each effect is based on calculated assessment and upon professional judgement.

For the purposes of this assessment, any effects with a significance level of slight or less have been concluded to be not significant in EIA terms.

Table 16-10: Matrix used for the assessment of the significance of the effect.

		Magnitude of impact			
		Negligible	Low	Medium	High
Sensitivity of receptor	Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight
	Low	Imperceptible or slight	Imperceptible or slight	Slight	Slight or moderate
	Medium	Imperceptible or slight	Slight	Moderate	Moderate or major
	High	Slight	Slight or moderate	Moderate or major	Major or profound

16.10 Assessment of significance

The potential impacts arising from the construction, operational and maintenance and decommissioning phases of the Project are listed in Table 16-5, along with the project design parameters against which each impact has been assessed.

A description of the potential effect on infrastructure, marine recreation and other users caused by each identified impact is given below.

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16.10.1 Displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities (diving vessels), resulting in a loss of recreational resource

Construction phase

Magnitude of impact

The installation of Project infrastructure within the offshore wind farm area and offshore cable corridor may displace recreational activities (sailing, motor cruising, boat angling and diving) from the footprint of the development and from any areas subject to temporary advisory Marine Safety Zones and advisory clearance distances, resulting in a loss of recreational resource.

The Project will involve the installation of 25 wind turbines, one offshore substation, 41 km of inter-array cables and 16 km of offshore cable, with associated advisory Marine Safety Zones and/or advisory clearance distances, over the 15-month offshore construction period. There will be 475 vessel round trips comprised of jack-up barge/DP vessels, tug/anchor handlers, cable installation vessels, guard vessels, survey vessels, crew transfer vessels, and scour/cable protection vessels, during the installation phase. Construction at the landfall will require cable installation via open trenching, with associated advisory clearance distances over a period of three months within the overall 15-month offshore construction phase (Table 16-5).

The offshore wind farm area overlaps slightly with a general sailing area and with one light and one medium traffic recreational boating route. The offshore cable corridor overlaps with one light traffic recreational boating route which also branches west into Dundalk Bay. Recreational fishing may also occur within the offshore cable corridor, subject to targeted fish species. No boating routes or general sailing areas have been identified along the nearshore and intertidal sections of the offshore cable corridor; however the occasional small vessel may transit across the area and it is likely that boat angling activities may overlap with the nearshore section of the offshore cable corridor.

The spatial extent of the Project is small in the context of the available sailing area in the western Irish sea. The spatial extent of the impact will be relatively small, with the potential for localised displacement of recreational craft from the individual 500 m advisory Marine Safety Zones around structures and/or advisory clearance distances around vessels.

The impact is predicted to be of local spatial extent, short to medium term duration, intermittent and low (offshore wind farm area)/high (offshore cable corridor) reversibility. It is predicted that the impact will affect the receptor directly. The magnitude of impact is therefore, considered to be low.

Sensitivity of the receptor

It is anticipated that recreational sailing, motor cruising, boat angling and diving vessels will be able to transit past installation activities and associated advisory Marine Safety Zones and/or advisory clearance distances, given the adequate sea room around the Project. There are other locations available for sailing, motor cruising, boat angling and diving activities within and around Dundalk Bay such that alternatives are available if required during installation works.

Notices to Mariners will be promulgated regularly during the construction phase, advising of the location, nature and timing of activities, and information and notices will be posted at the landfall location, ensuring that recreational activities can be planned accordingly.

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

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.

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Operational and maintenance phase

Magnitude of impact

The presence of Project infrastructure and/or operational and maintenance activities within the offshore wind farm area and the offshore cable corridor may displace recreational activities (sailing, motor cruising, boat angling and diving) from the footprint of the development and from any areas subject to temporary advisory Marine Safety Zones and advisory clearance distances, resulting in a loss of recreational resource.

The Project will involve the installation of 25 wind turbines and one offshore substation installed on monopile foundations, 41 km of inter-array cables and 16 km of offshore cable. The Project will incur 352 vessel round trips per year during the operational and maintenance phase, associated with routine inspections and seabed surveys, and any repairs or replacements required. There will be an average of two major component replacement activities per year, seven repair and reburial events for the inter-array cables and three repair and reburial events for the offshore cable repair over the Project lifetime.

The spatial extent of the impact is small in the context of the available sailing area in the western Irish Sea, with the potential for localised displacement of recreational craft around installed structures or around any individual 500 m advisory Marine Safety Zones and/or advisory clearance distances temporarily established around operational and maintenance activities.

The impact is predicted to be of local spatial extent, medium-term duration, continuous (offshore wind farm area)/intermittent (offshore cable corridor) and low (offshore wind farm area)/high (offshore cable corridor) reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.

Sensitivity of the receptor

It is anticipated that recreational sailing, motor cruising, boat angling and diving vessels will be able to transit through the offshore wind farm area whilst avoiding the installed Project infrastructure and any temporary advisory Marine Safety Zones and/or advisory clearance distances. There are also other locations available for sailing, motor cruising, boat angling and diving activities within and around Dundalk Bay such that alternatives are available.

Notices to Mariners will be promulgated as required during the operational and maintenance phase, advising of the location, nature and timing of activities.

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

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

The effects of decommissioning activities are expected to be the same or similar to the effects from construction.

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

16.10.2 Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource

Construction phase

Magnitude of impact

Offshore cable corridor installation activities within the nearshore and intertidal sections of the offshore cable corridor may displace recreational activities (shore angling, kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) from the footprint of the development and from any areas subject to advisory clearance distances, resulting in a loss of recreational resource.

The offshore cable corridor will be installed via open trenching, with the installation of approximately 800 m of cable within the intertidal zone, with associated installation vessels and advisory clearance distances, over a period of approximately three months.

Shore angling is likely to occur within the offshore cable corridor at the landfall and Dunany Bay Beach is likely to be used by local beach users including sea swimmers. Kayaking, kite surfing, surfing and windsurfing may also take place within 1 km of the shoreline.

The spatial extent of the impact will be relatively small and of limited duration, with the potential for localised displacement of recreational activities from advisory clearance distances of approximately 500 m in radius around vessels and equipment during the installation period.

The impact is predicted to be of local spatial extent, short-term duration, continuous 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

There are suitable alternative locations for shore angling and beach activities to the south of the offshore cable corridor (e.g. at Port Beach), further west around Dunany Point, and in the wider Dundalk Bay, with Templetown Beach, Gyles Quay and Cranfield Beach all offering similar beach activities, including sea swimming, and various other water sports including kite surfing and wind surfing. Information and notices will be posted at the landfall location advising of the nature, timing and location of cable installation activities, ensuring that recreational activities can be planned accordingly.

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

Significance of the effect

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 **slight adverse significance**, which is not significant in EIA terms.

Decommissioning phase

The effects of decommissioning activities are expected to be the same or similar to the effects from construction.

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

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16.10.3 Potential for increased suspended sediment concentrations and associated deposition affecting other recreational activities (swimming, diving and angling)

Increases of suspended sediments and associated sediment deposition are predicted to occur during the construction and decommissioning phases as a result of the installation/removal of monopile foundations, installation/removal of inter-array cables and offshore cable and sand wave clearance for the foundations, inter-array and offshore cables. Increases of suspended sediments and associated sediment deposition are also predicted to occur during the operational and maintenance phase due to inter-array and offshore cable repair and reburial events. Chapter 7: Marine Processes provides a full description of the physical assessment, including numerical modelling used to inform the predictions made with respect to increases in suspended sediment and subsequent deposition.

The Centre for Environment, Fisheries and Aquaculture Science (CEFAS) Climatology Report 2016 shows the spatial distribution of average non-algal Suspended Particulate Matter (SPM) for the majority of the UK continental shelf. For 1998-2005 the largest plumes are associated with large rivers such as the Thames estuary, the Wash and Liverpool Bay, which show mean values of SPM above 30 mg/l. Using this study, it is estimated that the average SPM associated with Dundalk Bay is approximately 2 mg/l to 3 mg/l (Silva *et al.*, 2016) (see appendix 7-1: Marine Processes - Technical Report).

Construction phase

Magnitude of impact

The installation of Project infrastructure within the offshore wind farm area and offshore cable corridor may lead to increases in suspended sediment concentrations and associated sediment deposition which may affect sea swimming and the use of recreational dive sites. The only sites that the Dundalk Sub Aqua Club is likely to use in the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area (Figure 16-3) are the three known wreck sites, two within the offshore cable corridor and one located to the southeast of the offshore wind farm area. The other ten dive sites identified around Carlingford Lough are outside the Infrastructure, Marine Recreation and Other Users – Tidal Excursion Study Area.

Modelling of suspended sediments associated with the foundation installation showed low levels of suspended sediments with peaks of 100 mg/l only extending beyond the offshore wind farm area where the water depths are shallowest (see chapter 7: Marine Processes for further information in respect of predicted suspended sediments). The average suspended sediment concentration is predicted to be ~5 mg/l which is in the order of background levels for the area. The maximum suspended sediment concentration experienced by the wreck site to the southeast of the offshore wind farm area during foundation installation is predicted to be 50 mg/l. The other two wreck sites and the ten dive sites around Carlingford Lough will not experience suspended sediment concentrations greater than background levels during foundation installation.

Installation of inter-array cables through ploughing/jetting would involve disturbance of seabed material from 3 m wide and 3 m deep trenches. Modelling of suspended sediment concentrations associated with the installation of inter-array cables showed a peak concentration of 500 mg/l in the immediate vicinity of inter-array cable installation, with averages less than 5 mg/l. None of the wreck locations or the dive sites around Carlingford Lough will experience suspended sediment concentrations greater than background levels during inter-array cable installation.

Installation of the offshore cable corridor through ploughing/jetting would involve disturbance of seabed material from 3 m wide and 3 m deep trenches. Modelling of suspended sediment associated with the installation of the offshore cable showed average concentrations were predicted to be less than 50 mg/l. The two wreck sites within the offshore cable corridor may experience suspended sediment concentrations of approximately 2000 mg/l during offshore cable installation. The sediment plume will only persist for a maximum of 2-3 hours in any location. The ten dive sites around Carlingford Lough will not experience suspended sediment concentrations greater than background levels during offshore cable installation.

Therefore, the potential dive site at the wreck to the southeast of the offshore wind farm area will only experience increased suspended sediment concentrations during foundation installation (predicted to be 15

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months). The potential dive sites at the wrecks in the offshore cable corridor will only experience increased suspended sediment concentrations during offshore cable installation (expected to be four months). The ten dive sites around Carlingford Lough will not experience suspended sediment concentrations greater than background levels during construction of the Project. Notice to Mariners will be issued during construction works to ensure that recreational activities can be planned accordingly.

The increased suspended sediment concentrations and associated sediment deposition is predicted to be of localised spatial extent, short term duration, intermittent and high reversibility due to site hydrodynamics. It is predicted that the impact will affect recreational diving receptors directly. The magnitude is therefore, considered to be negligible.

Sensitivity of the receptor

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 of >2 m. During periods of low visibility (approximately >2.5 mg/L, West and Scott, 2016) extra precautions from those persons diving are implemented (BSAC, 2021). However, the dive club may determine that they do not wish to dive during periods with high levels of suspended sediments. The wrecks in the offshore cable corridor will only experience increased suspended sediment concentrations during offshore cable installation (expected to be four months) after which diving conditions will improve and there are likely to be other suitable alternative sites available for diving (e.g. reefs and geological areas of interest).

Recreational anglers may experience lower catch rates in areas that experience increased sediment plumes from proposed project activities. Specifically, when fishing for fin fish species that rely on sight to catch prey. The period in which angling within the Infrastructure, Marine Recreation and Other Users - Physical Overlap Study Area may be affected will be sporadic and highly localised dependent on the fishing location and the project activity causing an increase in sediment concentrations. In addition, there will likely be suitable alternative sites for fishing during periods of high suspended sediment concentrations in a particular location.

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

Significance of the effect

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.

Operational and maintenance phase

Magnitude of impact

Operational and maintenance activities within the offshore wind farm area and offshore cable corridor may lead to increases in suspended sediment concentrations and associated sediment deposition. There will be seven inter-array cable repair and reburial events and three offshore cable repair and reburial events over the Project lifetime (Table 16-12), using similar methods as those for cable installation activities (i.e. trenching/jetting).

Any suspended sediments and associated deposition will be of the same magnitude, or lower as for construction. For the purposes of this assessment, the impacts of the operational and maintenance activities are predicted to be similar to those for construction, as set out above. The potential dive sites at the wreck sites will only have increases in suspended sediments during the short-term operational and maintenance M activities after which diving can resume. Due to their distance from each other, it is unlikely that all the wrecks will experience increases in suspended sediments at the same time therefore one will be available for recreational diving throughout the project lifetime. The ten dive sites around Carlingford Lough will not experience suspended sediment concentrations greater than background levels during operation of the Project. Notices to Mariners will be issued before any major works to ensure that recreational activities can be planned accordingly.

The increased suspended sediment concentrations and associated sediment deposition are predicted to be of localised spatial extent, short-term duration, intermittent and high reversibility due to site hydrodynamics. It

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is predicted that the impact will affect recreational diving receptors directly. The magnitude is therefore, considered to be negligible.

Sensitivity of the receptor

The sensitivity of the receptors can be found in the construction phase assessment above.

Significance of the effect

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.

Decommissioning phase

Magnitude of impact

Decommissioning of Project infrastructure within the offshore wind farm area and offshore cable corridor may lead to increases in suspended sediment concentrations and associated sediment deposition. The cutting and removal of monopile foundations will occur to approximately 2 m below seabed, along with the removal of inter-array and offshore cables.

Decommissioning of the foundations, inter-array cables and offshore cables is assumed to result in similar increases in suspended sediments and associated deposition as that during construction. For the purposes of this assessment, the impacts of decommissioning activities are therefore predicted to be similar to those for construction, as set out above.

The increased suspended sediment concentrations and associated sediment deposition are predicted to be of localised spatial extent, short term duration, intermittent and high reversibility due to site hydrodynamics. It is predicted that the impact will affect subtidal recreational diving receptors directly. The magnitude is therefore, considered to be negligible.

Sensitivity of the receptor

The sensitivity of the receptors can be found in the construction phase assessment above.

Significance of the effect

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.

16.10.4 Mitigation and residual effects.

The assessment of impacts has concluded that there are no significant effects and therefore it is considered that no measures over those included in the Project (as outlined in section 16.8.1) are required.

As no mitigation is proposed, the residual effects are as outlined in the assessment above.

16.10.5 Future monitoring

No monitoring to test the predictions made within the impact assessment is considered necessary.

16.11 Cumulative Impact Assessment

16.11.1 Methodology

The Cumulative Impact Assessment (CIA) takes into account the impact associated with the Project together with other projects. The projects selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise (see volume 2A, appendix 3-1: CIA Screening Annex). Each project

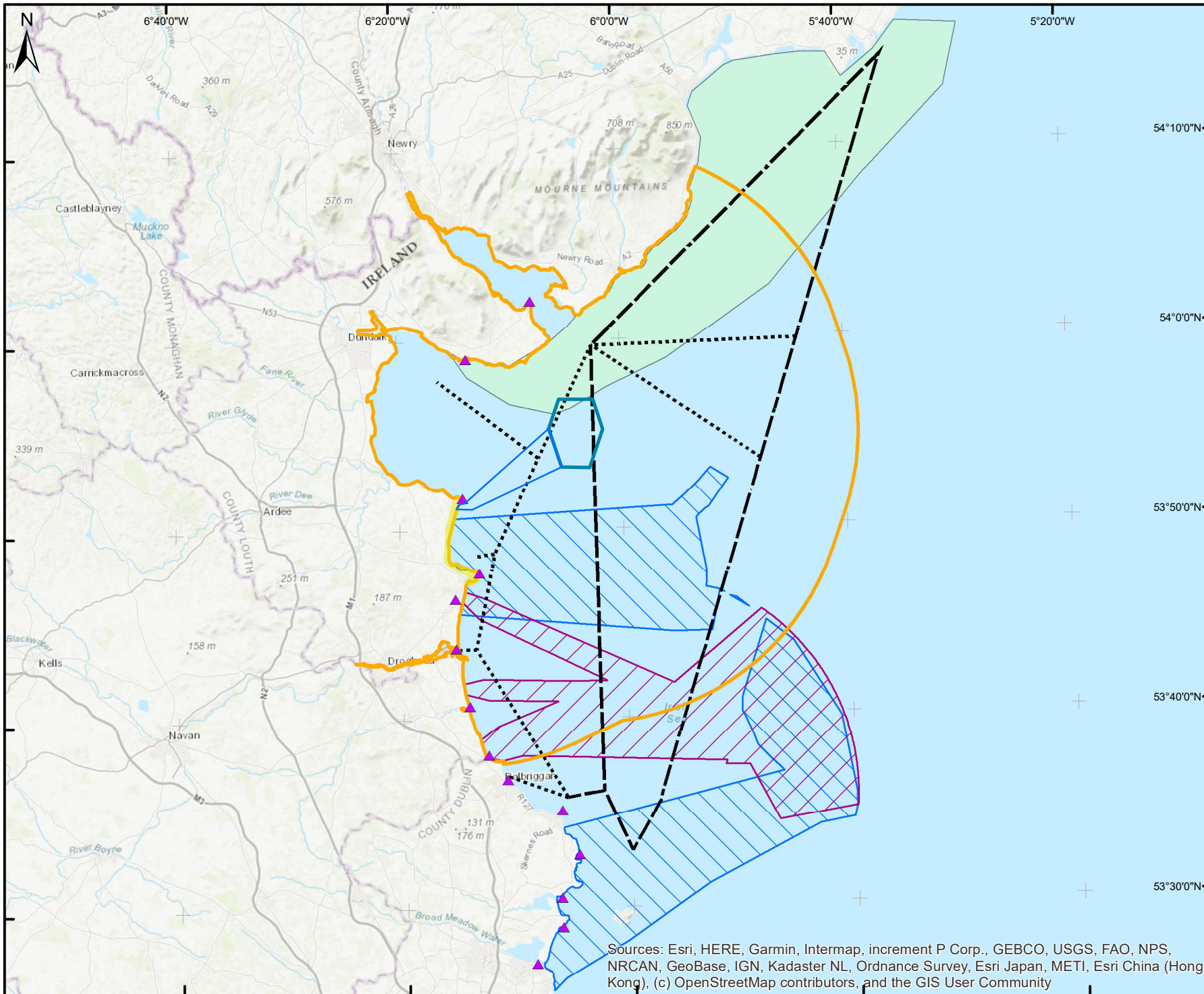
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has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

The approach to CIA examines the effects of the Project alongside the following projects if they fall within the Zone of Influence for infrastructure, marine recreation and other users:

- Other projects with consent but not yet constructed/construction not completed;
- Other projects in a consent application process but not yet determined (including planning applications, foreshore lease/licence applications, Dumping at Sea Permit applications;
- Other projects currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact; and.

Projects, which satisfy the definition of 'relevant maritime usage' under the Maritime Area Planning Act (2021) (i.e. wind farm projects designated as 'Relevant Projects' or 'Phase 1 Projects') including Arklow Bank II, Bray Bank and Kish Bank; North Irish Sea Array, Codling Wind Park (I and II). The specific projects screened into this CIA, are outlined in Table 16-11 and demonstrated in Figure 16-4. Given the range of infrastructure and other sea user stakeholders considered in this chapter and the scale of geographic coverage of their activities, other offshore developments within 25 km (or until the shoreline was reached (using the greater of the two distances)) of the offshore wind farm area and offshore cable corridor (Figure 16-4) were considered in order to ensure sufficient coverage of other offshore projects which may also affect infrastructure and other sea users affected by the Project.



Legend

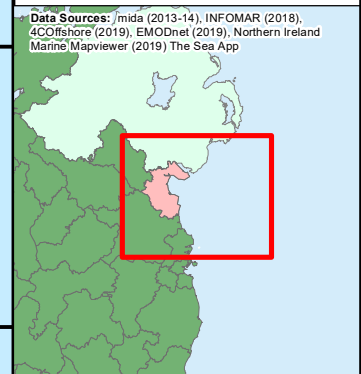
- Offshore Wind Farm Area
- Offshore Cable Corridor
- Infrastructure Marine Recreation and Other Users Cumulative Impact Assessment Study Area

Site Investigation Works

- Mainstream
- Lir Offshore Array

Recreation Activities

- Surf Beach
- General Sailing areas
- Medium Traffic
- Light Traffic
- Fishing Spot



Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title **Figure 16-4**
Other projects screened into the cumulative impact assessment

rps
A TETRA TECH COMPANY

West Pier Business Campus,
Dun Laoghaire,
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Tel: +353 (0) 1 4882900
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Issue Details

Drawn By: NG	Project No. EOR0822 (MDR1520B)
Checked By: NG	File Ref:
Approved By: AOS	EO822_I0U_E_1604_FINAL
Scale: 1:500,000 @A4	Projection: ITM (IRENET95)
Date: 12/03/2024	Geographic Co-ordinates: ETRS89

NOTE: 1. This drawing is the property of RPS Group Ltd. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
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Table 16-11: List of other projects considered within the CIA.

Project/Plan	Status	Distance from offshore wind farm area (km)	Distance from offshore cable corridor (km)	Description of Project/Plan	Dates of construction (if applicable)	Dates of operation (if applicable)	Overlap with the Project
Site Investigation Works							
Lir Offshore Array Ltd.	Planning	15.0	7.9	The Foreshore Licence application is to undertake surveys and site investigations to inform development and project design for the proposed site. Surveys include geophysical, geotechnical, environmental and Metocean.	N/A	2022-2027 (subject to award of licence)	The Project construction phase is likely to overlap with the surveys and site investigation activities. The survey vessels may have advisory clearance distances in place during their investigations, which may result in further displacement of receptors already affected by the Project.
Mainstream Renewable Power (North East Wind) (Mainstream Renewable Power Ltd.)	Planning	4.2	0.7	Foreshore Licence application for site investigation works off County Dublin. Surveys include Geophysical, Geotechnical, Metocean and Ecological site investigations.	N/A	2022-2027 (subject to award of licence).	

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Table 16-12 presents the relevant project design parameters from Table 16-5, which are used to assess the potential cumulative impact of the Project with the other projects identified in Table 16-11 (where information is available).

Table 16-12: Project design parameters used for the assessment of potential impacts on infrastructure, marine recreation and other users.

Potential impact	Phase			Project design parameters	Justification
	C	O	D		
Displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities (diving vessels), resulting in a loss of recreational resource	✓	✗	✗	<p>Project design parameters as described for the Project (see Table 16-5) assessed cumulatively with the following other projects:</p> <ul style="list-style-type: none"> Lir Offshore Array (Lir Offshore Array Ltd. – Ref No. FS007392): Approximately 4 vessels operating in and around the Infrastructure, Marine Recreation and Other Users Cumulative Impact Assessment Study Area; and Mainstream Renewable Power Ltd: Approximately 4 vessels operating in and around the Infrastructure, Marine Recreation and Other Users Cumulative Impact Assessment Study Area. 	<p>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.</p> <p>For the purposes of this CIA, advisory safety distances (500m) have been assumed around the other projects' survey vessels.</p>
Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource	✓	✗	✗	<p>Project design parameters as described for the Project (see Table 16-5) assessed cumulatively with the following other projects/plans:</p> <ul style="list-style-type: none"> Lir Offshore Array (Lir Offshore Array Ltd. – Ref No. FS007392): Approximately. 4 vessels operating in and around the Infrastructure, Marine Recreation and Other Users Cumulative Impact Assessment Study Area; and Site Investigations off Co, Dublin (Mainstream, Renewable Power Ltd – Ref No. FS007373): Approximately 4 vessels operating in and around the Infrastructure, Marine Recreation and Other Users Cumulative Impact Assessment Study Area. 	<p>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.</p> <p>For the purposes of this CIA, advisory safety distances (500m) have been assumed around the other projects' survey vessels.</p>

16.11.2 Assessment of significance

A description of the significance of cumulative effects upon infrastructure, marine recreation and other users receptors arising from each identified impact is given below.

Displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities (diving vessels), resulting in a loss of recreational resource

Construction phase

Magnitude of impact

The installation of infrastructure within the offshore wind farm area and offshore cable corridor, together with the projects and plans identified in Table 16-11, may displace recreational activities, resulting in a loss of recreational resource. The site investigation surveys listed Table 16-11 are each expected to involve three to four small vessels operating in and around the Infrastructure, Marine Recreation and Other Users Cumulative Impact Assessment Study Area. Recreational vessels displaced by Project installation activities within the offshore wind farm area and offshore cable corridor may also be displaced by site investigation activities.

The Lir and Mainstream site investigation surveys may overlap with the construction phase for the offshore infrastructure. Both applications are subject to award of consent. Site investigation activities for these projects are likely to involve limited vessel activity (three to four vessels) within their identified Foreshore Licence Areas. Vessels are likely to be used for geophysical, archaeological, geotechnical, marine ecology and benthic ecology surveys. An advisory clearance distance is likely to be advised around the survey vessels as they move across the survey areas, therefore any restricted areas are likely to be transient. Both site investigations also overlap with the general sailing area.

The spatial extent of the impact will be relatively small in the context of the available sailing area in the western Irish sea, with the potential for localised displacement of recreational craft around Project installation activities and around the individual survey vessels.

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 low.

Sensitivity of receptor

It is anticipated that recreational sailing, motor cruising, boat angling and diving vessels will be able to transit past the Project installation activities and site survey activities, given the adequate sea room around the Project and around the individual site survey vessels. There are other locations available for sailing, motor cruising, boat angling and diving activities within and around Dundalk Bay such that alternatives are available if required during periods of concurrent project activity.

Notices to Mariners will be promulgated regularly during the construction phase, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly. Notices to Mariners are also likely to be promulgated in advance of any site investigation activities.

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

Significance of effect

Overall, the magnitude of the impact when assessed cumulatively with other plans and projects 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.

Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource

Construction Phase

Magnitude of impact

The installation of Project infrastructure within the offshore cable corridor, together with the projects and plans identified in Table 16-12, may displace recreational activities (shore angling, kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users), resulting in a loss of recreational resource. Other projects screened into the assessment in proximity to the nearshore and intertidal section of the offshore cable corridor include site investigation surveys to the south of the offshore cable corridor. Recreational activities (shore angling, kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) displaced by Project installation activities within the offshore cable corridor may also be displaced by site investigation activities.

The Lir and Mainstream site investigation surveys may overlap with the construction phase for the offshore infrastructure. Both applications are subject to award of consent. Site investigation activities for these projects are likely to involve limited vessel activity (three to four vessels) within their identified Foreshore Licence Areas. Vessels are likely to be used for geophysical, archaeological, geotechnical, marine ecology and benthic ecology surveys. An advisory clearance distance is likely to be advised around the survey vessels as they move across the survey areas, therefore any restricted areas are likely to be transient.

Shore angling is likely to occur within the offshore cable corridor at the landfall and Dunany Bay Beach is likely to be used by local beach users. Kayaking, kite surfing, surfing and windsurfing may also take place within 1 km of the shoreline. The nearshore survey areas for the site investigations also extend to the coast south of Dunany Bay Beach, where shore angling, kayaking, kite surfing, surfing and windsurfing, and other beach activities may take place.

The spatial extent of the impact will be relatively small and of limited duration, with the potential for localised displacement of recreational activities around Project installation activities and around the individual survey vessels.

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 receptor

There are alternative locations for shore angling and beach activities to the south of the offshore cable corridor, further west around Dunany Point, and in the wider Dundalk Bay (Templetown Beach, Gyles Quay and Cranfield Beach all offer similar beach activities, including sea swimming, and various other water sports including kite surfing and wind surfing), such that alternatives are available if required during periods of concurrent project activity. Information and notices will be posted at the landfall location advising of the nature, timing and location of cable installation activities, ensuring that recreational activities can be planned accordingly. Notices to Mariners are also likely to be promulgated in advance of any site investigation activities.

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

Significance of effect

Overall, the magnitude of the impact when assessed cumulatively with other plans and projects is deemed to be negligible 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.

16.12 Transboundary effects

A review of the impacts presented in section 16.10 has identified that there is no potential for significant transboundary effects with regard to Infrastructure, Marine Recreation and Other Users from the Project upon the interests of the UK or other EEA States. This is due to the potential impacts on infrastructure, marine recreation and other users receptors being limited to the immediate vicinity of the Project and one tidal excursion from the Project. Any impacts will therefore not extend into other states.

16.13 Interactions

A description of the likely inter-related effects arising from the Project on infrastructure, marine recreation and other users is provided in volume 2C, chapter 32: Interactions.

16.14 Summary of impacts, mitigation measures and residual effects

Information on infrastructure, marine recreation and other users was collected through a desktop review of existing datasets (Table 16-4) and through consultation (Table 16-3). No site-specific surveys were undertaken to inform the assessments as it was considered the desktop assessment provides sufficient detailed information in order to inform the impact assessment.

Table 16-13 presents a summary of the potential impacts, mitigation measures and residual effects in respect to infrastructure, marine recreation and other users. Table 16-14 presents a summary of the potential cumulative impacts, mitigation measures and residual effects.

Overall, it is concluded that there will be no significant effects arising from the Project during the construction, operational and maintenance or decommissioning phases.

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Table 16-13: Summary of potential environmental effects, mitigation and monitoring.

Potential impact	Phase C O D	Measures included in the Project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities (diving vessels), resulting in a loss of recreational resource	✓ ✓ ✓	Notices to Mariners will be promulgated regularly during the construction phase, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly.	C: Low O: Low D: Low	C: Medium O: Medium D: Medium	C: Slight adverse O: Slight adverse D: Slight adverse	None	Slight adverse	None
Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource	✓ ✗ ✓	Information and notices will be posted at the landfall location advising of the nature, timing and location of cable installation activities, ensuring that recreational activities can be planned accordingly.	C: Negligible D: Negligible	C: Low D: Low	C: Slight adverse D: Slight adverse	None	Slight adverse	None
Potential for increased suspended sediment concentrations and associated deposition affecting other recreational activities (swimming, diving and angling)	✓ ✓ ✓	Notices to Mariners will be promulgated regularly during all phases phase, advising of the location and nature of works, ensuring that recreational activities can be planned accordingly.	C: Negligible O: Negligible D: Negligible	O: Low O: Low D: Low	D: Imperceptible adverse O: Imperceptible adverse D: Imperceptible adverse	None	Imperceptible adverse	None

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Table 16-14: Summary of potential cumulative environmental effects, mitigation and monitoring.

Potential impact	Phase			Measures included in the Project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
	C	O	D							
Displacement of recreational sailing and motor cruising, recreational fishing (boat angling) and other recreational activities (diving vessels), resulting in a loss of recreational resource	✓	✗	✗	Notices to Mariners will be promulgated regularly during the construction phase, advising of the location, nature and timing of activities, ensuring that recreational activities can be planned accordingly.	Low	Low	Slight adverse	None	Slight adverse	None
Displacement of recreational fishing (shore angling) and other recreational activities (kayaking, kite surfing, surfing and windsurfing, sea swimming and beach users) along the nearshore and intertidal section of the offshore cable corridor resulting in a loss of recreational resource	✓	✗	✗	Information and notices will be posted at the landfall location advising of the nature, timing and location of cable installation activities, ensuring that recreational activities can be planned accordingly.	Negligible	Low	Slight adverse	None	Slight adverse	None

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