

# Appendix 15-1: Marine Archaeology Technical Report





# ORIEL WIND FARM PROJECT

## Environmental Impact Assessment Report Appendix 15-1: Marine Archaeology Technical Report

MDR1520B  
EIAR – Appendix 15-1  
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# 1 INTRODUCTION

This Marine Archaeology Technical Report presents baseline information to inform chapter 15: Marine Archaeology of the Oriel Wind Farm Project (hereafter referred to as the Project) Environmental Impact Assessment Report (EIAR). The scope of the Marine Archaeology Technical Report covers the Project development below the Low Water Mark (LWM). The archaeology and cultural heritage baseline and assessment of the Project above the LWM (i.e. the intertidal zone and onshore) is presented in volume 2C, chapter 26: Cultural Heritage (including Archaeological and Architectural Heritage) and appendix 26-1: Cultural Heritage Report.

The aim of this Marine Archaeological Technical Report is to provide an overview of the archaeological baseline and its significance.

The objectives of this study are to:

- Incorporate the baseline data obtained from existing data sources;
- Summarise the potential for submerged prehistoric archaeology which may be encountered within the offshore wind farm area and offshore cable corridor; and
- Identify known maritime sites and, based on the maritime history of the Marine Archaeology Study Area and the wider area, assess the potential for the existence of unknown sites and materials within the offshore wind farm area and offshore cable corridor.

The qualifications and competencies of the author of this Technical Report are presented in volume 2A; chapter 1: Introduction.

## 2 PLANNING AND LEGISLATION

### 2.1 Relevant legislation

This section outlines the legislation relevant to offshore archaeological remains in the context of offshore renewable energy development.

#### 2.1.1 Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023

Marine archaeological heritage is protected primarily under the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (Irish Government, 2023), in particular Parts 3 and 5 of the 2023 Act.

Archaeological heritage is defined in Section 2 of the 2023 Act as relevant things (structures, wrecks, ritual or ceremonial site, sites of historic events, battlefields, sites with legendary or mythological associations, any layer or feature not natural in origin) of archaeological interest and archaeological objects. Archaeological objects are objects situated at or removed from a relevant thing of interest or a monument that, by reason of the archaeological interest attaching to it or of its association with any historic event, period, subject or person has a cultural, monetary, or scientific value greater than its intrinsic value.

A 'wreck' is defined in Section 2 of the 2023 Act as 'any form of watercraft or vessel...or aircraft or any part or element thereof, lying on, in or under the seabed or land covered by water, and any things contained in or on such watercraft, vessel or aircraft, or any objects which were formerly so contained'.

Wrecks over 100 years old and archaeological objects found underwater are protected under Part 3 of the 2023 Act through the establishment of a national Register of Monuments, containing a database of prescribed monuments. Significant wrecks less than 100 years old can be designated for special protection on account of significance by any of the following criteria:

- Age, date or period;
- Morphology;
- Condition; Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023;
- Typology;
- Environment in which it is situated; and
- The circumstances in which it is found.

Such special protection can also be used to designate areas of seabed or land covered by water to more clearly define and protect wreck sites and archaeological objects. Under Part 5 of the legislation, all diving on known protected wreck sites or with the intention of searching for underwater cultural heritage is subject to licensing requirements.

#### 2.1.2 Merchant Shipping (Salvage and Wreck) Act 1993

The Merchant Shipping (Salvage and Wreck) Act of 1993 contains provisions which can be used for the protection of historic wrecks.

Under the Merchant Shipping (Salvage and Wreck) Act 1993, the Director of the National Museum of Ireland has a statutory role regarding dealing with notifications from receivers of wreck of unclaimed wreck and the retention on behalf of the State of unclaimed wreck if it is of archaeological interest.

#### 2.1.3 International law

Legislation acting to protect submarine archaeological remains in Ireland is also based on international law such as The United Nations Convention on the Law of the Sea 1982, the European Convention on the Protection of the Archaeological Heritage (Revised) 1992 (the Valletta Convention) and the United Nations Educational, Scientific and Cultural Organisation's Convention on the Protection of the Underwater Cultural Heritage 2001.

## 2.2 Planning framework and guidance

### 2.2.1 Marine spatial planning

The Department of Housing, Planning and Local Government (DHPLG)<sup>1</sup> released the Marine Planning Policy Statement (DHPLG, 2020) in November 2020. This sets out a vision for the development of a fully integrated Marine Planning System. One of the principles of the Marine Planning System will be to ‘*support the preservation and enjoyment of Ireland’s... marine related cultural and heritage assets*’.

The National Marine Planning Framework (NMPF) (DHPLG, 2021) was published in July 2021. This includes the following planning policy relating to Heritage Assets:

*“Proposals that demonstrate they will contribute to enhancing the significance of heritage assets will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals unable to contribute to enhancing the significance of heritage assets will only be supported if they demonstrate that they will, in order of preference:*

- *Avoid;*
- *Minimise; or*
- *Mitigate harm to the significance of heritage assets; and*
- *If it is not possible, to minimise or mitigate harm, then the public benefits for proceeding with the proposal must outweigh the harm to the significance of the heritage assets.”*

The NMPF aims to make sure proposals do not have a detrimental impact on marine heritage assets and will make sure these assets are considered in decision making processes. The level of significance attached to a heritage asset should be considered in relation to any proposal along with the scale and type of impact that might occur. Proposals may include plans to avoid locations where heritage assets may be located or to minimise compromise or harm.

The NMPF is supported by a Strategic Environmental Assessment (SEA) (DHPLG, 2020). The SEA Statement contains a statutory consultee response from the Department of Culture, Heritage and the Gaeltacht (DCHG)<sup>2</sup> which included the following matters:

- Archaeological assessments, mitigation, excavation and monitoring may be required, and planning applicants must engage a suitably qualified private archaeologist; and
- Planning authorities should be advised to consult the Wreck Inventory of Ireland and Wreck View for marine environment applications and refer cases to the National Monument Services (NMS).

In response to the planning framework there is a recommendation that the DCHG provide ‘guidance on a zone of influence around known heritage sites within which certain activities will not be acceptable’.

### 2.2.2 Offshore Renewable Energy Development Plan (OREDPP)

The Offshore Renewable Energy Development Plan (OREDPP) was adopted in February 2014. Section 4 of the OREDPP provides a table of suggested project level mitigation measures including those in relation to impacts on the marine archaeological resource. This is summarised below in Table 2-1 as follows:

<sup>1</sup>DHPLG was renamed as the Department of Housing, Local Government and Heritage (DHLGH) in September 2020.

<sup>2</sup>DCHG was renamed as the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media in September 2020.



## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

**Table 2-1: Summary of OREDP provisions relevant to marine archaeology.**

Summary of OREDP provision	Where addressed
<b>Marine and Coastal Archaeology and Wrecks</b>	
<b>Direct disturbance of unknown and known sites:</b> Conform to National Monuments Acts 1930-2004 and follow NMS codes of practice; carry out seabed investigations prior to installation; avoid sites of interest and exclusion zones; submit any recovered artefacts to NMS; avoid protected and other sites of interest.	See chapter 15: Marine Archaeology.
<b>Changes to sediment regime:</b> Conform to National Monuments Acts 1930-2004 and follow NMS codes of practice; carry out seabed investigations prior to installation in consultation with the Underwater Archaeology Unit of NMS; avoid sites of interest and exclusion zones; record and report potential archaeological and vessel remains to NMS.	
<b>Data acquisition:</b> Conform to National Monuments Acts 1930-2004 and follow NMS codes of practice; record and report potential archaeological and vessel remains to NMS.	

In February 2023, the 'OREDP II - National Spatial Strategy for the transition to the Enduring Regime' was published in draft and subject to consultation. The key objectives of OREDP 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 most suitable for the sustainable deployment of ORE in Ireland’s maritime area.*
- *Identify critical gaps in marine data or knowledge and recommend prioritised actions to close these gaps”*

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

### 2.2.3 Louth County Development Plan 2021-2027

The Louth County Development Plan 2021-27 (LCDP) was adopted in September 2021. Chapter 9 of the LCDP outlines policies towards the built environment. This includes a policy with a specific reference to underwater archaeology as follows:

*“BHC 1: To protect and enhance archaeological sites and monuments, underwater archaeology, and archaeological objects listed in the Record of Monuments and Places (RMP), and/or the Register of Historic Monuments and seek their preservation (i.e. presumption in favour of preservation in situ or in exceptional cases, at a minimum, preservation by record) through the planning process and having regard to the advice and recommendations of the National Monuments Service of the Department of Housing, Local Government and Heritage and the principles as set out in the ‘Framework and Principles for the Protection of the Archaeological Heritage’ (Department of Arts, Heritage, Gaeltacht and the Islands, 1999).”*

### 2.2.4 Guidance

There are no codes of practice published by the NMS specific to offshore wind farm development. However, the general principles set out in the NMS Codes of Practice (such as COP EirGrid 2009 and COP ESB Networks 2009) have been followed where relevant in accordance with the requirements of the OREDP.

This Technical Report has also been prepared in accordance with the guidance set out in the Institute of Archaeologists of Ireland’s (IAI) Code of Professional Conduct 2006 and within the Frameworks and Principles for the Protection of Archaeological Heritage 1999.

## 3 METHODOLOGY

### 3.1 Marine Archaeology Study Area

Figure 3-1 presents the Marine Archaeology Study Area. The Marine Archaeology Study Area has been defined as the area encompassing the offshore wind farm area, offshore cable corridor and a wider search area encompassing 2 km from the offshore wind farm area and offshore cable corridor boundaries, up to the LWM, to allow the site-specific data to be put in a wider context to further characterise its archaeological potential. The Marine Archaeology Study Area is based on professional judgement and was discussed and agreed with the Underwater Archaeology Unit of the NMS during consultation (see chapter 15: Marine Archaeology) in February 2021.

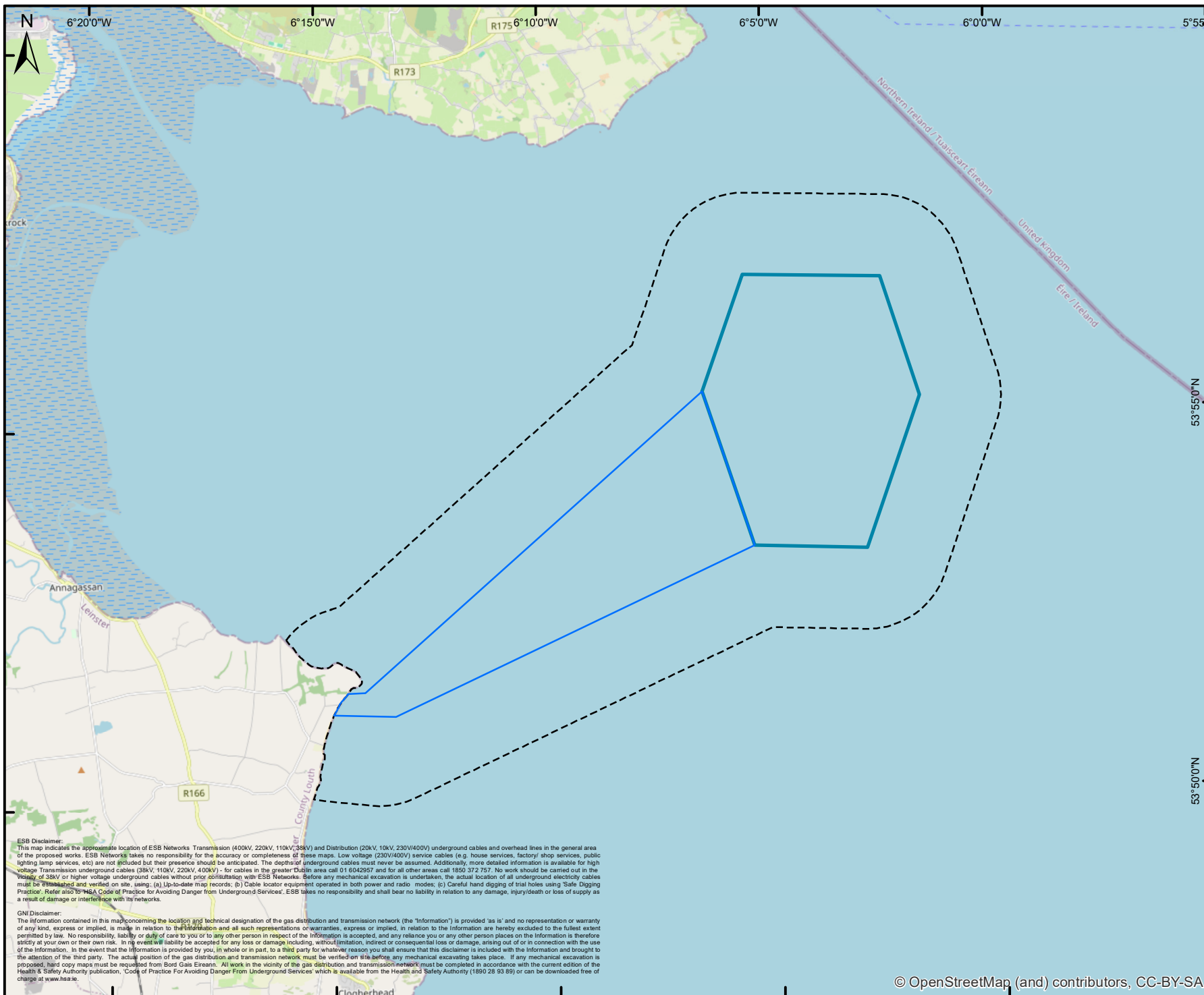
### 3.2 Methodology for Defining the Baseline Environment

#### 3.2.1 Desktop study

Information on marine archaeology within the Marine Archaeology Study Area was collected through a detailed desktop review of existing studies and datasets. These are summarised at Table 3-1 below.

**Table 3-1: Summary of data sources.**

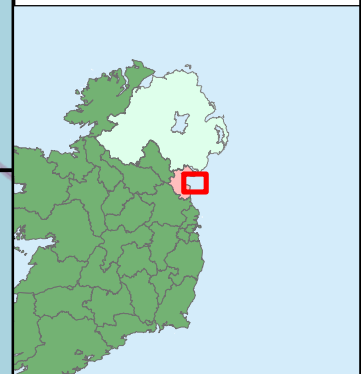
Title	Source	Year	Author
Wreck Viewer, Wreck Inventory of Ireland Database	National Monuments Service	2024	National Monuments Service
Historic Environment Viewer – Sites and Monuments Record database	National Monuments Service	2024	National Monuments Service
World Wide Wrecks and Obstructions	UK Hydrographic Office (UKHO)	2024	UKHO
INFOMAR – Integrated online mapping project	Geological Survey Ireland and Marine Institute	2024	Geological Survey Ireland and Marine Institute
Geological Survey Ireland Spatial Resources – Public Data Viewer	Geological Survey of Ireland	2024	Geological Survey of Ireland
Sediment characteristics within the offshore cable corridor	Chapter 7: Marine Processes	2023	RPS
Archaeological Assessment for Oriel Offshore Wind Farm Development North-western Irish Sea (Annex 1 of appendix 15-1: Marine Archaeology Technical Report)	N/A	2007	The Archaeological Diving Company Ltd (ADCO)
Underwater Archaeological Impact Assessment, Oriel Wind farm, Dundalk Bay and Dunany, Co. Louth (Annex 2 of appendix 15-1: Marine Archaeology Technical Report)	N/A	2021	ADCO
ADMIRALITY Marine Data Portal – UKHO Database	UKHO	2021	N/A



**Legend**

- Offshore Wind Farm Area
- Offshore Cable Corridor
- ⬡ Marine Archaeology Study Area

Data Sources: Client



Client

Project  
**Oriel Wind Farm Project**

Title **Figure 3-1  
Marine Archaeology Study Area**

West Pier Business Campus,  
Dun Laoghaire,  
Co Dublin,  
Ireland.

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Issue Details	
Drawn By: NG	Project No. EOR0822 (MDR1520B)
Checked By: NG	File Ref: EOR0822_MAR_T_1452_FINAL
Approved By: AOS	Projection: ITM (IRENET95)
Scale: 1:125,000 @A4	Geographic Co-ordinates: ETRS89
Date: 01/03/2024	

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### 3.2.2 Site-specific surveys

#### Geophysical Surveys

In order to inform the marine archaeology baseline, site-specific geophysical surveys were undertaken in 2006 and 2019 (ADCO, 2007, 2021). The results of the 2006 geophysical survey have since been incorporated into the NMS's Wreck Inventory and as such are discussed in sections 4.4.1 and 4.5. It is considered that seabed and wreck conditions could have changed significantly since the collection of this data and therefore it is no longer suitable to form the basis of marine archaeology evidence at EIA. The geophysical survey data collected in 2019 is therefore considered in this Technical Report and has been used to inform the Marine Archaeology Chapter.

The geophysical surveys undertaken in 2019 included the acquisition of multi-beam echosounder (MBES) bathymetry, side-scan sonar (SSS), magnetometry and sub bottom profiler (SBP) data. The surveys were undertaken by Ultramarine Ltd for Alphamarine Ltd on behalf of Oriel Windfarm Ltd and the data was archaeologically assessed by Archaeological Diving Company Ltd (ADCO).

#### Geotechnical Surveys

Geotechnical surveys were also carried out in 2019, including seven boreholes within the proposed offshore wind farm area and six boreholes within the proposed offshore cable corridor.

### 3.2.3 Data limitations

The interpretation of geophysical data is by its very nature, subjective. However, using an experienced specialist who can analyse the form, size and characteristics of an anomaly, a reasonable degree of certainty can be achieved. Measurements can be taken in most data processing software, and whilst largely accurate, discrepancies can occur. Where there is uncertainty as to the potential of an anomaly or its origin, a precautionary approach is always taken to ensure the most appropriate mitigation for the historic environment is recommended. There may be instances where a contact may exist on the seabed but not be visible in the geophysical data. This may be due to the anomaly being covered by sediment or being obscured from the line of sight of the sonar, or due to poor-quality data.

## 4 BASELINE ENVIRONMENT

### 4.1 Seabed topography

The Marine Archaeology Study Area occupies part of the Irish seabed which comprises shallow Quaternary deposits some distance from the Western Trough, identified as a potential former glacial lake (Flemming, 2005) (Figure 4-1). Pleistocene outcrops, infilled channels and ridges recorded in the Irish Sea suggest relict periglacial conditions during periods when the seabed was potentially exposed (Flemming, 2005). The Quaternary deposits comprise glacial tills, clay, pebbles and mud etc. Due to shallow waters and tidal currents much of the seabed is covered in recent sediment and gravel furrows from the Holocene as confirmed by the 2006 survey results (annex 1).

The side scan sonar survey undertaken within the offshore wind farm area in 2006 (annex 1) recorded the seabed as predominantly covered in sand and gravel. No significant areas of rock outcropping were identified, and the area was characterised as having soft sediment mobility. Sand ripples and gravel ripples were recorded and rock whilst recorded in places was not considered a predominant feature. This picture is in keeping with expectations as the offshore wind farm area lies to the east of the shallow and sediment-rich Dundalk Bay.

The bathymetry surveys undertaken in 2006 and 2019 (ADCO, 2007, 2021) recorded three main seabed topographic types. There are: rough surface where the glacial till is exposed, smooth surface where more recent sediments have been deposited on the till and undulating but smooth surface where this recent sediment is currently being eroded by currents (Oriel Windfarm Limited, 2007):

1. **Rough surface:** The seabed sediment comprises exposed glacial till in the west and east of the offshore wind farm area. The western band of till is on a raised area exposed to erosion since the retreat of the ice sheet. The eastern band of till is overlain by more recent sediment which has more recently eroded away. A series of elongated ridges running northwest-southeast are located in this area, indicating more active erosion. Where the till is exposed to the east, the topography is not as pronounced. This could indicate a less active erosional regime or could be due to a limited time over which it has been exposed.
2. **Smooth surface:** Smooth sediments are located in the east and south of the offshore wind farm area where the water depth is greater than 22 m. Smooth sediments occur where recent post-glacial sediment has been laid atop the till, and currents have not been active enough to create features; and
3. **Undulating but smooth surface:** where recent post-glacial sediment has been eroded by active currents in the area leading to the development of seabed features. These features are confined to the north of the offshore wind farm area. A series of east-west channels 50-60 cm deep has been scoured out by current action. The channels vary in length from 20 to 400 m and it is thought that they evolve with time lengthening along the direction of current flow. The channels are found in most areas where there is post-glacial sedimentary cover and the water depth is less than 30 m.

Consequently, post-glacial seabed erosion has taken place to some extent across parts of the offshore wind farm area. Where greater depths of modern sediment survive the greater chance for preservation of former palaeo-landscapes at significant depth.

A terrace extends across the offshore wind farm area and the offshore cable corridor, with the deeper water increasing towards the southeast (annex 2 and Figure 4-2). Water depths in the offshore wind farm area range from 14.4 m Lowest Astronomical Tide (LAT) along the terrace to 32 m LAT off the terrace, while water depths areas are less than 1 m LAT close inshore along the offshore cable corridor and up to 29 m LAT off the terrace (annex 2).

The Marine Archaeology Study Area lies within the western Irish Sea Mud Belt (WISMB), a palaeo-glacial basin filled with marine Holocene sediment. While there is no indication of exposed bedrock, the seabed substrate within the Marine Archaeology Study Area includes a band of rocks and boulders on the north and eastern part of the offshore wind farm area while coarse sediments, sand and mud occupy much of the central area of the offshore wind farm area. Coarse sediments and mud also occupy much of the offshore cable corridor.

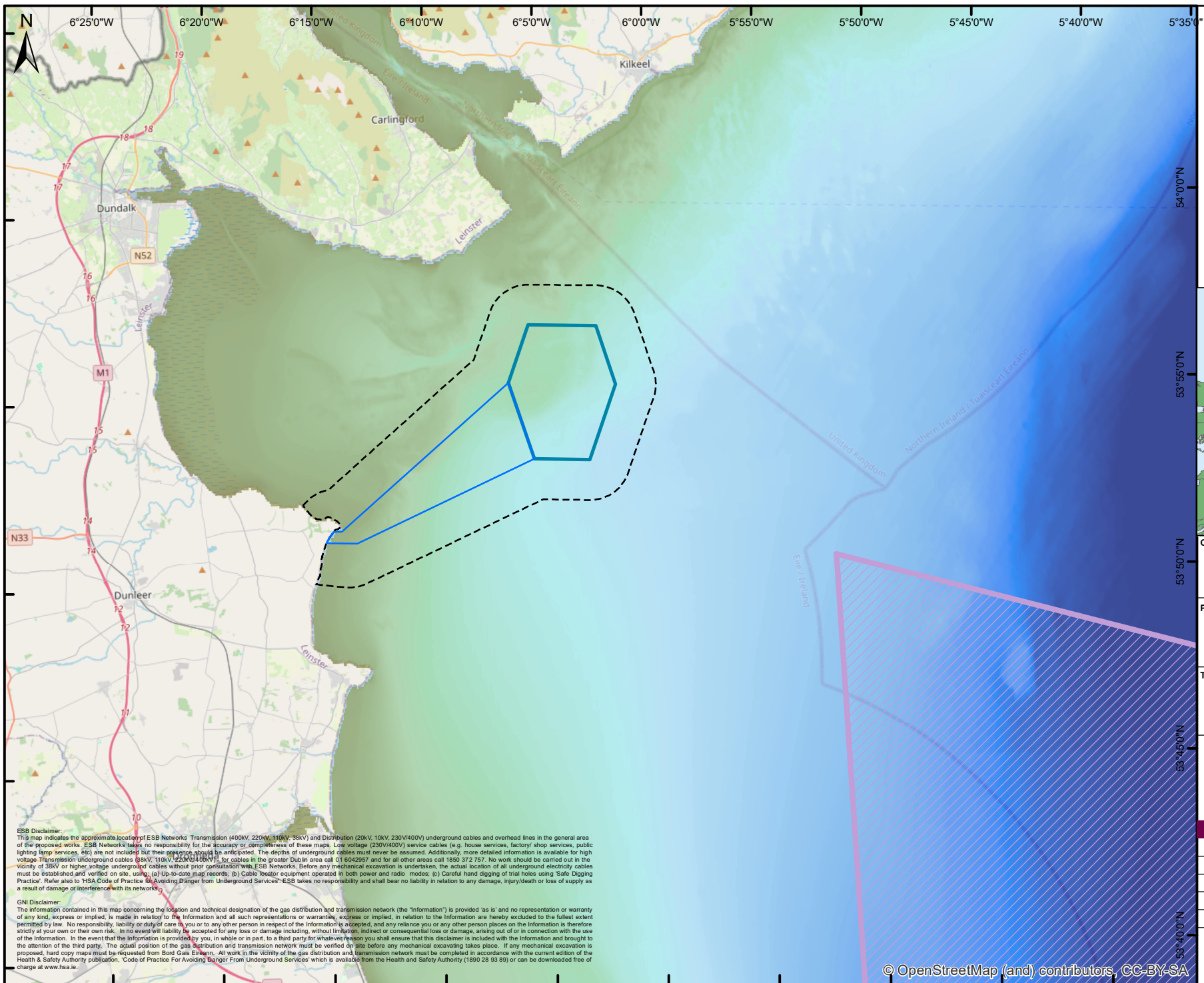
Sand and muds are good for the preservation of archaeological material such as wreck that might lie on such surfaces or become buried in them. In contrast, the aggressive environment of rock and boulder areas may cause any material remains lying there to be eroded away quickly, particularly in shallow water environments

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where tidal flow and extreme weather will produce impacts. Coarse sediments, comprising gravel and sandy gravel are also harsh environments causing erosion of archaeological remains, where timber elements may be reduced, and only the more robust elements such as substantial metal pieces (for example metal-plating and munitions) might be expected to survive (annex 2).





**Legend**

- Offshore Wind Farm Area
- Offshore Cable Corridor
- Marine Archaeology Study Area
- Glacial Lake

**Bathymetry, depth in metres**

High : 5

Low : -90

Data Sources: Client, EMODnet



Client

Project

## Oriel Wind Farm Project

Title **Figure 4-1**  
**Marine Archaeology Study Area and predicted location of glacial lake**  
 (taken from Figure 12.1 Aecom and Metoc 2010)

West Pier Business Campus,  
 Dun Laoghaire,  
 Co Dublin,  
 Ireland.

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 Email: ireland@rpsgroup.com  
 Web Page: rpsgroup.com/ireland

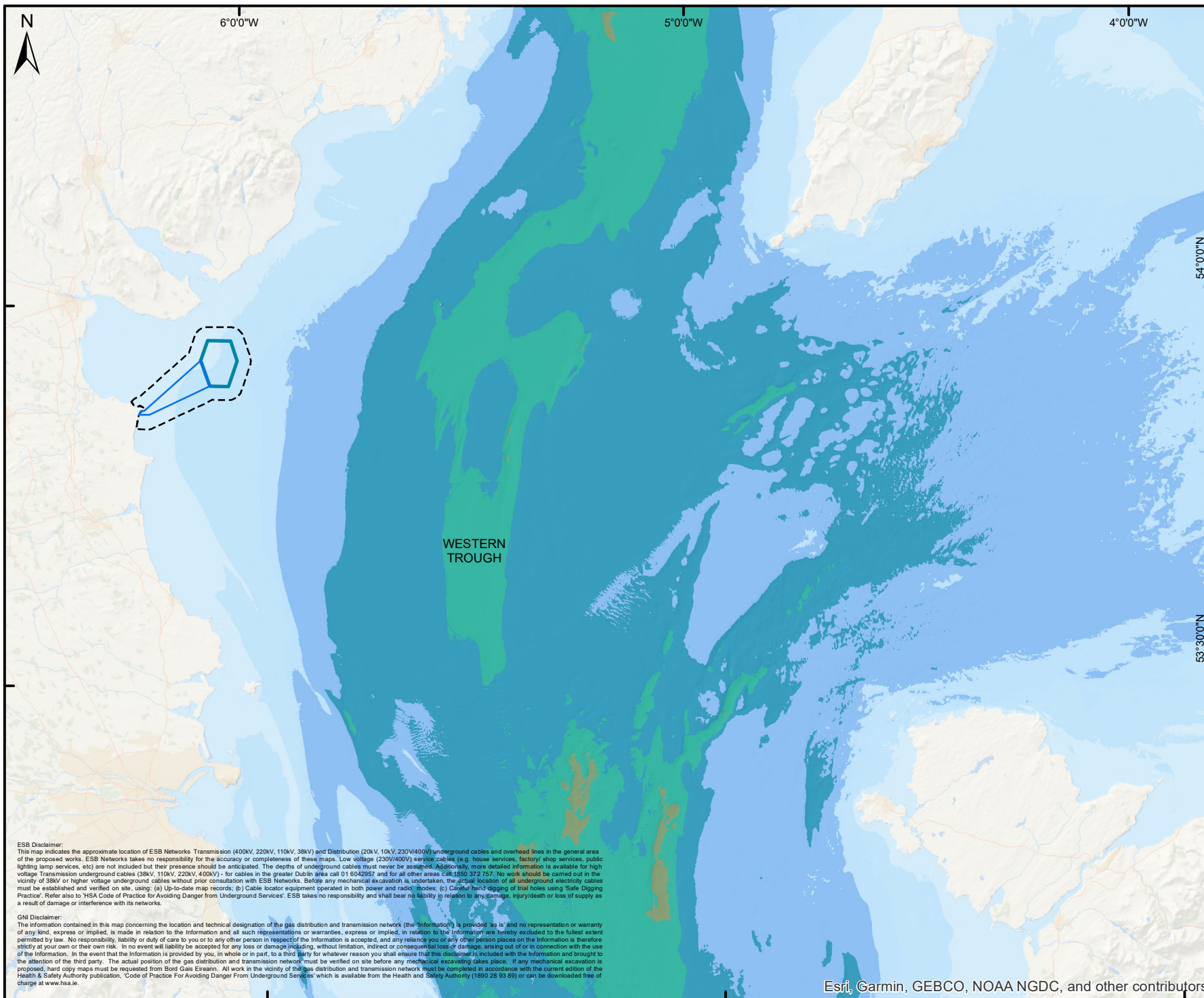
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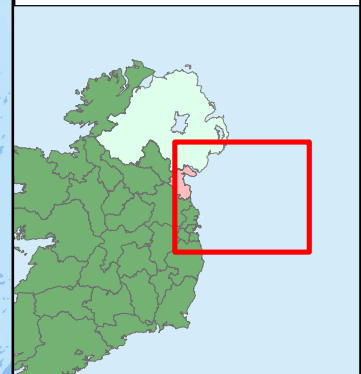
**Legend**

- Offshore Wind Farm Area
- Offshore Cable Corridor
- Marine Archaeology Study Area

**Bathymetry, depth in metres**

- 0-20
- 20-40
- 40-60
- 60-100
- 100-140
- >140

Data Sources: Client, EMODnet



Client



ORIEL WINDFARM  
OFFSHORE RENEWABLE ENERGY

Project

**Oriel Wind Farm Project**

Title **Figure 4-2**  
**Location of Marine Archaeology Study Area in relation to main seabed topographic features**



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## 4.2 Submerged prehistoric archaeology

During the Pleistocene the Irish Sea most likely either formed dry land (interglacial) as part of the land mass that connected Ireland with Britain and mainland Europe or was covered in an ice sheet (glaciation). During periods of glaciation the Irish seabed would have been uninhabitable but during interglacial periods there is a potential for periglacial occupation during periods when the seabed would have formed dry land. Although it is probable however that any seabed sites dating from before the last glaciation would have been lost due to the subsequent movement of the ice sheet.

The last glaciation, the Devensian (c. 20,000 BP), covered most of Ireland in ice, including the Marine Archaeology Study Area, although part of southwest Ireland remained ice free during this epoch. The subsequent phases of ice melt and the rise in sea level meant that by c. 18,000 BP the Western Trough appears as periglacial lake (Flemming, 2005; Figure 4-3). Considering the maps derived from analysis of sediment deposits on the seabed of the Irish Sea used by Flemming (2005) (Figure 4-3), the Marine Archaeology Study Area became free of ice c. 14,000 BP and formed dry land close to the shore of a possible glacial lake. By 12,000 BP sea level rose and inundated most of the Marine Archaeology Study Area apart from its western extent which was eventually submerged by c. 7,000 BP. As the Marine Archaeology Study Area was exposed as dry land it could have been occupied by hominids exploiting the shoreline of the glacial lake. As it was submerged there is a potential for early Mesolithic occupation of the still exposed shoreline in the western extent of the Marine Archaeology Study Area up until c. 7,000 BP. More recent studies (Westley and Henry, 2015) suggest that sea level rise following the retreat of the ice meant that by c. 16,000 BP Ireland was completely cut off from mainland Europe and Britain (Figure 4-3).

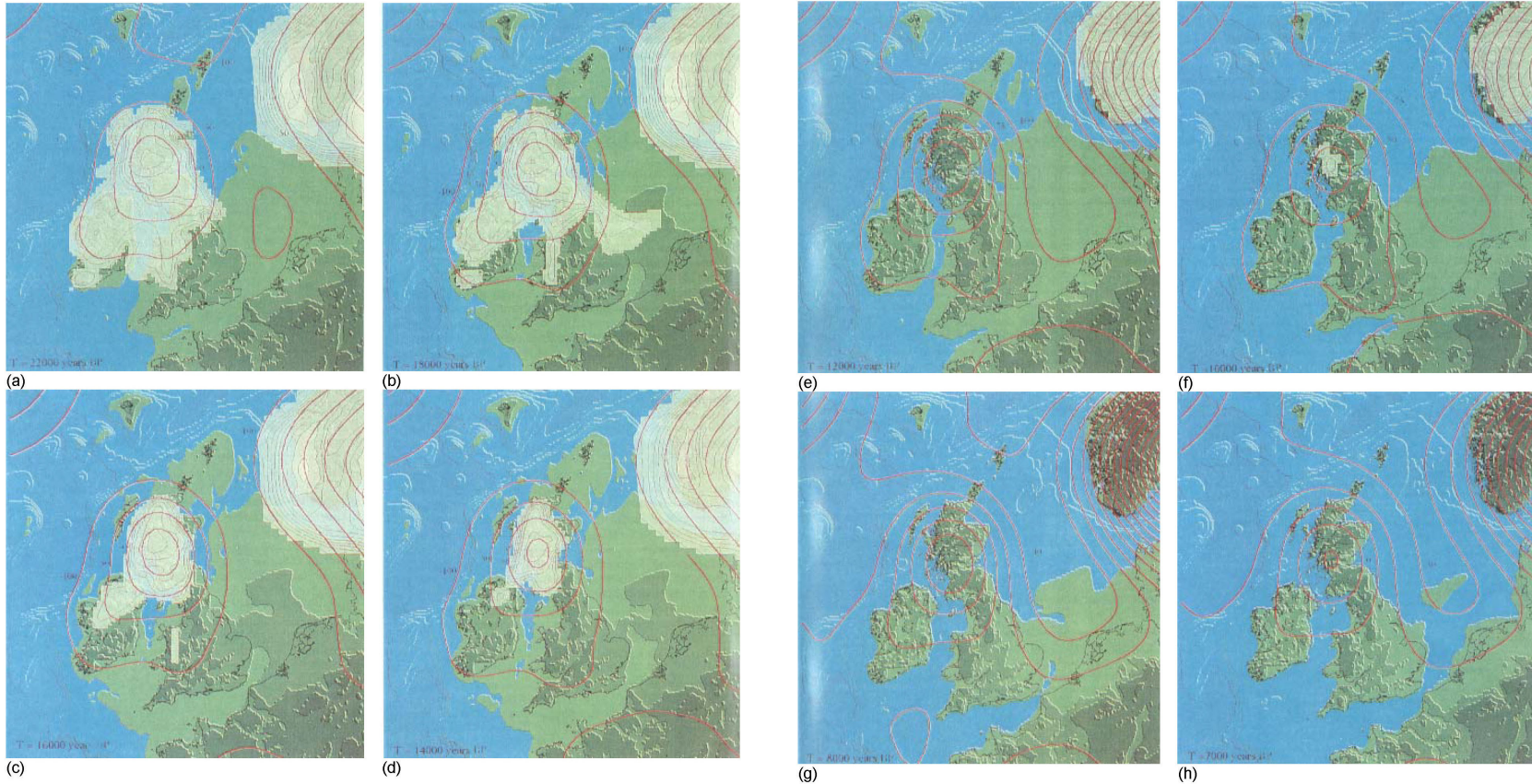
There is currently no evidence of human occupation of Ireland during the Palaeolithic (Wessex Archaeology, 2005). During the periods of glaciation most of Ireland would have been uninhabitable and therefore it is not surprising that evidence of Palaeolithic occupation is limited. Only two Palaeolithic artefacts are identified within the Irish record comprising a derived struck flint recovered from a gravel quarry in Co. Louth (Mitchell and Ryan, 1997) and a butchered bear patella dating to 10,500 BC found in a cave in Co. Clare (Dowd, 2016). However, given the number of Palaeolithic coastal sites in Britain there must have been periods when the Irish seabed was exposed, and Palaeolithic communities were potentially living and hunting along the shoreline of the potential glacial lake (Figure 4-1). In addition, given the discoveries of submerged prehistoric sites in all the adjacent seas of the British Isles (i.e. English Channel and North Sea) the absence of current evidence in the Irish Sea may be attributed to a lack of archaeological investigation. Alternatively, sites may have been lost due to the prolonged glaciation of the region and more recent fluvial erosion. As such it is most likely that there are only pockets of areas of the Irish seabed where archaeological sites could survive (Flemming, 2005).

Generally, the Marine Archaeology Study Area lies in a sheltered area where prehistoric sites, or organic deposits and landscapes, if present, could be preserved. However, due to the level of erosion and the paucity of evidence, it is considered unlikely that evidence of Palaeolithic occupation will be found within the Marine Archaeology Study Area. The effects of repeated glaciations, marine transgressions and associated fluvial activity mean that the potential for the survival of any archaeology from this period within the Marine Archaeology Study Area is unlikely.

Close to the modern shoreline, if peat and organic muds are present, there is a potential for geoarchaeological/paleoenvironmental evidence within the offshore cable corridor. In addition, where these sediments are present there is a good potential for organic preservation as confirmed by the discovery of a Mesolithic fish trap in County Dublin (McQuade and O'Donnell, 2007). The presence of Mesolithic occupation along the east coast of Ireland suggests that the potential for Mesolithic evidence within the western extent of the Marine Archaeology Study Area cannot be entirely ruled out.

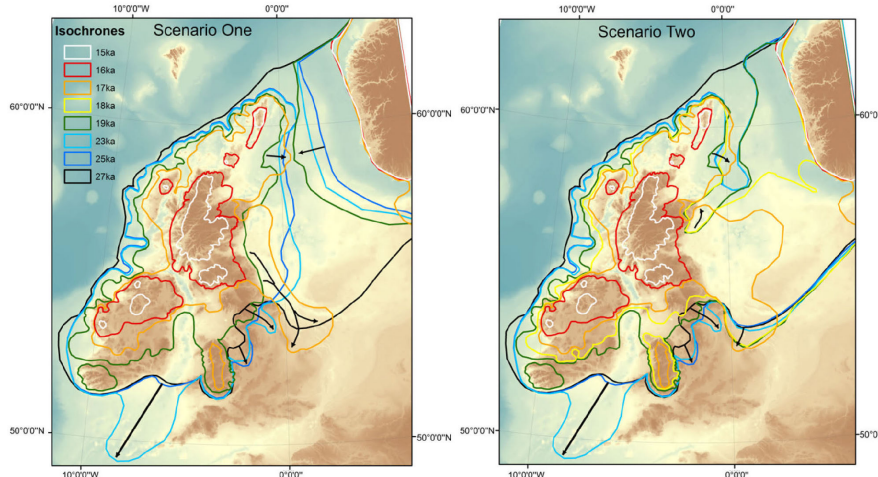
However, a programme of geotechnical investigations undertaken in 2019 did not identify any anthropogenic features such as timber, metal or ceramic, or any peat or related organic strata that might indicate the presence of submerged palaeo-landscapes.





Flemming 2005.  
 Isobase maps of predicted shorelines, shoreline locations and ice sheet limits for selected epochs. (a) 22,000 years BP corresponding to the adopted time of maximum glaciation over the British Isles, (b) 18,000 years BP corresponding to the time of the onset of deglaciation of the large ice sheets, (c) 16,000 years BP, (d) 14,000 years BP, (e) 12,000 years BP, (f) 10,000 years BP, (g) 8,000 years BP, (h) 7,000 years BP. The maximum ice heights for these epochs are: 1,500m at the time of the glacial maximum at 22,000 years BP, 1,400m at 18,000 years BP, 1,300m at 16,000 years BP, 1,000m at 14,000 years BP and 400m at 10,000 years BP. Palaeowater depths are also indicated with contours at 50, 100, 150 and 200m. Isobase contour intervals are 50m for (a) to (d), 25m for (e) and (f) and 10m for (g) and (h). (After Lambeck, 1995).

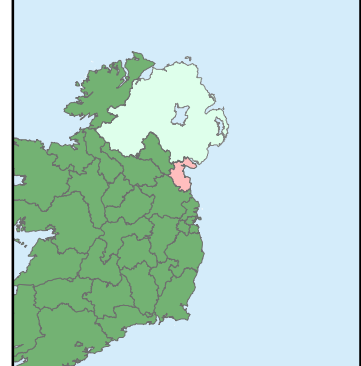
Clark *et al* 2010.  
 Isochrone of ice retreat of the BILS; successive margin positions in years ka BP. In Scenario One; *Early and complete break up of North Sea ice and a surge lobe down the east coast of England* we also reconstruct the Tamen Readvance of Norwegian ice. Scenario Two; *Two-stage deglaciation of the North Sea with a persistent ice dome in the south*, adopts a more cautious view regarding the Tamen advance - it merely maintains its position. In both scenarios significant advances are marked with black arrows.



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Data Sources:



Client  
**Oriel Wind Farm**  
 OFFSHORE RENEWABLE ENERGY

Project  
**Oriel Wind Farm Project**

Title **Figure 4-3**  
**Maps showing potential retreat of ice sheet and rise in sea level (reproduced from Figure 5 Flemming 2005 and Figure 17 Clark *et al* 2010)**

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### 4.3 Maritime archaeology potential

Recent studies have shown that by c. 16,000 BP Britain and Ireland had been completely separated by the Irish Sea due to rising sea levels.

The maritime history of Ireland is the product of a complex interplay of constantly evolving local coastal and marine activities, international links and patterns of shipping, and sea use since at least the Mesolithic.

The maritime archaeological record of the Marine Archaeology Study Area has been considered in terms of the following broad temporal phases: Early Prehistoric; Neolithic and Bronze Age; Iron Age and Roman; Early Medieval and Medieval; and Post-Medieval and Modern.

#### 4.3.1 Early Prehistoric (Palaeolithic to Mesolithic)

There is currently no evidence of maritime archaeological remains dating to these periods within the Marine Archaeology Study Area. Although the existence and survival of Palaeolithic watercraft are highly speculative in Ireland, Examples from elsewhere in the world, however, suggest that early modern humans did undertake maritime activities (Johnstone, 1980), perhaps the best known being the suggestion that the colonization of Australia c. 40,000 BP involved island-hopping in or on primitive watercraft (Lourandos, 1997).

Activities related to the exploitation of the marine environment may have taken place since at least the Middle Palaeolithic. There is evidence in archaeological deposits from around the Mediterranean Basin (Italy, Gibraltar, Morocco and Libya) for the exploitation of marine resources by Neanderthals from at least as early as 50,000 to 30,000 BP (Stringer *et al.*, 2008). In South Africa evidence suggests human coastal adaptation and marine resource exploitation from 160,000 BP (Marean *et al.*, 2007).

The discovery of isolated Palaeolithic artefacts from terrestrial sites, dating to a period when Ireland was cut off from Britain and Europe (section 4.2) suggests that any occupation of Ireland during this period may have been facilitated by sea travel perhaps using simple watercraft, log boats or rafts, used for coastal journeys and fishing (McGrail, 1987; Dunkley, 2016), however, no evidence of Palaeolithic seafaring craft is known from the Irish record.

The effects of repeated glaciations, marine transgressions and associated fluvial activity across much of the Palaeolithic mean that the potential for the survival of any archaeology associated with the maritime environment from this period is unlikely.

The first archaeological evidence for the use of watercraft in the UK dates to the Mesolithic (c. 10,500 to 6,000 BP). Much of the evidence is circumstantial. Log boats from the period have been found in Denmark, with paddles known from Star Carr in Yorkshire and from Denmark (Van de Noort, 2011). The Star Carr evidence implies that these boats may have been confined to sheltered waterways. A late Mesolithic/early Neolithic burial in a partially burnt dugout canoe was found in St. Albans, Hertfordshire in 1988 (Dunkley, 2016). Finds in Germany and Denmark suggest that log boats were used for coastal journeys.

Several sites have been identified along the east coast of Ireland. These largely comprise of shell midden sites, such as those discovered at Rockmarshall, Co. Louth and Sutton, Co. Dublin, and these were discovered with assemblages of worked flints. As Ireland had been cut off from Britain by this period, colonisation of Ireland would not have been possible without the use of sea craft (Smith, 1992). These will likely have been log rafts, simple skin boats or dugout canoes (McGrail, 1997, 2001).

Watercraft may have been used in the rivers and estuaries in Ireland, for coastal journeys, fishing expeditions and possibly longer journeys in favourable weather. They are likely to have become increasingly important to the Mesolithic inhabitants with rising sea levels. However due to the paucity of evidence and fluvial activity across the Marine Archaeology Study Area the potential for the survival of any archaeology associated with the maritime environment from the Mesolithic period is unlikely.

#### 4.3.2 Neolithic and Bronze Age

This period saw a large scale social and economic change driven by the transition from nomadic hunter-gather societies to settled farming communities. It saw the construction of large numbers of monuments such as monumental tombs. County Louth possess 21 such monuments concentrated in the Cooley Peninsula and South Louth. Regular maritime contact with mainland Britain is reflected in the similarities between the



## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

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ritual monuments of Ireland and similar monuments along the western coasts of Wales and Scotland (Waddell, 1991). Continued contact is also represented by the material culture, a large number of Great Langdale (Cumbria) axe heads have been found in Ireland, just as a large number of polished stone axe heads made from Antrim porcellanite and tools of Antrim flint have been recovered in Britain (Waddell, 1991). A series of cropmarks at Salterstown represented by a field system (LH016-009002) and an enclosure (LH016-009001) may be representative of a seafaring community in this area during the period.

A small number of dugout canoes/log boats have been identified and recovered from coastal locations along the east coast of Ireland. These include two from Ballylig in Larne Lough, Co. Antrim (O'Sullivan and Breen, 2007) and the Greyabbey Bay log boat found in Co. Down. All three may have been used as a seafaring vessel (Forsythe and Gregory, 2007; O'Sullivan and Breen, 2007;). A further log boat was found at Gormanstown, County Meath under 2 m of sand during offshore trenching (Brady, 2002). This discovery confirmed the potential for offshore preservation as the site was 1 km from recent shoreline.

The Bronze Age was a period of technological innovation and of expansion of trade and exchange networks, facilitated by the introduction of new forms of boats both for ocean and coastal/riverine trade. Clear advances occurred in maritime technology during this period and an increasingly substantial maritime archaeological record allows a less speculative understanding of maritime culture than for earlier periods.

There is evidence that during the Bronze Age complex composite boats were in use and being developed. Hide boats are argued to have been a common vessel and sewn plank boats were a new development (Van de Noort, 2011). The latter have been described as the most advanced form of early water transport and would have been readily adaptable for use in riverine, estuarine and possibly even sea-going environments (Lillie, 2005; McGrail, 1990). There have been several examples of these flat-bottomed sewn plank boats found in UK waters, ranging from the Brigg 'raft' (dated to 825 to 760 BC) (Chapman and Chapman, 2005; McGrail, 1981) and North Ferriby boats (built between c. 2,000 to 1,700 BC) from the Humber (Cunliffe, 2001; Van de Noort, 2003), to boat fragments found at Caldicot and Goldcliff in Gwent (McGrail and Parry, 1991) and Kilnsea (Van de Noort *et al.*, 1999) and the substantial remains of a boat from Dover in Kent (Clark, 2002). No evidence of sewn plank vessels has been found in Ireland but evidence from the Welsh coast suggests examples should be present.

The proximity of the Marine Archaeology Study Area to possible shipping routes across the Irish Sea and up and down the east coast suggests that, during the Bronze Age, vessels could have been passing through the Marine Archaeology Study Area. There is thus a low to moderate potential for remains of such vessels to be present within the Marine Archaeology Study Area.

### 4.3.3 Iron Age and Roman

Seafaring and the spread of trade and ideas continued through these periods. A hoard of gold objects found in Broughter, Co Derry in 1896 contained a small model of a boat generally thought to be of a hide covered vessel and as such the earliest example of one found within Ireland (Breen and Forsythe, 2004) and would have been suitable for crossing the Irish Sea.

Although Ireland was never occupied by the Romans, the trade link in material culture between the Iron Age Irish and the Romans are evident along the east coast of Ireland. At Lambay Island, thought to potentially have been a trading port, a group of burials were discovered containing Roman brooches similar to those found in northern England during the 1<sup>st</sup> Century AD, whilst a boat built in a distinctive Mediterranean technique was found in 1968 in County Westmeath (Farrell, 1989).

Together with the evidence for substantial commercial trade this suggests that Iron Age and Roman maritime traffic may have passed through the Marine Archaeology Study Area. It is also likely that many more vessels of this period were lost than the available archaeological evidence suggests, increasing the potential that remains from this period are present within the limits of the Marine Archaeology Study Area.

### 4.3.4 Early Medieval and Medieval

Records of known wreck sites and losses in Irish waters are biased towards the Post-Medieval and Modern periods. Most of the major towns and cities along the east Irish coast, including Dublin, were developed by the Danish and Norse Vikings who frequently navigated the Irish Sea. Remains of Viking vessels have been found in construction of waterfronts, quays etc in Dublin and other cities along the east coast. Log boats dating to this period have been found in lakes and rivers, but it is still possible that they could also be found in a maritime context.

## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

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Timbers examined from Viking wrecks found off the coast of Denmark were found to have been constructed from timbers hewn in Dublin between 1060 and 1070 AD (Breen and Forsythe, 2004). A number of fortifications dating from this period have been identified along the east coast of Ireland. These include a fortification dating to the 9<sup>th</sup> to 10<sup>th</sup> century (LH015-038) and a fortification near Annagassan interpreted as a Viking Longphort (LH015-015001) in use from 831-926 AD.

The Anglo-Norman invasion of Ireland began in 1169 AD involving large numbers of seafaring vessels crossing the Irish Sea. By the middle of the 13<sup>th</sup> century, castles and the refortification of ports along the east coast ensured Norman control. This period saw an increase in population leading to an increase in trade. In addition, Ireland became involved in military campaigns such as providing men and supplies to support the 14<sup>th</sup> century English campaign against Scotland (McCaughan and Appleby, 1989).

Custom accounts from the 15<sup>th</sup> century provide evidence of a thriving import and export industry across the Irish Sea (Sherbourne, 1987). In the 16<sup>th</sup> and 17<sup>th</sup> centuries the Crown offered land and grants to the immigrant class of Scotland and England and large numbers relocated to the north and south of Ireland.

The level of Medieval maritime activity suggests that the potential presence of Medieval period shipwrecks in the Marine Archaeology Study Area is moderate to good.

### 4.3.5 Post-Medieval and Modern

The growth of commercial maritime travel beginning in the Late Medieval period continued and expanded in the Post-Medieval period. This resulted in an increase in importance of Irish Sea as a major sea route, both between Britain and Ireland and the length of the British and Irish Isles.

In addition, military campaigns in the 18<sup>th</sup> century saw French attempts to invade Ireland and several vessels were lost off the east coast. This led to an almost permanent presence by the British Navy in Irish coastal waters.

The loss of shipping through wrecking starts to be recorded systematically after c. 1750, which represents the birth of pre-modern navigation. There are 172 historic wrecking events associated with Dundalk Bay, which is a significant number for a bay only 14 km long (between Cooley Point in the North and Dunany Point in the South) and 11 km wide. This includes 163 recorded wrecks whose specific locations are not known and nine known wreck-site locations, two of which occur within the proposed offshore cable corridor.

There is one recorded loss attributed to the year 1594 (Wreck reference W00255), and none attributed to the 17<sup>th</sup> century. 20 wrecking events are recorded for the 18<sup>th</sup> century. In the 19<sup>th</sup> century 83 wrecking events were recorded. The numbers of losses and the associated financial and related implications at this time led to improvements in shipping and navigation and help to explain the very low numbers of loss attributed to the 20<sup>th</sup> century, when only eight shipwreck events in Dundalk Bay were recorded (annex 2).

There are a number of recorded wrecking events attributed to a known topographic reference point e.g. 53 events attributed broadly to Dundalk Bay, while 14 events are particular to Annagassan. In relation to the Project and surrounding area it is to be noted that Dunany Point is the topographic location for 16 recorded shipwreck events. The Dunany reefs present a key navigation hazard in this area and the reefs are mentioned in several of the records for wrecking at Dunany (annex 2). The vessels that wrecked at or close to Dunany appear to have been wooden ships for the most part, including several schooners, a barque, a brig and also a small fishing vessel or yawl. There is one 18<sup>th</sup> century loss, which is that of the *Mary Ann*; a vessel of New York that was *en route* to Liverpool with a cargo of rum, tobacco and slaves (W00209). The *Mary Anne* became stranded on a beach opposite the house of Robert Subthorpe. The crew mutinied and a large number of people tried to board the vessel. The captain and Mr Subthorpe's armed servants acted in protecting the vessel and cargo. Almost a century later, in 1880, the *Parkside* was a wooden brigantine or brig of Whitehaven that weighed 132 tons (W00224). The *Parkside* was *en route* from Newport to Dundalk with six crew and a cargo of coal when it became stranded in a SE force 8 gale and was totally wrecked at Dunany. The *Empire of Peace* (W00149) was a Liverpool Barque lost in 1881 located off the coast of Sea Bank.

During the First World War, HMS *Cullist* (W00485), a 1.030-ton British decoy ship was torpedoed and sank approximately 24 miles off the coast of Clogherhead. During the First and Second World War, submarine activity was prevalent in the Irish Sea and the remains of a number of U boats have been found though none from within the Marine Archaeology Study Area.

The post-Medieval and modern periods present the greatest potential for unrecorded archaeology to be discovered. The increasing incorporation of metal structural elements into vessel designs during this period

## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

means that wrecks for the 19<sup>th</sup> and early 20<sup>th</sup> centuries are also often more visible on the seabed than their wooden predecessors. They are visible to bathymetric and geophysical survey, and also generate strong magnetic anomalies, and this greater visibility is reflected in the increased number of known wrecks (i.e. those that have been located on the seabed) for the period under discussion, in contrast to the periods discussed previously.

The archaeological potential by period and the likely significance of any archaeological remains which may be present within the Marine Archaeology Study Area is summarised in Table 4-1. The significance of any remains is dependent on their state of preservation.

**Table 4-1: Summary of archaeological potential and value.**

Receptor	Potential	Value
Submerged Prehistoric occupation	Low	National
Paleoenvironmental/Geoarchaeological evidence	Low to Moderate	Regional – National
Early Prehistoric Maritime Evidence	Low	National
Bronze Age Maritime Evidence	Low to Moderate	Regional – National
Iron Age – Roman Maritime Evidence	Low to Moderate	Regional – National
Early Medieval – Medieval Maritime Evidence	Moderate to Good	Regional – National
Post-Medieval – Modern Maritime Evidence	Low to Moderate	Local – Regional – National

### Recorded losses

Data for known shipwrecks and recorded shipping losses within the Marine Archaeology Study Area were obtained as appropriate from the NMS Wreck Inventory of Ireland Database (WIID) and the site-specific surveys undertaken in 2006 and 2019 (appendices 0 and 0). These datasets provide a general picture of maritime casualties in the Marine Archaeology Study Area in the last 150 to 200 years but should not be viewed as representing the totality of even the more recent potential maritime archaeological remains in the area.

The desktop data obtained in 2024 does not contain any records of loss, but the wider area of Dundalk Bay has a high volume of recorded loss attributed to it.

Recorded losses represent maritime and aviation losses that are known to have occurred in the vicinity but to which no specific location can be attributed. Recorded losses are often grouped with reference to a geographic, hydrographic or other point of reference, making the positional data of these records unreliable. However, they do provide information on the historical marine traffic of the general region and therefore the archaeological potential. Recorded losses may be attributed to unknown anomalies identified by the geophysical survey or they may be positioned outside the Marine Archaeology Study Area.

The rocky environment of Dunany reefs presents a harsh seabed for the preservation of wreckage, particularly timber wreckage, where the shallow water depths and the exposed nature of the reefs would ensure that any vessel running aground there would be broken up quickly or would be pushed off the reefs into calmer waters.

### 4.4 Protected wrecks

Wrecks of historical, archaeological or are otherwise significant are preserved by the designation of an Underwater Heritage Order in accordance with the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 (Irish Government, 2023). No wreck sites that have been placed with an Underwater Heritage Order are located within the offshore wind farm area or offshore cable corridor.



## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

### 4.4.1 Desktop records

#### National Monuments Service

There are 17 records held by the NMS attributed to positions within the Marine Archaeology Study Area, 13 of these relate to geophysical anomalies that were identified in the 2006 geophysical survey. All of these were archaeologically assessed as geological at the time (annexes 1 and 3).

Of the four remaining records, two relate to wreck sites and one to a possible wreck site. The final record (W11435) states “*We regret that we are unable to supply descriptive details for this record at present*” and therefore no further information is known about this entry.

The two wreck sites are records of the *Topaz* (W00248) and an unidentified wreck site (W00276) (Figure 4-4). The *Topaz* was a Glasgow registered iron steamship lost in 1891. The ship weighed 168/353 tons and measured 161 feet long and was *en route* from Workington to Dundalk, carrying a cargo of steel rails, with a crew of nine when it was lost in a west-southwest force 4 wind. The record reports that she struck a reef, drifted into deeper water and sank. The reef must have been Dunany reef. The crew took to their lifeboat and landed at Greenore, Co. Louth. The ship and cargo were insured, so Lloyds employed a diver called Rigden/Rizdon to salvage the steel rails during 1892–1893. The rails, engines and working gear were removed. The vessel’s masts were also removed, and the area was buoyed. In 1977 the hull was still almost intact. The boiler and stern stand almost 3 m high off the seabed and the greatest depth recorded was 23 m. Wreck (W00276) also been identified to the south of this site. Wreck W00276, for its part, is simply recorded as an unidentified wreck beside that of *Topaz*. The charted position places W00276 350 m south-southeast of *Topaz*. In addition, a possible wreck (W00529) was identified during the Irish National Seabed Survey, located 860 m southeast of the offshore wind farm area.

The final record relates to that of a possible wreck site (W00529) that was identified during a National Seabed Survey and is described as being 5 m long, 2 m with a height of 3 m off the seabed. It lies in a general sea depth of 29m and is located within the Marine Archaeology Study Area, approximately 850 m southeast of the offshore wind farm area.

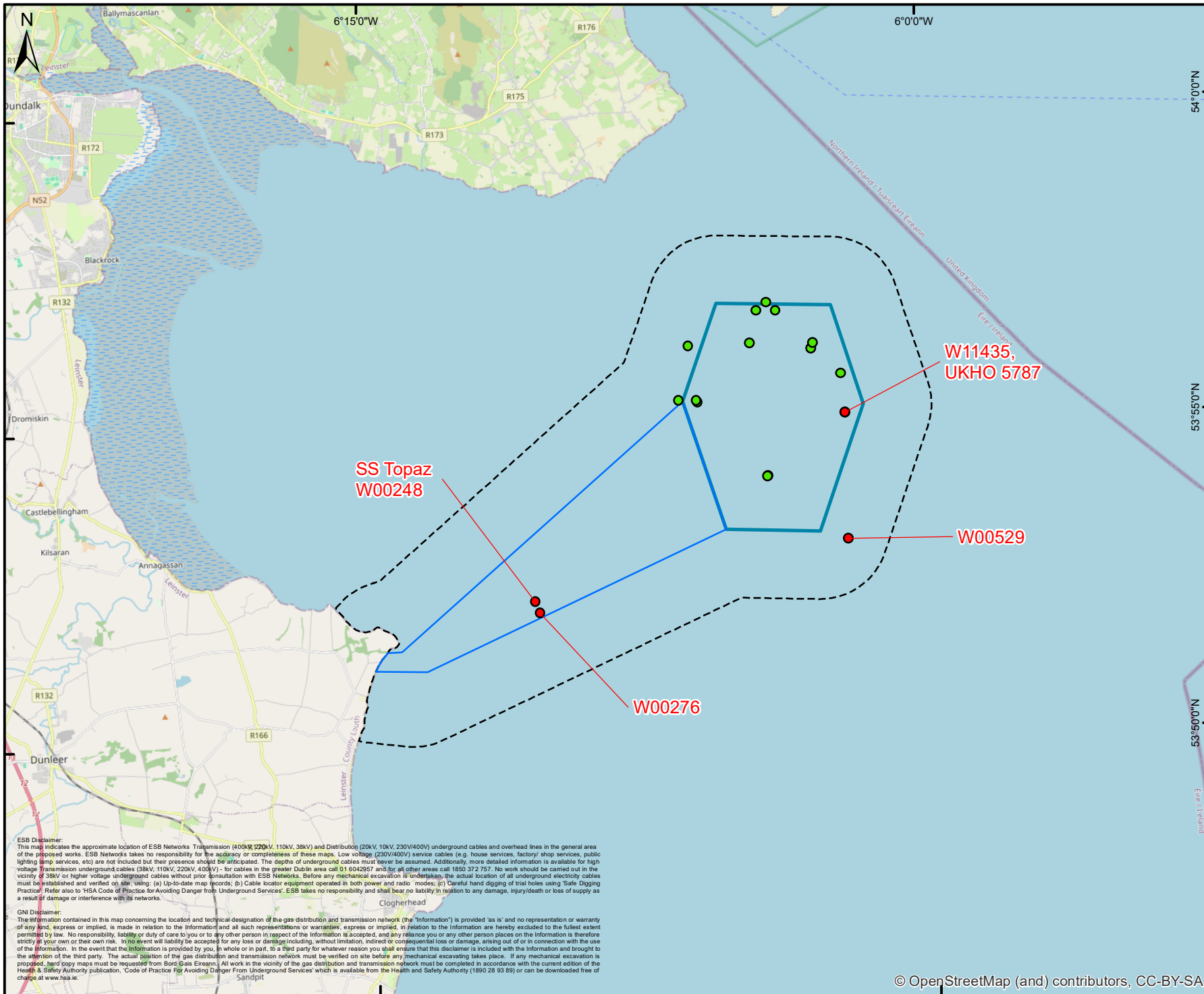
Geophysical survey data collected in 2019 has not identified material at the locations of these three sites, however both the *Topaz* and W00276 are located in muddy sediments and therefore there remains the possibility that they are buried, and that material of archaeological significance exists at these locations.

#### INFOMAR

INFOMAR hold only one record within the Marine Archaeology Study Area. ID295 which records the wreck of the *Topaz*, as described above in section 4.4.1.

#### United Kingdom Hydrographic Office (UKHO)

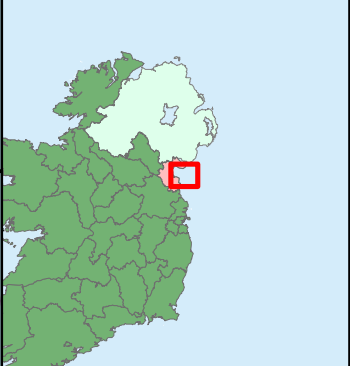
The UKHO hold three records within the Marine Archaeology Study Area, all three are recorded as live. One record (UKHO 5762) represents the foundation block for the Oriel anemometer mast and, as such, is not archaeological in nature. UKHO 5867 relates to the wreck of the *Topaz* as described above in section 4.4.1. The final record, UKHO 5787, was recorded in 2003 as both wreck and notable debris measuring 5 m in length. UKHO 5787 corresponds with the recorded position of NMS record W11435 and therefore suggest that material may be present at this location. The 2019 geophysical surveys did not identify material at this location, and no further information that may indicate the origin of this debris is known, however, it is possible that archaeological material may be buried in the soft sediment.



**Legend**

- Offshore Wind Farm Area
- - - Offshore Cable Corridor
- Marine Archaeology Study Area
- Desktop Data
- Geological Anomalies

Data Sources: Client



Client



**ORIEL WINDFARM**  
OFFSHORE RENEWABLE ENERGY

Project

**Oriel Wind Farm Project**

Title **Figure 4-4**  
**Maritime archaeology identified in the desktop data**



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Issue Details	
Drawn By: NG	Project No. EOR0822 (MDR1520B)
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Approved By: AOS	EOR0822_MAR_T_1463_FINAL
Scale: 1:150,000 @A4	Projection: ITM (IRENET95)
Date: 15/03/2024	Geographic Co-ordinates: ETRS89

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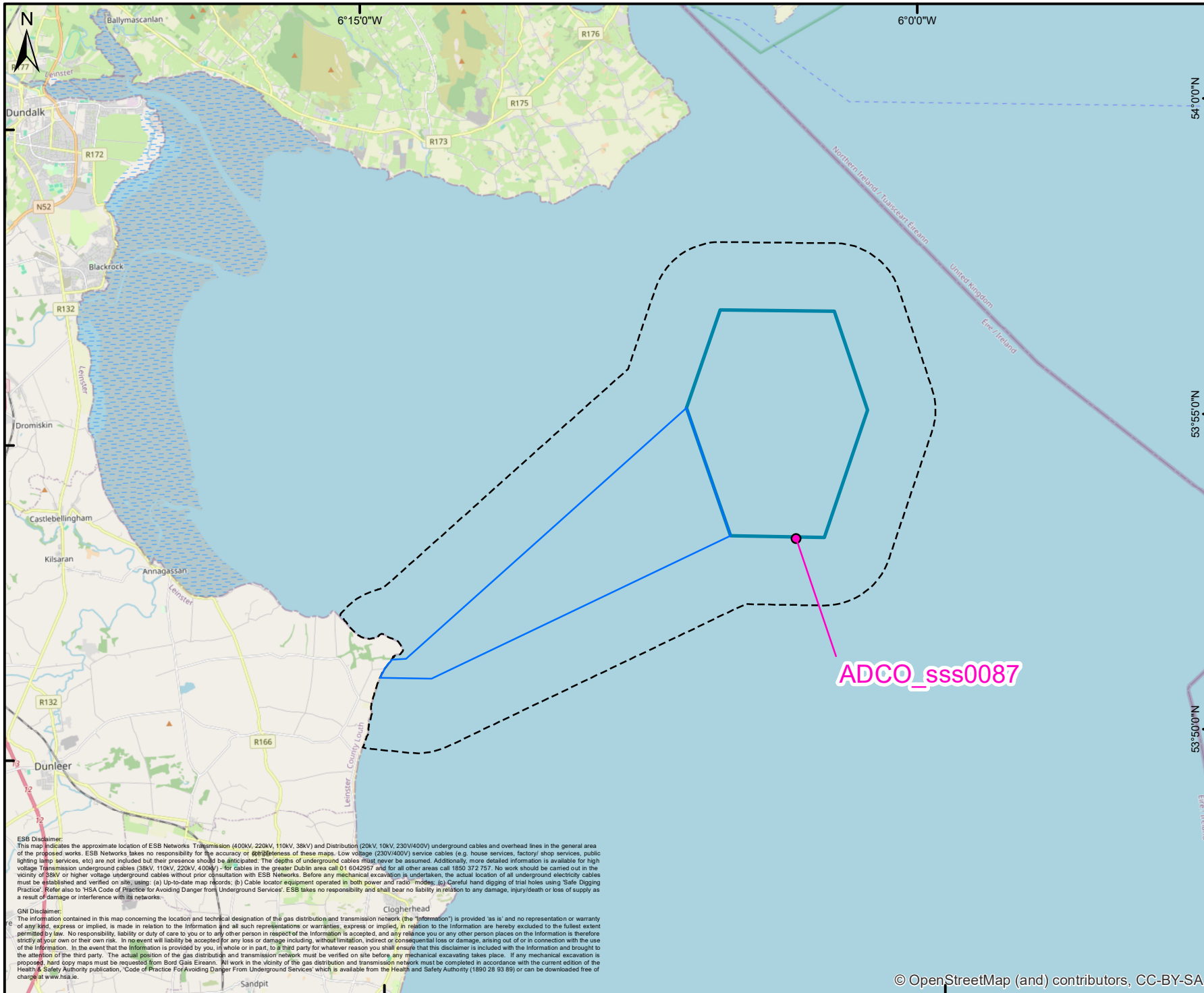
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## 4.5 Geophysical survey

A number of geophysical anomalies were identified during the 2006 survey within the offshore wind farm area (annex 1), which have since been classified as Wreck Sites on the WIID (W111145-W11157 and W111435). This comprised 14 sites, 11 of which lie within the offshore wind farm area and three of which lie close to the offshore wind farm area boundary. However, the report that identified those features concluded that they are 'probably not archaeological in nature' (annex 1). The features identified comprise isolated rock or boulders (W111148, W111149, W111150, W111154) SS1-3, 8) and concentrations of cobbles or other possible snag points (W111144, W111145, W111146, W111147, W111148, W111153, W111155, W111156, W111157). The 2006 data had one instance of correspondence of the snag point with the magnetometer data (W111144) suggesting that this feature was manmade in origin (annex 2). W111144 is located outside the current Marine Archaeology Study Area.

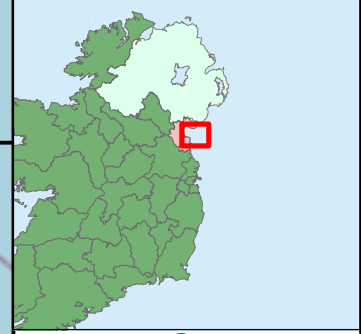
The results of the 2019 geophysical surveys included the identification of 88 side-scan sonar targets, 87 of which were interpreted as boulder/s by Ultramarine (ADCO, 2021). Archaeological assessment of the side scan sonar data undertaken by ADCO corroborated these findings. As these have no archaeological potential they will not be considered further in this report. The locations of the contacts will be shared with Oriel Wind Farm Limited for operational awareness and included in volume 2A, appendix 5-10: Marine Archaeological Management Plan.

The one contact that may be anthropogenic in nature (SSS\_0087) has been interpreted as a single item of debris measuring 3.3 m in length and registered a slight magnetometry reading, suggesting a content of ferrous metal. The feature is located on the southern border of the offshore wind farm area and does not correspond to any desktop records (Figure 4-5).



- Legend**
- Offshore Wind Farm Area
  - Offshore Cable Corridor
  - SSS Target
  - Marine Archaeology Study Area

Data Sources: Client



**Project**

## Oriel Wind Farm Project

**Title** Figure 4-5  
**Distribution of geophysical anomalies with archaeological potential from the 2019 geophysical survey.**

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## 4.6 Geotechnical investigations

A programme of geotechnical investigations was conducted in 2019, including seven boreholes within the proposed offshore wind farm area and six boreholes within the proposed offshore cable corridor. The distribution of the boreholes acquired is shown in Figure 9 of annex 2.

None of the borehole logs report the observation of anthropogenic features such as timber, metal or ceramic, and none record peat or related organic strata that might indicate the presence of submerged palaeo-landscapes.



## 5 CONCLUSION

### 5.1 Submerged prehistoric archaeological potential

During the Pleistocene, the Irish Sea most likely either formed dry land (interglacial) as part of the land mass that connected Ireland with Britain and mainland Europe or was covered by an ice sheet (glaciation). During periods of glaciation the Irish seabed would have been uninhabitable but during interglacial periods there is a potential for periglacial occupation during periods when the seabed would have formed dry land. However, the effects of repeated glaciations, marine transgressions and associated fluvial activity mean that the potential for the survival of any archaeology from this period within the Marine Archaeology Study Area is unlikely. None of the recent borehole investigations report the observation of anthropogenic features such as timber, metal or ceramic, and none record peat or related organic strata that might indicate the presence of submerged palaeo-landscapes.

### 5.2 Maritime archaeological potential

The Irish Sea has been identified as a region with historically high levels of shipping and military activity and vessel loss. The survival of shipwrecks depends on a range of factors, including the age and construction material of any wreck.

No protected wreck sites are located within the Marine Archaeology Study Area.

The wreck site of the *Topaz* (W00248, INFOMAR ID 295, UKHO 5867) is thought to be located within the offshore cable corridor. An unidentified wreck (W00276) and a piece of debris (W11435, UKHO 5787) are also thought to be located within Marine Archaeology Study Area. These two wreck sites, should they survive at these locations, would be protected under the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023. The 2019 geophysical survey data has not identified any archaeological material at the locations of these two wreck sites or at the recorded location of the debris, however, the sedimentation of the areas suggests the possibility that these wrecks may be buried at these locations and as such precautionary measures should be applied.

The 2019 geophysical surveys identified one item of debris, 3.3 m in length and registering a magnetometry reading that may represent archaeological material, precautionary measures should also be applied to the location of this debris.

The preponderance of iron and steel wrecks in the record probably masks the presence of earlier shipwrecks, which are of potentially greater archaeological interest. Compared to iron and steel wrecks, wooden shipwrecks tend to be older, smaller and to have carried less ferrous material. They also tend to break up more quickly than iron and steel wrecks and are thus more likely to be scattered, dispersed and have a generally lower physical profile on the seabed. Consequently, they are less likely to be located by geophysical survey.

There is therefore potential to encounter currently unknown or unrecorded shipwrecks. Measures will be included in the Project to ensure the prompt reporting and avoidance of undue damage to any such discoveries (see chapter 15: Marine Archaeology and volume 2A, appendix 5-10: Marine Archaeological Management Plan).

## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

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**ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT**

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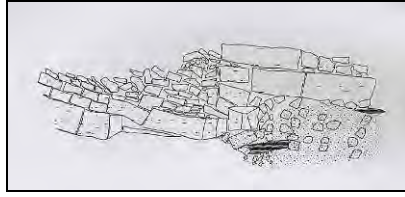
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**A.1 ADCO (2007) Archaeological Assessment  
for Oriel Offshore Wind Farm  
Development, North Western Irish Sea.**

**ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT**

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# **ARCHAEOLOGICAL ASSESSMENT FOR ORIEL OFFSHORE WINDFARM DEVELOPMENT NORTH- WESTERN IRISH SEA**

**06R118**

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**THE ARCHAEOLOGICAL DIVING COMPANY LTD.**

**ARCHAEOLOGICAL ASSESSMENT FOR ORIEL  
OFFSHORE WINDFARM DEVELOPMENT NORTH-  
WESTERN IRISH SEA**

**06R118**

06 February 2007

Project Director

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**THE ARCHAEOLOGICAL DIVING COMPANY LTD.**

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## SUMMARY

Archaeological assessment and interpretation of geophysical data acquired for a proposed marine windfarm scheme in north-west Irish Sea, has been carried out. Intensive survey has been conducted within the proposed Lease area and along two of three proposed cable routes to shore. The cable route options to shore include Castlebellingham, Co. Louth, Dunany, Co. Louth, and Bremore, Co. Dublin. Geophysical survey remains outstanding for the Bremore route as this was only identified recently.

Desktop assessment of the Sites and Monuments Record and the Inventory of Shipwrecks at the Department of the Environment, Heritage and Local Government (DoEHLG) does not indicate the presence of known archaeological sites within the proposed Lease area.

There are many shipwrecking incidents recorded within Dundalk Bay but the majority of these remain unlocated. Two wrecksites which have been position-fixed are located close to but outside the development area. The first site is an unknown wreck located approximately 200m south of the proposed cable route to shore at Castlebellingham. It is located on Admiralty Chart 44 in c. 1.2m of water in tidal mudflats. The second site is located approximately 900m southeast of the proposed Lease area, at ING 329140.91440E 294613.448342N. This is a previously unrecorded anomaly that was identified by the Irish National Seabed Survey (G-125). It represents a small feature, measuring c. 5m long, 2m wide and it stands c. 3m off the seabed, at a depth of c. 29m.

Shipwreck incidents occur throughout the sea area south of the proposed Lease area towards the proposed cable route landfall at Bremore, but this route is yet to be subject to geophysical survey and examination.

Interpretation of side-scan sonar, magnetometry, and multi-beam geophysical data acquired for the present project within the proposed Lease area does not indicate features of clear archaeological importance. However, a series of lesser anomalies has been identified that are interpreted as being natural in origin for the most part.



It is proposed that the construction phase will not require dredging works. Onsite impacts will be governed by the sinking of concrete caissons into position from the surface onto the seabed. Cables will be laid using a subsea plough.

The report recommends sub-tidal, inter-tidal and field inspection of cable landfall locations are undertaken in advance of construction commencing, to ensure that any known or visible archaeological features are avoided.

This report recommends that additional marine geophysical survey which meets archaeological specifications as identified by the Department of the Environment, Heritage and Local Government is carried out along the Bremore cable route before construction commences, if the Bremore route emerges as a preferred option, and that this survey is subject to full archaeological assessment and reporting.

This report recommends that the wrecksite located c. 200m south of the Castlebellingham cable route is avoided. Given the proximity of the proposed cable-lay to the recorded wrecksite location, consideration should be given to confirming the wrecksite's exact location prior to construction works commencing, and establishing an exclusion zone of 50m from the visible perimeters of the wrecksite to ensure that works associated with the cable lay avoid any indirect impact with the site.

It is recommended that anomaly SS13, on the Castlebellingham cable route be avoided because it appears to retain a metal content and is therefore probably archaeological in nature. Anomaly SS10 appears to be located close to a proposed turbine location. Care should be taken to ensure that anomalies are avoided during construction. If avoidance is not possible, diver inspection in advance of construction is recommended to further assess the archaeological potential.

It is recommended that the cable lay operations be archaeologically monitored as the use of a subsea plough represents a direct impact on the seabed.

The DoEHLG will require a detailed technical specification on the construction phase methodology for placement of the turbines on location before indicating the nature and extent of archaeological monitoring required.

The recommendations contained within this report are subject to the approval of the archaeological licensing authorities at the Department of the Environment, Heritage and Local Government.

## List of Figures

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- Figure 3: Distribution of known archaeological sites and monuments from Dundalk Bay to Bremore, with overlay of development features
- Figure 4: Detail showing existing archaeological sites in vicinity of possible cable route landfalls at castlebellingham and Dunany
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- Figure 13: Mosaic of magnetometer data acquired along Castlebellingham cable route. Note the series of localized highpoints towards the wesend.

## 1.0 INTRODUCTION

### 1.1 General

The Archaeological Diving Company Ltd (ADCO) was commissioned by Aqua-fact International Services Ltd to undertake an archaeological assessment and interpretation of marine geophysical data acquired by IMAR Survey Ltd for a proposed windfarm in the north-west Irish Sea.

The purpose of the report is to ascertain what archaeological potential exists on the seabed and associated land areas within the overall survey area for the windfarm, based on a review of existing desktop information and an assessment of the marine geophysical survey data acquired. No underwater or land-based archaeological work has been undertaken for this report.

### 1.2 Location

Figure 1 shows the location of the Foreshore Licence area. The coordinates of which can be seen in Table 1. The Lease area is located within the Foreshore Licence area; coordinates can be seen in Table 2. This area measures c. 6km N/S by 5km E/W (at its widest point). It is located in the open sea outside Dundalk Bay, Co. Louth, east-southeast of Dundalk and the Cooley peninsula, and northeast of Clogherhead.

Point	Latitude	Longitude	Easting	Northing
1	53°57' 47.4120"	6°2' 56.1984"	328035	303309
2	53°55' 23.4299"	6°8' 56.3028"	321588	298683
3	53°49' 59.3868"	6°8' 56.3316"	321849	288667
4	53°49' 59.3724"	6°4' 11.2908"	327060	288805
5	53°54' 35.3737"	6°0' 56.2716"	330387	297434

**Table 1: Limit Foreshore Licence area, courtesy of Aqua-fact Ltd**

Point	Latitude	Longitude	Easting	Northing
1	53°56' 52.39"N'	6°5' 32.27"W	325304	301515
2	53°56' 47.91"N'	6°2' 28.34"W	328661	301468
3	53°55' 13.20"N'	6°1' 38.35"W	329651	298569
4	53°53' 13.02"N'	6°2' 54.22"W	328372	294812
5	53°53' 16.71"N'	6°5' 25.07"W	325615	294852
6	53°55' 20.15"N'	6°6' 30.24"W	324323	298636

**Table 2: Limit Proposed Lease Area, with start and end points of proposed cable routes to shore License area, courtesy of Aqua-fact Ltd**

## 2.0 THE PROPOSED DEVELOPMENT

The development proposes to erect a series of wind turbines in the north-west Irish Sea in a hexagonal-shaped grid pattern. The turbine locations can be seen in Figure 2. Three possible cable routes extend to shore: one to the east to landfall at Castlebellingham, Co. Louth; one to the south-west to landfall at Dunany, Co. Louth; and one to the south to landfall at Bremore, Co. Dublin. These can also be seen in Figure 2. The landfall site at Castlebellingham is 6° 22' 15.7310"W, 53° 54' 34.6609" (307100E 296800N). An exact landfall has not been identified for the Dunany route. Due to uncertainties regarding the Bremore landfall location, an archaeological assessment was not conducted along this route. However, if the Bremore route proves workable in the future a full archaeological assessment will be carried out.

## 3.0 THE RECEIVING ENVIRONMENT

The primary archaeological record for the survey area is the Sites and Monuments Record (SMR) and the Historic Shipwreck Inventory compiled by the National Monuments Section at the Department of the Environment, Heritage and Local Government (DoEHLG). The SMR presents a comprehensive record of known archaeological sites on land, many of which have been included in the published Inventory of sites in Louth and Meath, published by the same department.<sup>1</sup> The extent to which the coastal zone retains known sites of archaeological interest is indicated on Figure 3, which shows the landscape and sea area between the Cooley Peninsula and the coastal strip running down to Bremore in the south. The coastal settlements of Dundalk, Blackrock, Dromiskin, Castlebellingham Annagassan, and Bettystown lie between these two points, as does the estuary of the River Boyne.

Counties Louth and Meath retain a rich coastal archaeological heritage (Figure 3). Whether looking out over Dundalk Bay from the Cooley peninsula, or positioned along the coastal strip on the lowlying estuarine areas that run south to Bremore, the variety of archaeology includes monuments and features from virtually all the primary phases of Ireland's cultural heritage. Figure 4 describes the existing archaeological features in the vicinity of Castlebellingham, where there is one option to receive the offshore cabling from the windfarm scheme. Known archaeological sites appear to be relatively absent on the coastal strip around Castlebellingham. The coastal focus

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<sup>1</sup> Michael Moore, *Archaeological Survey of County Meath* (Dublin, Stationary Office, 1987); Victor Buckley and David Sweetman, *Archaeological Survey of County Louth* (Dublin, Stationary Office, 1991).



occurs along the lower reaches of the River Glyde, which empties into Dundalk Bay to the south at Annagassan. It should not be assumed that the lack of apparent sites suggests a corresponding low archaeological potential. Confirmation of this comes in the charted presence of a shipwreck in the tidal mudflats offshore of Castlebellingham (Figure 5), which lies close to and south of the proposed cable route. At Dunany, which is selected as another option for cabling to come ashore, Figure 4 shows a complex of principally early medieval period sites (c. 50-1500 AD), as well as a mine.

The third option for cabling associated with the windfarm scheme to come ashore is at Bremore, Co. Dublin (Figure 6). The location is one of high archaeological potential. The landfall location is festooned with sites of former Neolithic period burial monuments, or megalithic tombs. The numbers of site indicates the presence of a former cemetery area. Several of the sites are recorded in the present-day sea cliffs after much of the fuller remains have fallen into the sea. This is an area of coastal erosion and archaeologists can expect to observe indications of former settlement in what is the seabed today, even if those remains will be significantly disturbed. Further up the coast, approximately 1.6km from Bremore and 1km offshore of Gormanston Beach, a dug-out canoe or prehistoric logboat was discovered during recent dredging activities in 2002.<sup>2</sup> This find underlines the possibility of archaeological recovery from marine contexts in the Bremore area today.

The nature of the interaction of such a maritime community with the sea can only be speculated before the mid-eighteenth century, because it was only after c. 1750 that a systematic record of ship-wrecking incidents was maintained for Irish coastal waters, and it is this record that forms the foundation of the Shipwreck Inventory at the DoEHLG. Appendix A lists the recorded wreckings between the Cooley Peninsula and Bremore. With some 294 reports of wrecking, it may be reported that the incidence of wrecking is high. The natural haven that Dundalk Bay would have provided to shipping during storms is clear enough, but these are also treacherous locations, especially during Easterly winds. In turn, the shallows which have formed as part of the estuarine muds especially within the North and South Bull areas outside Dundalk Harbour, hamper access by providing many opportunities for grounding vessels at low water.

The Shipwreck Inventory identifies a high incidence of wrecking, some of which extend out to sea, but does not indicate the presence of known wrecksites within the

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<sup>2</sup> Niall Brady, *Archaeological monitoring and excavation. Gas 2025 Irish Subsea Interconnector, Gormanston Landfall, 02E0467, 02E0948. Interim Report* The Archaeological Diving Company Ltd, November 2002.

footprint for the windfarm. This is echoed in Admiralty Chart 44 (Figure 4). The Chart shows a peppering of wrecks along the coast, as well as a series of wrecks further out to sea, but the footprint of the windfarm development area is clear of plotted wrecksites. One of the limitations of the Inventory is that it records the incidence of wrecking in relation to a known topographic feature, such as a headland or quayside, because this is the manner in which the record was taken by people stationed on land. It is far rarer to find specific coordinates for wrecking or indeed for the wreckage as lying on the seabed, especially if the search area is located at a remove from the shore. Such information is only acquired when fishermen report snags to their netting, or when systematic seabed survey has taken place that notes the positions of wrecksites. Appendix A includes twenty-six such wrecksites. None of the wrecks are located within the windfarm footprint. The closest sites are two vessels whose names are unknown. One of these two sites is located approximately c. 200m south of the proposed cable route to shore north of Castlebellingham (Figure 3). It is located on Admiralty Chart 44 in c. 1.2m of water in tidal mudflats (53°54' 15N 06°19' 00W, 310687E 296276N). The second site is located approximately 900m southeast of the proposed lease area, at ING 329140.91440E 294613.448342N. It is a previously unrecorded anomaly that was identified by the Irish National Seabed Survey (reference G-125). It represents a small feature, measuring c. 5m long, 2m wide and it stands c. 3m off the seabed, at a depth of c. 29m. To prove the point that potential remains for pre-1750 material to survive, attention is drawn to the discovery of a logboat, or dug-out canoe, just off the present beach at Gormanston, Co. Meath, and c. 1.6km north of the proposed landfall at Bremore. The vessel was discovered during archaeological monitoring of dredging works associated with the landfall of the Irish Subsea Gas Interconnector pipe in 2002. The next closest known wreck to the proposed development area is that of the *Topaz*, a 353-ton Glasgow steamer that struck Dunany Reef in 1893, and subsequently drifted into deeper water before sinking 4.5km off Dunany Point. The *Topaz* is 6.2km southwest of the windfarm area, and over 6km east of the Dunany cable route. She lies in c. 23m of water.

It is possible to conclude that while the windfarm scheme is located within a landscape and seascape that retains clear evidence for archaeological remains, there does not appear to be any such remains identified within the actual survey footprint for the development. Caution must however be exercised because of the nature of the archaeological evidence. The potential remains for additional development in the area to uncover new material, and a process of archaeological mitigation is required to ensure that this potential is resolved satisfactorily to all parties concerned.

## **4.0 GEOPHYSICAL DATA**

### **4.1 Sources Available**

The sources for assessment included:

- Baseline Multi-beam survey conducted by GSI Irish National Seabed Survey.
- Thermal rolls of side-scan sonar data acquired
- Digital copy of magnetometry data acquired
- Onboard survey apparatus, including: GeoAcoustics Dual Frequency Side-scan Sonar unit, and Geometrics G882 Marine Magnetometer

### **4.2 Nature of Record**

The data amounts to an intensive survey of the study area. The survey has provided overlap and the ability to view the same areas of seabed from different directions.

#### Survey Grid

The survey focused on the grid along which the turbines are to be deployed (Figure 5). The grid is divided into eight lines running NE/SW. These are crossed by eight lines running E/W. Three survey lines were recorded over each grid line corridor. The survey lines were conducted in a zig-zag pattern and line-spacing was at 50m intervals. The survey lines were numbered CL for the centre line and N50 and S50 for the lines to the north and south of it. Over the cable routes to shore, the line-spacing was either 30m or 25m depending on water depth. The survey lines were numbered in the same manner as in the license area. Cable routes were identified to Castletbellingham and to Dunany. While the cable route surveys stopped short of the shoreline due to shallow waters, the Castletbellingham cable route survey was terminated c. 3.5km short of the shoreline because of the extensive mudflats in the area.

#### Bathymetry Survey

The multi-beam data acquired by the Irish National Seabed Survey describes an area of shelving seabed from a highpoint of -12m and -14m in the northwest and western sectors that drops away gradually and consistently to depths of -32m and -33m in the east and southeast sectors of the larger License area (Figures 6-7). The topography echoes the presence of the Cooley mountains c. 5km to the northwest, and the more gently sloping landscape to the south.

### Side-scan Sonar Survey

The side-scan sonar survey reveals a seabed that is predominantly covered in sand and gravel. There are no significant areas of rock outcropping exposed, and the overriding characteristic is one of soft sediment mobility. Sand ripples and gravel ripples show through clearly (Figure 8). While rock is apparent in places it is not a ubiquitous feature. This picture is in keeping with expectations as the development area lies to the east of the shallow and sediment-rich Dundalk Bay.

The suggestion of archaeological anomalies within the data acquired is low. Appendix B describes fifteen instances of anomalies identified. The distribution of these anomalies is presented in Figure 9. The survey was comprehensive and it was possible to examine the same pieces of the seabed from different directions. Anomalies SS5 and SS15 represent separate images of the same features, as do SS7 and SS14 of a different location. In addition to what appears to be the occasional isolated rock or boulder (anomalies SS1-3, 8), there are seven instances of localized concentrations of cobbles or other possible snag points (SS5 [and 15], 6, 7 [and 12], 9, 10, 11, 13). Such snag-point locations are highlighted because they represent areas where material appears to have become entrapped. Entrapment can occur naturally, where lighter materials are deposited around a rock outcrop or boulder feature. Entrapment can also occur around debris associated with a shipwreck. Some level of qualification is possible to assess whether the snag is natural or manmade in origin, by cross-referencing the magnetometer data for the same location. In this case, there is one instance of correspondence, suggesting that SS13 is manmade in origin.

### Magnetometer Survey

The magnetometer survey was conducted simultaneously with the side-scan sonar survey. The details are summarized in Figures 10-11, which show mosaics of the magnetometer data collected in the Lease area and the along the Castlebellingham cable routes respectively. The data suggests that within the Lease area, magnetic anomalies are natural in origin. A pattern of linear irregularities or fluctuations is detectable, running NW-SE across the surveyed area. The data consistently shows ranges of lower values in these instances, while in the southwest corner the values are higher. The pattern suggests that the causative factors lie in modulations within the underlying geological structure, rather than for any manmade reason. Archaeological anomalies would typically represent intense localized fluctuations, and there is no indication of such within the Lease area.

There is a series of four localized high readings along the cable route to Castlebellingham (Figure 11). The fact that the survey corridor is narrow prevents an appreciation of the broader context to help determine the degree to which these features might be natural in origin. However, there does appear to be a correspondence with a side-scan sonar anomaly in one instance (Mag 1 and SS13). The positional overlap is not exact. Nevertheless, the correspondence would suggest that there is a ferrous metal component to this feature, which is sharply defined in its side-scan sonar images along one edge. It is possible therefore that this anomaly is manmade in origin and consequently that it retains archaeological potential. It is recommended that the cable route avoid impacting with this feature. It should be noted that while magnetometry detects ferrous metal, it is not suitable for detecting non-ferrous and non-metallic debris.

## 5.0 IMPACT OF DEVELOPMENT<sup>3</sup>

Side-scan sonar anomaly SS10 is located slightly to the east of the location for a proposed turbine site. It is recommended that turbines avoid being sited directly over any of the geophysical anomaly sites, to minimize potential impacts with archaeological features. In the event that avoidance is not possible, further assessment of the anomalies in advance of construction would be necessary, to qualify the archaeological potential of the anomaly(s), and to propose additional mitigations if necessary. Such qualification may require an underwater assessment.

It is proposed to construct the turbines ashore in pre-cast concrete caissons. The foundations will be floated to site and sunk onto location. No drilling, piling or dredging is to be necessary. In principal this onsite methodology suggests that there will be little direct impact on the seabed in terms of the turbine construction and placement. The Department of the Environment, Heritage and Local Government will however require a detailed technical specification that describes the proposed methodologies for placement and maintenance (i.e. anchor points, etc), in order to assess the possible impacts in greater detail and determine the appropriate archaeological mitigation strategy.<sup>4</sup>

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<sup>3</sup> Based on information supplied by Aqua-fact International Ltd.

<sup>4</sup> DoEHLG Underwater Archaeology Underwater Archaeology Unit, *pers. comm.* January 2007.



Cables will be laid using a subsea plough, with an expected corridor 3m in width. This process represents a direct impact on the seabed that should be archaeologically monitored in the event that such work impacts with a buried wrecksite. In the event that the Castlebellingham route emerges as the preferred cable route, it is recommended that any impact with anomaly SS13 is avoided, given the possibility that this anomaly retains archaeological potential. In the event that avoidance is not possible, further assessment of the anomalies in advance of construction would be necessary, to qualify the archaeological potential of the anomaly(s), and to propose additional mitigations if necessary. Such qualification may require an underwater assessment.

## **6.0 CONCLUSIONS**

The review of the known archaeological record and the geophysical data acquired indicates that the proposed development area shelves gradually seaward and retains a seabed that is predominantly covered in sand and gravel.

The data does not indicate the presence of known existing archaeological sites within the proposed development area or along the two cable-route options which have been surveyed. However, two known shipwreck sites are located outside and adjacent to the proposed works area and care should be exercised to ensure that all impacts associated with the scheme avoid both of these locations. The geophysical survey in turn has identified a series of anomalies, the majority of which are probably not archaeological in nature. However, with respect to anomaly SS13 on the Castlebellingham cable route, and also six other locations throughout the survey area of what appear to be boulder clusters or other 'snag points', care should be exercised to ensure that all impacts associated with the scheme avoid these locations, in the event that the locations prove to retain archaeologically significant material. In the event that avoidance is not possible, a series of additional measures would be required in advance to construction to clarify the nature of the anomaly(s) in archaeological terms.

## **7.0 RECOMMENDATIONS**

### **7.1 Pre-construction Measures**

SUB-TIDAL, INTER-TIDAL AND FIELD INSPECTION OF CABLE LANDFALL LOCATIONS is recommended in advance of development proceeding. This work

would commence with location-specific desktop study of the topographic files in the National Museum of Ireland, which may record small finds and artefacts from the locations, as well as a detailed study of any monuments in the vicinity, to provide a further chronological context. The desktop work would be followed by site inspections, which would seek to record the seabed and landscape in the immediate vicinity of the landfalls in terms of the archaeological potential, and to make recommendations for additional resolution within the limits of the development project as defined. Such fieldwork is licensed by the Department of the Environment, Heritage and Local Government (DoEHLG), and should be undertaken by a suitably qualified archaeologist who has proven experience in maritime archaeology. It is noted that the Castlebellingham cable route survey was terminated c. 3.5km from the shoreline due to tidal mudflats. There remains an extensive area beneath Low Water that has not been surveyed. Should this emerge as the preferred cable route, this outstanding sub-tidal portion should be assessed by archaeological diver inspection. Dive inspection would apply to those sub-tidal areas associated with the other cable route options where the geophysical survey has not been able to access. The client would need to ensure that the archaeological dive contractor holds the necessary commercial dive insurance for such operations.

ADDITIONAL MARINE GEOPHYSICAL SURVEY is recommended in advance of construction commencing. This work, which is licensed by the DoEHLG and must meet the standards required by that Department, would focus on the Bremore cable route. The Bremore cable route has not yet been surveyed because it emerged as a possibility only after the main survey work was completed. The results of the survey work would be interpreted by an experienced archaeologist recognized by the DoEHLG. Any anomalies located in the vicinity of the impact areas would need to be fully investigated, and may require diver-truthing to identify their nature and extent. Diver-truthing would be carried out by a team of experienced underwater archaeologists, under license from the DoEHLG. The client would need to ensure that the archaeological dive contractor holds the necessary commercial dive insurance for such operations.

THE UNNAMED WRECKSITE AT 31O687E 296276N should be avoided during works associated with the construction phase. Given the proximity of the proposed cable-lay to the recorded wrecksite location (c. 200m away), consideration should be given to confirming the wrecksite's exact location prior to construction works commencing, and establishing an exclusion zone of 50m from the visible perimeters of the wrecksite to ensure that works associated with the cable lay avoid any indirect impact with the site.

THE SIDE-SCAN SONAR ANOMALY SS13 AT 314135.27E 296525.93N should be avoided during works associated with the construction phase. Given the possibility that this anomaly retains a metallic signature it is likely that this feature is archaeological in nature. Consideration should be given to diverting the cable route around the site. If avoidance is not possible, an archaeological diver inspection is recommended in advance of construction to confirm the nature and extent of the anomaly and to make further recommendations in terms of the construction programme.

THE SIDE-SCAN SONAR ANOMALY SS10 appears to be located close to the proposed sites for turbine units. Care should be taken to avoid locating turbines directly above an anomaly, to prevent any impact with features of possible archaeological interest. If avoidance is not possible, an archaeological diver inspection is recommended in advance of construction to confirm the nature and extent of the anomaly(s) and to make further recommendations in terms of the construction programme.

## **7.2 Construction Phase Measures**

ARCHAEOLOGICAL MONITORING. Archaeological monitoring licensed to the DoEHLG is recommended during the cable-lay operations as the use of a subsea plough represents a direct impact on the seabed. In the event that archaeological features are encountered during the cable lay, it will be strongly advised that the cable route is diverted around the feature. If avoidance is not possible, additional archaeological work may be necessary to resolve the archaeological requirements.

The DoEHLG requires a detailed technical specification on the construction phase methodology for placement of the turbines on location before indicating the nature and extent of archaeological monitoring required.<sup>5</sup>

Should a programme of diver inspection be conducted in advance of construction commencing, care should be exercised to include any additional mitigation measures identified from that work.

## **7.3 Management Measures, Pre-Construction and Construction Phases**

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<sup>5</sup> DoEHLG Underwater Archaeology Underwater Archaeology Unit, *pers. comm.* January 2007.

**RETAINING AN ARCHAEOLOGIST/S.** An archaeologist experienced in maritime archaeology should be retained for the duration of the relevant works.

**THE TIME SCALE** for the pre-construction and construction phase works should be made available to the archaeologist, with information on where and when ground and seabed disturbances will take place.

**SUFFICIENT NOTICE.** It is essential for the developer to give sufficient notice to the archaeologist/s in advance of the pre-construction and construction phase works commencing. This will allow for prompt arrival on site to resolve further survey work, and to monitor ground and seabed disturbances. As often happens, intervals may occur during the construction phase. In this case, it is also necessary to inform the archaeologist/s as to when ground disturbance works will recommence.

**DISCOVERY OF ARCHAEOLOGICAL MATERIAL.** In the event of archaeological features or material being uncovered during the construction phase, it is crucial that any machine work cease in the immediate area to allow the archaeologist/s to inspect any such material.

**ARCHAEOLOGICAL MATERIAL.** Once the presence of archaeologically significant material is established, full archaeological recording of such material is recommended. If it is not possible for the construction works to avoid the material, full excavation would be recommended. The extent and duration of excavation would be a matter for discussion between the client and the licensing authorities.

**ARCHAEOLOGICAL TEAM.** It is recommended that the core of a suitable archaeological team / archaeological dive-team be on standby to deal with any such rescue excavation. This would be complimented in the event of a full excavation.

**SECURE SITE OFFICES** and facilities should be provided on or near those sites where excavation is required.

**BUOYING/FENCING** of any such areas would be necessary once discovered and during excavation.

**ADEQUATE FUNDS** to cover further survey, excavation, post-excavation analysis, and any testing or conservation work required should be made available.

**MACHINERY TRAFFIC** during construction must be restricted as to avoid any of the selected sites and their environs.

SPOIL should not be dumped on any of the selected sites or their environs.

**PLEASE NOTE: All of the above observations and conclusions are based on the archaeological desktop information and marine geophysical data supplied. Should any alteration occur, further assessment would be required.**

**PLEASE NOTE: Recommendations are subject to approval by the licensing authorities of the National Monuments Section in the Department of the Environment, Heritage and Local Government, and the National Museum of Ireland, and the related institutions in Northern Ireland.**

#### **ACKNOWLEDGEMENTS**

Thanks are extended to Padraic O hAodha of Imar Surveys Ltd, and to Caroline Roche of Aqua-fact International Ltd for their assistance with the geophysical data. I am also grateful to Karl Brady, DoEHLG, for bringing attention to the wrecksite data of the INSS.



## **8.0 APPENDIX A: LISTINGS OF THE KNOWN ARCHAEOLOGICAL RECORD, FROM THE MARINE SURVEY AREA AT ORIEL OFFSHORE WINDFARM**

### **8.1 National Museum of Ireland**

The records in the National Museum of Ireland have not been assessed as part of the present study as particular landfall locations have not been finalized.

### **8.2 Previous Licensed Excavation Work**

There is no record of previous licensed archaeological excavation work within the proposed licence area.

### 8.3 National Monuments Section at the Department of the Environment, Heritage and Local Government

#### Shipwreck Inventory

Name	Date	Location	Detail	References
<i>Adeline</i>	7/12/1830	Drogheda	This vessel, under Master Bunker, was bound for Liverpool from New Orleans when it was dismasted and wrecked. The crew and passengers were saved	
<i>Africa</i>	1864	in the Rock Hole between perches No. 7 and 8, Dundalk	Prussian brig, carrying a cargo of grain for the Dundalk Distillery, <b>went aground</b> in the bay. On December 21st, 1864, notice was served on the master to remove his vessel from the river as she was causing an obstruction to navigation. The owners asked for a new trial. In July 1865 it was decided that the damage to the ship was caused by it drifting from where it had been safely placed. This had been allowed to happen because of the negligence shown by the vessel's officers in allowing the anchor to foul in the bobstay.	Bourke, 1998, 45; De Courcy Ireland, 1983, 76; Hoey et al., 1987, 106-107
<i>Agnes</i>	9/12/1853	between Laytown and Gormanstown / ¼ mile out from high tide mark, Ben Head / Beer Head (sic. Ben Head) / off Ben Lean (sic. Ben Head) / Between Ben Head and Nannywater	46 ton brig of Whitehaven was en route from Whitehaven to Dublin / Cardiff with a cargo of iron ore. She encountered a SE force 9 wind with cloudy weather and went ashore.	
<i>Alexander</i>	12/11/1852	2 miles S. of Soldier's Pt./near Black Rock, Dundalk Bay	45 ton sloop was 21 years old and classed as Æ 1 by Lloyd's. She was <i>en route</i> from Troon to Dundalk with a cargo of coal for Carton & Sons. There were four men aboard and the master was Mooney. They encountered an ESE force 11 wind with thick and hazy conditions. Her chain cable was carried away in the gale and she <b>drifted ashore</b> . There was no lifeboat or rockets to help them and all those aboard were lost/survived. The estimated loss on the vessel was £100 and £25 on the cargo.	Bourke, 1998, 39, 46; CSP, 1852-1853, Vol. LXI, 184-185; CSP, 1852-1853, Vol. XCVIII, 7; CSP, 1857-1858, Vol. LII, 5
<i>Ally and Betty/Sally</i>	11/11 or	1½ miles S of Soldier's Point/Dundalk Bar/near	26 ton smack of Ardglass was 38 years old. She was <i>en route</i> from Belfast to Dublin, under Smyth, with three crew and a cargo of	Bourke, 1998, 44, 39; CSP, 1852-1853, Vol.

Name	Date	Location	Detail	References
<i>and Betty</i>	12/1852	Black Rock	'moulding and leather'. She encountered an ESE force 11 wind with thick and hazy conditions. Her mainboom was carried away, and she sprung a leak. She was then <b>driven ashore</b> with the loss of one life. The estimated loss on the vessel was £50 and £40 on the cargo.	LXI, 180-181; CSP, 1852-1853, Vol. XCVIII, 7; CSP 1857-1858, Vol. LII, 5; CSP, 1861, Vol. LVIII, 378; CSP, 1864, Vol. LV, 130
<i>Andromeda</i>	16/04/1877	near Dundalk Bar, close to the lighthouse	16 year-old wooden schooner, of London weighed 99 tons. She was owned by T. Barnsey of Goole, and the master was T. Earnshaw. She was <i>en route</i> from Garston to Dublin with five crew, two passengers (the master's wife and daughter) and a cargo of coal when she became stranded in an ESE force 9 gale along with the <i>Jane</i> . The lifeboat took off the four crew and the master's wife and daughter. The master took to the mast in the hope that the vessel would be re-floated. Eventually the coastguard took him off before the <b>vessel broke up and sank</b> . There was no loss of life.	Bourke, 1994, 9; CSP, 1877, Vol. LXXV, 113; De Courcy Ireland, 1983, 96; Hoey et al., 1987, 108-109
<i>Ann</i>	5/12/1786	near Dundalk	The <i>Ann</i> , captained by Swann, was on passage from Liverpool for Newry when she <b>went ashore</b> near Dundalk. The cargo was saved.	L.L. no. 1835, 5 December 1786
<i>Ann/Anne</i>	4/10/1852	1 mile north of Nannywater	20 ton smack was owned by Jane Comerford of Skerries. The master of the vessel was J. Thornton. She encountered an ESE force 8 with rain, whilst trawling in the bay, and ran on to the strand 'through stress of weather' and because the trawl had not been hauled up in time.	
<i>Ann and Mary</i>	26/07/1847	Drogheda	This sailing vessel had 'been in contact.'	
<i>Anna</i>	10/10/1884	Drogheda Bar	This 76 ton brig was en route from Ardrossan to Dublin with coal when she was wrecked.	
<i>Anne</i>	8/02/1861	Caragree rocks, Newhaven Point, near the tower at Balbriggan	This schooner went onto the rocks but the crew survived.	
<i>Anne McCloud</i>	1861	Dundalk Bay	After a violent storm this vessel was found in the bay <b>in about 12 fathoms of water</b> . She had been bound for Newry with a cargo of coal. Her master and owner Captain Darby and the three crew were lost.	Hoey et al., 1987, 106

Name	Date	Location	Detail	References
<i>Anthea</i>	WW1	Annagassan bridge, River Glyde	Fishing boat, owned by Mr. King of Annagassan, was <b>abandoned on the mill side of the bridge</b> after the fishing season.	Bourke, 1998, 46
<i>Apollo</i>	3/9/1813	South Bull Head, near Drogheda	This vessel, captained by Chesholm, was sailing from Liverpool to North America when she struck on the Head and filled with water.	
<i>Ardendee</i>	12/1895	Lurgangreen S. of Blackrock	629 ton Liverpool-owned iron barque was built in Whitehaven in 1876. She was <i>en route</i> to Falmouth from Rangoon with a cargo of rice when she <b>ran aground</b> . The crew were saved.	De Courcy Ireland, 1983, 123
<i>Arizona</i>	16/11/1901	west bank, Dundalk	Vessel was <i>en route</i> from Miramichi, New Brunswick to Dundalk with a cargo of timber for Jennings. Whilst being towed by a tug she <b>grounded</b> and could not get off despite the help of lighters.	Bourke, 1998, 46
<i>Atalanta/Atlanta</i>	25/11/1852	North Bull, Drogheda	This 41 ton smack of Belfast was 30 years old. She was en route from Belfast to Skerries, under M'Kie, with four crew and a cargo of salt. She encountered a SSE force 10 wind and 'thick weather.' She lost her sails and the main boom gave way due to the stress of weather. She was driven ashore with an estimated loss of £50 on the vessel and £8 on the cargo. Neither was insured	
<i>Belle Hill/Bell Hill</i>	26/02/1875	100 yards from the shore, Newhaven Point, near Balbriggan	500 ton iron barque of Liverpool, Official No. 29,998, was built in Seacombe in 1866 was en route from Liverpool to Valparaiso with 16 crew and a general cargo. The weather was thick and misty and it appears that the master was not aware of his true position. She struck about 800 yards from the shore. She was hurled on the rocks of New Haven Point, about 300 yards from the high water mark. Eventually the masts fell overboard and the ship began to break up rapidly. The ribs of the vessel remained visible in the sand until the 1950s.	
<i>Betsy/Betsey</i>	12/11/1852	Kilcove, near Drogheda	This 140 ton brig of Maryport was 60 years old and classed as Æ2 by Lloyd's. She was en route from Maryport to Dublin, under Russell, with four crewmen and a cargo of coal. She encountered an easterly force 10 wind with thick and rainy conditions. The loss of her sails and the bad weather caused her to be driven ashore. She subsequently lost a number of stays while trying 'to get her head off shore.' There was 'no means of saving life near.'	
<i>Betty</i>	12/10/1820	Drogheda coast	This vessel was en route from Preston when it was lost along with the crew.	

Name	Date	Location	Detail	References
<i>Blue Bell</i>	10/1870	between Whitehaven and Annagassen	78 ton schooner was <i>en route</i> from Annagassen to Whitehaven with a crew of four. It is supposed she foundered and became a <b>total loss</b> .	CSP, 1871, Vol. LXI, 43, 52
<i>Boucalais</i>	26 or 30/04/1859	near Dundalk	110 ton French lugger was <i>en route</i> from Bayonne to Belfast with a cargo of corn. She encountered a gale and <b>went ashore</b> . The crew survived.	Bourke, 1998, 46; De Courcy Ireland, 64
<i>Bower Hill</i>	Unknown	near Cardy Reef, Braymore Bay, north of Balbriggan (within 100 yards of <i>Young Englander</i> )	Total wreck.	
<i>Boyne</i>	9/05/1832	South Bull, Drogheda	This vessel was en route from Ardrossan to Drogheda under Capt. Hudson. The crew were saved along with some materials from the vessel.	
<i>Brian Boru</i>	15/11/1847	Near Drogheda	This steam vessel had been 'in contact near Drogheda.'	
<i>Bridges</i>	8/4/1858	Ben Head	vessel of Fife was en route from Dundalk to Liverpool when she became a wreck in a strong wind.	
<i>Brothers</i>	14/04/1879	off Dundalk	15 year-old vessel of Greenock was either a 135 ton wooden brigantine or a 220 ton collier. She was built in Prince Edward Is. and her Official No. was 50,946. Her owner was T. Stewart of Lamlash and the master was P. Mailey/Melia. She was <i>en route</i> from Ardrossan to Dundalk with four crew and 210 tons of coal for a Mr. Oakes. She sprang a leak and as the water gained on the pumps the crew abandoned the vessel and saw her <b>founder</b> . The vessel was laid up for some months and despite the moderate weather, her seams are supposed to have opened and she became a total wreck. It was thought that a defective hull was the cause of the loss.	Bourke, 1998, 46; CSP, 1880, Vol. LXVI, 83, 162-163; De Courcy Ireland, 1983, 101
<i>Captain Cook</i>	18/02/1899	Clogher Head	Iron steam ship of Dublin weighed 137 tons. She was 28 years old and classed by Lloyd's as '≅ 100 A1'. The date of her last survey was January 1899. The maser was A. Kerr and the owner was G. Webster of Glasgow. The vessel was <i>en route</i> from Troon to Drogheda with 10 crew and a cargo of coal when she became <b>stranded</b> in a W force 1.	CSP, 1900, Vol. LXXVII, 145
<i>Captain</i>	1901	Clogher Head	Vessel was carrying a cargo of coal when it <b>went ashore</b> .	Garry (ed.), 2000, 196



Name	Date	Location	Detail	References
<i>Cook</i>				
<i>Canada</i>	4/12/1868	1 mile from Bettystown	281 ton barque was en route from Liverpool to West Africa with a general cargo when she was wrecked in a SE force 8 wind.	
<i>Castor</i>	26/01/1832	Drogheda/ Dundalk	Brig of Workington was carrying a cargo of deals, under the command of McGelton of Dundalk, when <b>lost</b> .	Bourke, 2000, 25; Freeman's Journal 1832, Drogheda Journal
<i>Catherine</i>	23/05/1855	Soldiers Point, Dundalk	Vessel of Dundalk, carrying a cargo of coal, became <b>stranded</b> on 'Rock Perch' as a result of 'the low tides.'	Bourke, 1998, 41; CSP, 1857-1858, Vol LII, 8
<i>Charlotte</i>	27/12/1803	Termonfeckin River	Vessel was <i>en route</i> from Ayr to Glasgow, under Wilson, when she became <b>stranded</b> .	Bourke, 1998, 45; L.L. no. 4414, 27 December 1803
<i>Charlotte</i>	3/11/1835	Near Drogheda	en route from Glasgow to Liverpool when wrecked.	
<i>Chatham</i>	12/12/1853	Drogheda Bar	This 913 ton ship of London was en route from Liverpool to Savannah with 20 crew and a cargo of salt. She encountered a SE force 10 wind with hazy weather, which caused her to go to pieces. Eighteen lives were lost. The later inquiry blamed the incident on the drunkenness of the master. The estimated loss on the vessel was £5,200, which was insured for £5,000 at Liverpool. The estimated loss on the cargo was £500. At a meeting in Drogheda in January, 1854, a resolution was unanimously passed, recommending the erection of a lighthouse on the Rock-a-Bill.	
<i>Cocker</i>	19/10/1881	½ mile NW of Dunany Harbour	38 year-old wooden schooner of Whitehaven weighed 53 tons. She was owned by E. Jones of Dunany and the master was T. Hanratty. She was <i>en route</i> from Whitehaven to Dunany with three crew and a cargo of coal. She became stranded and was <b>totally wrecked</b> in a SE force 9 gale.	CSP, 1883, Vol. LXIII, 108
<i>Countess Roden</i>	26/12/1836	Block House Island	200 L. smack was <b>lost</b> but the crew survived.	CSP, 1857, Vol. XIV, 259
<i>County of Lancaster, Wk No. 00910162</i>	unkown	53 30 43N, 005 57 17W	This vessel had a length of 98 ft. and a beam of 16 ft. She was carrying a cargo of coal. In 14/7/83 the wreck was found to lie in a general depth of 32m. She was orientated NNW / SSE and was intact and upright. In 1985 fishermen thought that the wreck was a submarine. In 1990 the wreck was found to be a small coaster. The vessel was identified when	

Name	Date	Location	Detail	References
			the bell was recovered.	
<i>Cullist</i> , Wreck No. 009100982	11/02/1918	53° 48 00N 05° 51 00W	1,030 ton (gross) ship was commissioned as a decoy ship in/03/1917. She was <b>torpedoed</b> by a submarine. A survivor gave the above position in 1918. The wreck was searched for twice in 1976 but nothing was found.	Admiralty Wreck Data 1996
<i>Cumberland</i>	unknown	off Annagassan	135 ton collier was <b>lost</b> in a gale.	Bourke, 1998, 46
<i>Cumberland</i>	14/10/1891	Annagassan Beach	35 year-old, 64/65 ton schooner was built in 1856. It was owned by P. Hanratty, Adamston, Co. Louth, and registered in Drogheda. It was <b>moored when it was wrecked</b> in a SW force 7 wind.	Bourke, 1994, 10; CSP, 1893-1894, Vol. LXXX, 123; De Courcy Ireland, 1983, 113
<i>Daggry</i>	11/04/1899	Dundalk Harbour	Wooden barquentine of Norway weighed 361 tons and was 44 years old. The master was O. J. Petersen and the owner was W. Augensen of Frederickstadt, Norway. The vessel was <i>en route</i> from Frederickstadt to Dundalk with nine crew and a cargo of timber. She became stranded in a NNW force 6 and was a <b>total loss</b> .	CSP, 1900, Vol. LXXVII, 181
<i>Dalila</i>	1865	off Dundalk	Schooner of Nantes became <b>stranded and broke up</b> . The seven crew were saved by the Blackrock lifeboat.	De Courcy Ireland, 1983, 81
<i>Dart</i>	8/01/1848	Drogheda Bay	88 ton vessel of Drogheda was en route from Glasgow to Drogheda when she sank 'after contact'.	
<i>Day Star</i>	5/02/1887	end of the jetty at Dundalk	Vessel was lost and been broken up by a Mr. Oakes.	Bourke, 1998, 46
<i>Delight</i>	5/12/1877	North Bull, north of Drogheda Bar	111 year-old wooden brigantine of Whitehaven weighed 119 tons. The owner was R. Graves of Workington and the master was J. Graham. She was en route from Workington to Dublin with four crew and a cargo of coal. She became stranded in a SE force 6 and was totally wrecked.	
<i>Diligent</i>	14/08/1829	Dundalk	Collier brig was <b>wrecked</b> in a gale.	Bourke, 1998, 43; De Courcy Ireland, 1983, 42
<i>Dolores</i>	12/12/1853	north side of Drogheda Bar / North Bull	85 ton schooner of Bilboa was en route from Bilboa to Liverpool with nine crew and a cargo of flour. She encountered an ESE force 10 wind with cloudy weather and ran ashore and became a wreck.	

Name	Date	Location	Detail	References
<i>Duke of Wellington</i>	9 or 13/02/1851	Knockingar, on the beach at Gormanstown, 2 miles N of railway station / near Gormanstown Castle	This 70 ton coal brigantine / brig was carrying coals when driven ashore in an E force 10 and became a total wreck.	
<i>Druid</i>	16/04/1852	Termonfeckin Strand	55 ton schooner of Aberystwyth was seventeen years old. The owner and master was Robert Neweell of Aberystwyth. She was <i>en route</i> from Liverpool to Drogheda with rock salt when she encountered an ESE force 7 wind with thick weather and a heavy swell. Due to the weather conditions 'the master overran his distance, and finding himself too close in, attempted to stay, but <b>struck</b> in the act of staying on.' The cargo was discharged and some of it was landed. Estimated loss on the vessel was £50. Estimated loss on the cargo was £8.	Bourke, 1998, 38; CSP, 1852-1853, Vol. LXI, 64-65; CSP, 1857-1858, Vol. LII, 5
<i>Duddon</i>	10/1883	South Bull, opposite Dundalk Lighthouse	Vessel <b>broke up</b> . The Giles's Quay lifeboat assisted the crew.	De Courcy Ireland, 1983, 109
<i>Duke of York</i>	28/12/1810	Near Drogheda	vessel of Whitehaven was under the command of Tomlinson when she was lost.	
<i>Duke of Wellington</i>	02 or 07/1861	Near Drogheda	32 ft. in length, weighed 59 tons and was carrying a cargo of coal. It was registered in Dundalk on the 28th of May 1857. Edward Finegan / Duffy of Dundalk was the owner. Registration was cancelled on the 30th of May 1862 after notification was given by Mr Joseph Farrell, that the vessel had been lost near Drogheda in July 1861.	
<i>Dunavil Forth</i> (Possibly), Wreck No. 009101135	unknown	53° 58 50N 05° 44 23W	Wreck was located in 1976. The least depth by echo-sounder was 45m in a general depth of 51m. The wreck lies in a soft grey mud with no scour marks. In 1984 the wreck was examined and found to lie in a general depth of 52m (least depth 44.2m). She was 29m long and had a beam of 8m and was mainly intact, orientated 038°/218°. There was a further anomaly c. 200m from the main body of the wreck, on a bearing of 260°. This could be wreck-related debris or just a rock.	Admiralty Wreck Data 1996
<i>Eagle</i>	10/07/1837	off the quay at Dundalk	Vessel had travelled from Ayr.	Bourke, 2000, 25
<i>Eagle</i>	8/11/1877	1/2 mile N of Laytown Coastguard Station	25 year-old wooden smack of Arklow weighed 12 tons. The owner and master was J. Kavanagh of Arklow. She was out fishing from Balbriggan, in ballast, with seven crew aboard. She was stranded in a SSW force 6 wind and was totally wrecked.	

Name	Date	Location	Detail	References
<i>Earl Spencer/Earl Spenser</i>	17/11/1852	Drogheda Bar	57 ton schooner was en route from Liverpool to Dublin with a cargo of coals and three crew when she became a total loss in an E force 10 wind.	
<i>Elizabeth</i>	26/01/1768	Dundalk	The <i>Elizabeth</i> , captained by Pool, was sailing from Liverpool to Waterford and Jamaica when she parted from her anchors and cables and <b>went ashore</b> . It was hoped at the time that the vessel could be got off.	L.L. no. 3341, 26 January 1768
<i>Eliza Knightly</i>	20/11/1830	Drogheda	en route to Drogheda from Liverpool, under a Captain Roggan, when she was driven ashore during a SSE gale.	
<i>Ellen and Mary</i>	21/11/1898	Cardy Rocks, Balbriggan	This wooden cutter of Dublin was 11 years old and weighed 50 tons. The master was W. Byrne and the owner was M. Dalton of Ringsend, Dublin. The vessel was engaged in fishing off Dublin with four crew. She was in ballast when she became stranded in a NNE force 4.	
<i>Emilie</i>	1834	Dundalk Bay	24 year-old vessel of Newry and Strangford weighed 63 tons and classed as E1 when she was <b>lost</b> .	Bourke, 1998, 44; CSP, 1836, Vol. XVII, 377
<i>Empire of Peace</i>	23/10/1881	c. 1 mile N of Annagassan Harbour/Dunany Point	22 year-old wooden ship/barque of Liverpool weighed 1,493 tons. She was owned by the Merchants' Trading Co. Ltd. of Liverpool and the master was A. Sandison. She was <i>en route</i> from Liverpool to New Orleans with 22 crew and a general cargo when she became <b>stranded and totally wrecked</b> in a SE force 10 gale. The crew took to their own boat and made the shore safely.	Bourke, 1994, 7; CSP, 1883, Vol. LXIII, 109; De Courcy Ireland, 1983, 105
<i>Endeavour</i>	9/02/1809	Drogheda	This vessel was en route from Waterford to Liverpool, under Bell, when she was lost.	
<i>Endeavour</i>	28/10/1856	Drogheda	vessel of Drogheda was en route from Drogheda to Ayr when she burned.	
<i>Endeavour</i>	8/04/1858	Cooley Mount, Dundalk	50 ton sloop of Amiwich was 8 years old. She was <i>en route</i> from Dundalk to Bangor with a cargo of slates when she became stranded in an E by S force 10 wind and was <b>partially wrecked</b> . All three men aboard were lost.	Bourke, 1994, 11; Bourke, 1998, 45; CSP, 1857-1858, Vol LII, 10; CSP, 1859, Vol. XXV, 18; CSP, 1861, Vol. LVIII, 36; CSP, 1864, Vol. LV, 130
<i>Englishman</i>	23/12/1869	South Bull, Boyne	Brig of Workington <b>grounded</b> . The vessel's sternpost fractured and she	Bourke, 1994, 10; De

Name	Date	Location	Detail	References
	or 03/1870	Estuary	filled with water very quickly. The five crew were rescued by the lifeboat.	Courcy Ireland, 1983, 86
<i>Entered Apprentice</i>	21/11/1881	1 mile SW of Dunany Point	17-year old unregistered wooden smack weighed 4 tons. The owner was G. Percival of Balbriggan and the master was P. Walsh. She was out fishing from Balbriggan, in ballast, with three crew when she <b>foundered</b> in a SW force 10 gale. All lives were lost.	CSP, 1883, Vol. LXIII, 91
<i>Erin</i>	24/12/1895 or 18/01 1896	Mitchelstown/ Dunany Point	33 year-old single-decked, double-masted wooden schooner from Wexford weighed 70/89 tons. Built in 1862, the <i>Erin</i> was <i>en route</i> from Gloucester to Dublin, under Master J. Whelan, with four crew and a cargo of bricks, retorts and clay, when it became <b>stranded</b> in a SE force 11 wind, and became a total loss. Registration was cancelled on 18/01/1896 on word that the vessel had been totally wrecked.	Bourke, 1994, 10; CSP, 1897, Vol. LXXVIII, 129; Irish National Archive, Custom and Excise Records - Custom House Wexford, Register of Ships 1882 - 1976.
<i>Esther and Mary</i>	9/05/1878	Near Gormanston railway station	This 34 year-old wooden schooner of Cardigan weighed 51 tons. She was classed by Lloyds as 'A1, Red, S.S. 72, 8 years, 5.76'. The owner was J. Philips of Cardigan and the master was E. Davies. She was en route from Bangor to Dundalk with two crew and a cargo of slates. She became stranded in an E force 8 gale and was totally wrecked.	
<i>Europe</i>	18/02/1766	Bremore	This snow was carrying coal from Workington when wrecked.	
<i>Fair Trader</i>	5/07/1847	Boyne area	steam vessel had been 'in contact in the Boyne.	
<i>Fairy Queen</i>	19/12/1874	Dundalk Bay	Following the sinking of this vessel, the masts were still visible above water.	Bourke, 1998, 46
<i>Fame</i>	27/12/1803	Near Drogheda	vessel of Guernsey was en route from Waterford to Liverpool, under Captain Yeates / Thompson, when she was stranded and lost.	
<i>Fame</i>	6/02/1826	Drogheda	This schooner went ashore.	
<i>Fanny</i>	1/02/1803	Near Drogheda	This vessel was en route from Irvine to Ireland, under Crawford, when she went ashore.	
<i>Fanny Bailey</i>	19, 26 or 28/01/1879	Dundalk Bar/ lighthouse at Dundalk	22 year-old wooden brigantine or brig weighed 138 tons. She was <i>en route</i> from Troon to Dundalk with five crew and a 220-ton cargo of coal and iron. She arrived behind the tide and ran aground on the bar in a severe SE force 7 gale. Completely <b>broken up</b> .	Bourke, 1994, 9; Bourke, 1998, 46; CSP, 1880, Vol. LXVI, 105; De Courcy Ireland, 1983, 100-101; Hoey et al., 1987, 110-111



Name	Date	Location	Detail	References
<i>Favorite</i>	24/12/1848	near Dundalk	Vessel was <i>en route</i> from London to Newry when she was <b>lost</b> .	CSP, 1852-1853, Vol. XCVIII, 2
<i>Frances and Mary / Frances Mary</i>	22/08/1848	Drogheda Bar	46 year-old wooden brigantine / brig of Drogheda weighed 84 tons. P. Byrne of Drogheda was the owner and master. She was en route from Ayr to Drogheda with four crew and a cargo of coal. She became stranded in a SE force 5 wind and was totally wrecked.	
<i>Fidelity</i>	25, 26 or 28/10/1852	Clogher Head	152 ton brig of Dublin was 17 years old. She was <i>en route</i> from Troon to Dublin, under Monan, with eight crew and a cargo of coal. She encountered a SE wind with thick conditions and was <b>driven ashore</b> in a violent gale. The coastguard rescued the crew.	Bourke, 1994, 7; Bourke, 1998, 39; CSP, 1852-1853, Vol. XCVIII, 6; CSP, 1852-1853, Vol. LXI, 156-157; CSP, 1857-1858, Vol. LII, 5; De Courcy Ireland, 1983, 52; Garry (ed.), 2000, 49
<i>Foam</i>	11/08/1911	Off Bettystown	wooden sloop from Drogheda weighed 2 tons. It was moored off Bettystown, Co Meath, when it became stranded, resulting in its total loss.	
<i>Fortune</i>	11/11/1773	Dundalk Bay	Vessel was <i>en route</i> from Glasgow to Dublin, under Bolton, when she was <b>driven ashore</b> . It was feared she would be lost.	Bourke, 1998, 43; L.L. no. 487, 23 November 1773
<i>Frances and Ann</i>	11 or 12/10/1824	Dundalk	Vessel was sailing from Liverpool to Strangford, under Quail, when it was <b>driven ashore</b> and filled with water. The crew were saved.	Bourke, 1998, 44; L.L. no. 5951, 15 October 1824
<i>Frederick</i>	21/08 or 13/09/ 1861	Dundalk Bar	Vessel was carrying a cargo of timber for Williamsons when it was <b>driven onto the bar</b> . The lifeboat rescued the 21 people aboard. On the 13 <sup>th</sup> September the <i>Frederick</i> broke up in squally weather.	Bourke, 1998, 47; De Courcy Ireland, 1983, 71
<i>Friends</i>	30/12/1803	between Dundalk and Drogheda	Vessel of Saltcoats was under the command of Harvey when she became <b>stranded</b> .	L.L. no. 4415, 30 December 1803
<i>Gazelle</i>	9/02/1861	between Clogher Head and the mouth of the Boyne	10 year-old schooner weighed 51 tons. She was carrying coal when she <b>foundered</b> in an ENE force 12 wind and was a total loss. The four crew and one passenger aboard were lost.	CSP, 1862, Vol. LIV, 14, 23
<i>Gebrude</i>	6/04/1858	Black Rock, near	Galliot of Eckster, Holland, was <b>wrecked</b> . The cargo was salvaged and	Bourke, 1998, 42, 47; De

Name	Date	Location	Detail	References
<i>Zelling/Gebroeder/Gebroeder Zelling</i>		Dundalk	was sold at the German consulate at Dundalk.	Courcy Ireland, 1983, 62
<i>Georgina White</i>	30/03/1850	Annagassan	Glasgow schooner was <i>en route</i> to Opporto when she was <b>wrecked</b> .	Bourke, 1994, 8
<i>Gleanor</i>	5/07/1847	Boyne area	Sailing vessel had been 'in contact in the Boyne.	
<i>Glenroder</i>	6/04/1858	Blackrocks, Dundalk	Vessel of Zelling Eckser, <i>en route</i> from Nantes to Douglas, became <b>stranded</b> with an estimated loss of 1,200 L.	CSP, 1857-1858, Vol. LII, 4
<i>Goldman</i>	around 1862	Dundalk Bar	Vessel was <b>wrecked</b> .	Bourke, 1998, 47
<i>Grace</i>	22/02/1858	Dundalk	Vessel of Harringdon became <b>stranded</b> .	Bourke, 1998, 42
<i>Guess</i>	c. 9/02/1861	Annagassan	62 ton vessel was <b>wrecked</b> during a gale. The crew were rescued by local fishermen.	Bourke, 1998, 47; De Courcy Ireland, 1983, 70
<i>Happy Return</i>	16/09/1794 or 09/1805	Near Drogheda	vessel was en route from Liverpool to Drogheda, under Griffith, when she was stranded.	
<i>Harmony</i>	13/12/1853	North Bull, Drogheda	Went ashore.	
<i>Harriet McBeath</i>	28/10/1875	Salterstown, Dundalk Bay	358.37 ton, barque-rigged, wooden vessel of St. John's was built in that port in 1864. Classed by Lloyd's as 'cont., A1, 4.72', (i.e., from/04/1872), and her Official No. was 48,225. She was <i>en route</i> from Cameroon to Liverpool with fourteen crew, one passenger and a cargo of palm oil. On October 27th the ship was making water and it was decided to make for the Isle of Man. Carlingford lights were mistaken for the Bahama Light-vessel and the vessel <b>went ashore</b> . It was nearly low water when the vessel stranded and both anchors were let go to prevent her from driving inshore, but as the tide flowed she surged further upon the rock. The vessel had <b>struck heavily</b> when first stranded and when the pump was sounded there was 5 ft. of water in the well.	CSP, 1876, Vol. LXVII, 190, 336; De Courcy Ireland, 1983, 93
<i>Harry Wood</i>	1930s	Off Laytown	This wreck caused an obstruction to shipping. The masts were removed by the Port Authorities.	
<i>Hebe</i>	25/01/1803	Dundalk Bay	Vessel was <i>en route</i> from Bristol to Dublin, under Hodson, when she <b>went ashore</b> and filled with water.	L.L. no. 4319, 25 January 1803

Name	Date	Location	Detail	References
<i>Hebe</i>	3/10/1833	at Dundalk	Vessel was <i>en route</i> from Dundalk to Irvine when she <b>foundered</b> .	CSP, 1836, Vol. XVII, 304
<i>Hector</i>	29/12/1815	Between Drogheda and Newry	This vessel was en route from Drogheda to Liverpool, under Captain Parks, when she became stranded.	
<i>Hope</i>	c. 9/02/1861	Annagassan	Drogheda-owned vessel was <b>wrecked</b> during a gale. The crew were rescued by local fishermen.	De Courcy Ireland, 1983, 70
<i>Hulda</i>	9/10/1875	Near entrance to River Nanny	3 year-old wooden barque of Norway weighed 394 tons. The owner was B. Steen of Laurvig and the master was C. Gundersen. She was en route from New York to Dundalk with 11 crew and a cargo of Indian corn. She became stranded in a force 7 ESE gale and was lost.	
<i>Ida</i>	27/02/1875	3 miles east of Soldiers Pt., Dundalk Bay	10 year-old wooden brigantine of Dundalk weighed 285 tons. She was <i>en route</i> from Troon to Dundalk with eight crew and a cargo of coal. She became <b>stranded</b> in an ESE gale, with the loss of one life.	Bourke, 1998, 47; CSP, 1875, Vol. LXX, 63
<i>Independence</i>	26/01/1856	¼ mile from Nanny water river, Drogheda	Vessel of Bath was en route from Liverpool to New Orleans when she got lost. According to the Mate's subsequent account they ran a WNW course and made 115 miles in 7 hours, while the log only gave 10 miles per hour. The ship was lost by error in time and reckoning as well as error in judgement. The crew was recovered by the steam ship <i>Faugh a Ballagh</i> . The estimated loss was £12,000 but it was expected that the vessel would be recovered.	
<i>Industry</i>	30/03/1781	Dundalk	Vessel was <i>en route</i> from London to Dundalk, under Capt. Gordon, when she <b>ran onto a sandbank and was lost</b> .	Bourke, 1998, 45
<i>Isabella</i>	3/03/1837	Clogher Head	Sloop of Liverpool was <b>wrecked</b> while bound for Dundalk.	Bourke, 1998, 43; Garry (ed.), 2000, 48
<i>Isabella</i>	6/09/1851	Drogheda	en route from Liverpool to Drogheda when it went ashore south of Drogheda Bar. It 'had to discharge about twenty tons; slightly damaged.' The master was Meeghan.	
<i>Isca</i>	14/12/1810	Dundalk Bay	Vessel was <i>en route</i> from Whitehaven, under King, when she was <b>stranded</b> in Dundalk Bay.	L.L. no. 4523, 28 December 1810
<i>Isle of Arran</i>	05/1916	Termonfeckin Strand	313 ton Glasgow steamer <b>went ashore</b> . Eighteen people were rescued.	De Courcy Ireland, 1983, 140; Garry (ed.), 2000,

Name	Date	Location	Detail	References
				195
<i>James</i>	29/11/1837	Nutt and Louth Rock	Vessel, under a Captain Pattison, <b>sank en route</b> to Drogheda.	Bourke, 2000, 25
<i>James</i>	01/1873	Drogheda Bar	70 ton schooner of Carnarvon was built in 1844 and owned and captained by J. Jones. The vessel ran onto the bar in strong SE winds.	
<i>Jane</i>	30/01/1789	Dundalk Bay	<i>Jane</i> was sailing from Greenock to Dublin with a cargo of tobacco when she was <b>totally lost</b> . All the crew perished.	Bourke, 1998, 45; L. L. no. 2060, 30 January 1789
<i>Jane</i>	9/05/1839	Off Drogheda	vessel under Captain Clarke was wrecked.	
<i>Jane</i>	1 or 2/02/1841	Drogheda Bay	vessel of Portferry was en route from Troon to Dublin, under Master Clark / Clarke, when she was lost.	
<i>Jane</i>	16/04/1877	Dundalk Bar, 200 yards south of the lighthouse	62 year-old wooden schooner of Whitehaven weighed 114 tons. She was <b>stranded</b> in an ESE force 9 gale along with the <i>Andromeda</i> . A lifeboat rescued the crew. Although it was hoped to re-float the vessel, the storm did not abate and both vessels sank completely.	Bourke, 1994, 9; CSP, 1877, Vol. LXXV, 113; De Courcy Ireland, 1983, 96; Hoey et al., 1987, 108-109
<i>Jenny</i>	28/03/1876	Near Drogheda	en route from Dundalk to Liverpool, under Bannatine, when she was totally lost along with the crew.	
<i>Jessie</i>	2/06/1840	Entrance to Drogheda Harbour	en route from Dublin to Troon when wrecked.	
<i>Jessie</i>	2/11/1887	Clogher Head	17 year-old unregistered wooden lugger weighed 15 tons of Clogher Head. The vessel was moored at Clogher Head, in ballast, when it was <b>stranded and totally wrecked</b> in a S force 10 gale.	CSP, 1889, Vol. LXIX, 127
<i>Johanna</i>	c. 9/02/1861	Annagassan	Drogheda-owned vessel was <b>driven ashore</b> in a gale. Local fishermen rescued the crew.	Bourke, 1998, 47; De Courcy Ireland, 1983, 70
<i>John and Elizabeth</i>	c. 9/02/1861	Annagassan	Drogheda-owned vessel was <b>wrecked</b> during a gale. The crew were rescued by local fishermen.	De Courcy Ireland, 1983, 70
<i>John and Ellanor/John and Eleanor</i>	c. 9/02/1861	Annagassan	71 ton vessel was <b>wrecked</b> during a gale. Local fishermen rescued the crew.	Bourke, 1998, 47; De Courcy Ireland, 1983, 70
<i>Julia</i>	23/03/1866	Dundalk Bay	Liverpool barque was <i>en route</i> from Liverpool to Port-au-Prince, West	Bourke, 1998, 47; De

Name	Date	Location	Detail	References
	/1886		Indies when she encountered a gale and was <b>wrecked</b> . One of the crew was lost but the lifeboat rescued the others.	Courcy Ireland, 1983, 83
<i>Kate</i>	19/12/1853	Bettystown Strand, 1½ mile south of Drogheda Bar	69 ton schooner of Gloucester was en route from Gloucester to Dublin with a crew of six and a cargo of iron. She encountered a SE force 9 wind with hazy weather and became stranded due to the stress of weather.	
<i>Kenneth C</i>	11/1915	Fethis, NW side of Clogher Head	Three-masted tern schooner was <i>en route</i> from Nova Scotia, under Capt. Alfred Potter. She had unloaded a cargo of timber at Liverpool and was being towed out when she encountered a SE gale. She <b>struck a reef</b> near Clogher Head and received severe damage. She was <b>driven ashore and became stuck on the rocks</b> . The water was shallow enough for the crew to walk ashore but the vessel broke in two and soon went to pieces.	Bourke, 1998, 43; Garry (ed.), 2000, 43-44
<i>Keoka</i>	04.03.1875	Cranfield Bay (Briggs Reef)	of Maryport, coal, 97 net ton brigantine	CMA UU
<i>King of Prussia</i>	28/04/1812	Dundalk Bay	Vessel was <i>en route</i> from Liverpool to Newry, under Taylor, when she was <b>driven ashore</b> .	Bourke, 1994, 9; Bourke, 1998, 44; L.L no. 4663, 8/05/1812
<i>Lady Endergally</i>	1827	off Dundalk	35 ton vessel of Lancaster was 24 years-old. She was <i>en route</i> from Dundalk to Duddon when she was <b>lost</b> .	CSP, 1836, Vol. XVII, 327
<i>Lady Harriett</i>	13/11/1852	Drogheda	This vessel of Greystones was carrying a cargo of coal when she was lost.	
<i>Lady Huntley</i>	20/06/1852	South Bull, Dundalk (later Soldier's Point)	Schooner of Maryport <i>en route</i> to/from Swansea with coal when she <b>went ashore</b> . She filled with water as the sea washed over her. The cargo was discharged into boats and the crew was saved. The vessel <b>was got off on the 24th and brought to Soldier's Point where she was laid 'on the hard to have her bottom examined'</b> . She stayed on the shore, filling with water at every high tide.	Bourke, 1994, 11; Bourke, 1998, 39; CSP, 1852-1853, Vol. LXI, 86-87; CSP, 1852-1853, Vol. XCVIII, 6; CSP, 1857-1858, Vol. LII, 5
<i>Lance</i>	1/04/1850	'Termonteckie (sic. Termonfeekin) Beach', near Bar of Drogheda	73 ton brigantine of Dublin was 3½ years-old and was classified as 'A1' by Lloyd's. She was <i>en route</i> from Newport, S.W., to Liverpool with five crew and a cargo of iron rods. She encountered a SSE force 10 wind and foggy conditions and was <b>wrecked</b> 'from stress of weather'.	Bourke, 1998, 38; CSP, 1852, Vol. XLIX, 38-39; CSP, 1857-1858, Vol. LII, 4

Name	Date	Location	Detail	References
<i>Lark</i>	24/08/1822	between Workington and Dundalk	Vessel of Workington was <i>en route</i> from Dundalk to Liverpool, under Hodgson, when she <b>ran on shore</b> on Saturday night, having sprung a leak. Eighty-seven head of cattle and a large number of sheep were drowned.	L.L no. 5729, 30/08/1822
<i>Laurel</i>	6/12/1825	Spanish Battery, Dundalk	Vessel was under the command of Captain Plowright when she was <b>wrecked</b> .	Bourke, 1998, 44
<i>Leviathan</i>	29/12/1764	off Dundalk	Vessel, under Captain Grisdal, sprung a leak whilst at sea and subsequently <b>sank</b> .	Bourke, 2000, 25
<i>Lion</i>	End 09/1805	Near Drogheda	Stranded.	
<i>Liska</i>	3/01/1856	bank near Dundalk	Vessel of Dundalk, with its cargo of grain, lost sight of the lighthouse and <b>ran aground</b> . As a result the vessel was damaged.	Bourke, 1998, 41; CSP, 1857-1858, Vol. LII, 8
<i>London</i>	Near Drogheda	20/03/1847		
<i>Lord Nelson</i>	28/01/1848	Dundalk Bay	Vessel was <i>en route</i> from Liverpool to Africa when she was <b>lost</b> .	Bourke, 1994, 11; CSP, 1852-1853, Vol. XCVIII, 1
<i>Louisa Jane</i>	27/04/1892	Entrance to Drogheda Harbour	49 year-old, 78 ton wooden schooner was en route from Carrickfergus to Drogheda / Dublin, under the Master and owner J. Long of Drogheda, with a cargo of salt and three crew, when lost in a N force 5 wind.	
<i>Magdaline</i>	1828	Dundalk Quay	Dundalk based vessel was underway from that port when the boiler exploded as she was casting off from the quay. It was said that the boiler stays failed.	CSP, 1839, Vol. XLVII, 31
<i>Maglena</i>	15/09/1807	Near Drogheda	en route from Newry to Liverpool, under Hourine, when she went ashore.	
<i>Maid of Galloway / Maid of Galway</i>	30/03 or 31/05/1850	rocks north of Balbriggan Harbour	This paddle steamer burst her boilers off Holyhead and was driven across the Irish Sea and onto rocks. She 'parted abaft' of the paddle box.	
<i>Mail</i>	1859	Dundalk lighthouse	Screw steamer owned by Messrs. Malcomson sailed between the ports of Drogheda, Dundalk, Newry and Ardrossan and on this occasion was carrying a cargo of general merchandise and some coal. She was three	Bourke, 1994, 9; Hoey et al., 1987, 106



Name	Date	Location	Detail	References
			hours behind the time of high tide and somehow <b>got caught in the sand</b> near the lighthouse as she was entering the port of Dundalk. The captain and crew got ashore. The vessel was badly damaged before she could be re-floated so a tug and lighters were engaged to tow her from where she lay. In 1893 Captain Rigden, contractor for the removal of wrecks, and his brother, were reported to be preparing for the blowing up of the <i>Mail</i> as she was a hazard to navigation.	
<i>Man O War</i>	Unknown	Near Balbriggan	This wreck is locally known as 'Man O War'. It is mentioned in a June 1783 newspaper.	
<i>Manly/Manley</i>	27/09/1871	Mouth of the Boyne, Bettystown beach	53 year-old brig of Whitehaven weighed 165 tons. She was en route from Newport to Dublin with coal, when she was stranded and totally lost in SE gale force 8.	
<i>Margaret</i>	24 or 26/03/1810	off Dundalk	Vessel of Liverpool was <i>en route</i> from London to Newry, under Capt. Robert Bryan, when she was <b>wrecked and went to pieces</b> .	Bourke, 1994, 7; Bourke, 1998, 44; L.L no. 4445, 30/03/1810; Swan, 1970, 68
<i>Margaret</i>	1828	Drogheda Bay	vessel of Drogheda weighed 93 tons. She was 22 years old and classed as 'E1' when she was burned.	
<i>Margaret</i>	20/02/1843	off Clogher Head	Brig of Irvine was <i>en route</i> from Ardrossan to Dublin, under Patten, when she <b>foundered</b> . The master and two boys drowned.	CSP, 1843, Vol. IX, 49
<i>Maria</i>	16/05/1806	Lurgan Green, near Dundalk	Vessel was <i>en route</i> from Liverpool, under Gibson, when she became <b>stranded</b> .	Bourke, 1998, 44; L.L. no. 4053, 16/05/1806
<i>Maria</i>	1864	North Bull of the Boyne	Milford schooner was wrecked.	
<i>Maria Juliana</i>	18/02/1771	Clogher Head	Vessel was <i>en route</i> from Gottenburg to Dundalk, under Ohman, when she ' <b>ran on a parcel of rocks</b> ' in a thick fog. Most of the cargo was to be saved.	Bourke, 1998, 43; L L no. 202, 1/03/1771
<i>Martha Ann</i>	28.12.1889	Cranfield Point	Welsh owned, slates, 67 net ton schooner, SSW5, stranded	CMA UU
<i>Mary</i>	18/01/1803	Drogheda	vessel was en route from Dublin, under Capt. Dawson, when she was lost.	

Name	Date	Location	Detail	References
<i>Mary</i>	18/01 or 1/02/1803	Drogheda	vessel was en route from Dublin, under Wheatley, when she went ashore.	
<i>Mary</i>	21/11/1810	near Dundalk	Vessel of Carnarvon was under the command of Davis when she became <b>stranded</b> .	Bourke, 1998, 44; L L no. 4515, 30 November 1810.
<i>Mary</i>	8/02/1823	Dunany, near Ballanwal	Vessel of and for Whitehaven was <i>en route</i> from Dublin, under Mann, when she was <b>wrecked</b> . The crew survived.	L L no. 5777, 14 February 1823
<i>Mary</i>	5/04/1858	North Bull, Drogheda	vessel of Carlisle was stranded.	
<i>Mary</i>	14/04/1858	Drogheda Bar	vessel of Balbriggan was wrecked.	
<i>Mary</i>	24/03/1867	Drogheda Bar	schooner was en route from Runcorn to Dublin with a cargo of salt when she struck the wall at the bar.	
<i>Mary/Marys</i>	7/03/1877	Entrance to the Boyne	36 year-old wooden galliot / schooner of Liverpool weighed 53 tons. The owner and master was L. Martindale of Workington. She was en route from Workington / Maryport to Rostrevor, Co. Down with coal when she was stranded in an N by E force 9 gale.	
<i>Mary A Kersterer</i>	14/10/1881	Dundalk Bay	Vessel got into difficulties in the bay. Her masts were cut away and the deck cargo was thrown overboard in order to lighten her. It is thought that tugs towed her to the quay.	Bourke, 1998, 48
<i>Mary Ann</i>	14/03 or 05/1783	Dunany	Vessel of New York was <i>en route</i> to Liverpool with a cargo of rum, tobacco and slaves. She became <b>stranded on a beach</b> opposite the house of Robert Subthorpe. The crew mutinied and a large number of people tried to board the vessel. The captain and Mr. Subthorpe's armed servants acted in protecting the vessel and cargo.	Bourke, 1998, 44
<i>Mary Ann</i>	13/01/1904	Clogher Head Bay	Unregistered wooden lugsail was 20 years-old and weighed 2 tons. She was working out of Clogherhead, fishing, with seven crew. She was in ballast when she <b>foundered</b> in a WSW to W force 7, and became a total loss.	CSP, 1905, Vol. LXXI, 113
<i>Mary Anne</i>	9/02/1861	Balscadden	This Belfast vessel lost her rudder on the Ravens (Rowan Rocks?), off Ireland's Eye. She was driven ashore, bottom up, at Balscadden	
<i>Mary of Liverpool</i>	1877	north of Baltray	Vessel was carrying a cargo of guiana when it <b>went ashore</b> .	Garry (ed.), 2000, 195

Name	Date	Location	Detail	References
<i>Mary Stoddart</i>	7 or 9/04/1858	Dundalk Lighthouse	466 ton barque of Grangemouth/ Scarborough was 16 years old. She was <i>en route</i> from Alexandria to Glasgow with a general cargo, when she was caught in a SE force 12 storm, which raged for five days. Captain Johnson returned the next day in the <i>Independence</i> and boarded the <i>Mary Stoddart</i> . The crew took to the rigging and lashed themselves to the masts. Meanwhile, the vessel dragged her anchor and <b>grounded</b> opposite Black Rock, with her deck several feet below high tide level. The estimated loss on the vessel was 3,550 L. In 1879 a monument was erected in memory of the rescue.	Bourke, 1994, 11; Bourke, 1998, 42; Hoey et al., 1987, 95-100; CSP, 1857-1858, Vol. LII, 10; CSP, 1859, Vol. XXV, 18; CSP, 1861, Vol. LVIII, 36; CSP, 1864, Vol. LV, 130; De Courcy Ireland, 1983, 61-62, 66
<i>Mary/05/</i>	21/01/1887	7 miles ESE of Dunany Point	2 year-old unregistered wooden yawl weighed 22 tons. The owner and master was P. Matthews of Annagassan. It was out fishing from Annagassan, in ballast, with five crewmen aboard when she was <b>wrecked</b> in a W force 7 gale.	CSP, 1888, Vol. XC, 107
<i>Maxim</i>	25/09/1867	2 miles N of the Boyne, near Termonfeckin	Brigantine of St. John, New Brunswick, was caught in a SE gale and was <b>driven onto the beach</b> . The Baltray lifeboat rescued eight crewmen.	Bourke, 1994, 8, 9
<i>Mayflower</i>	8/02/1809	Dundalk Bay	<i>En route</i> from Waterford to Liverpool, under Magi, when she became <b>stranded</b> .	Bourke, 1998, 44; L L no. 4329, 21 February 1809
<i>Minerva</i>	19/11/1799	Dundalk	Vessel was <i>en route</i> from Chester to Newry, under Soules when she was <b>lost</b> . The crew survived.	Bourke, 1998, 45; L L no. 4015, 19 November 1799
<i>Minerva</i>	6/01 or 1/04/1839	Clogher Head	Schooner was <i>en route</i> from Bangor to Dundalk when it <b>went ashore and was wrecked</b> .	Bourke, 1994, 7; Bourke, 2000, 25; De Courcy Ireland, 1983, 45; Garry (ed.), 2000, 49
<i>Molly</i>	23 or 24/11/1778	Mount Bagnall, north side of Dundalk Bay	Campbeltown vessel <i>en route</i> from Campbeltown to Dublin with dried fish. The vessel was <b>driven ashore and became a total loss</b> . Fifteen tons of salted ling were saved and stored by Mr. Halson of Mount Bagnall.	Bourke, 1998, 48; De Courcy Ireland, 1983, 27; <i>Newry Chronicle</i> , 23 Nov. 1778; Swan, 1970, 67
<i>Mona</i>	13/06/1855	South Bull, Drogheda	coal brig of Maryport became stranded on the South Bull.	
<i>Nancy</i>	2/12/1825	south side of Dundalk Bay/Annagassan	Vessel was <i>en route</i> from Whitehaven to Rush, under Burns, when she <b>stranded</b> . The crew and cargo of coal were saved.	Bourke, 1998, 44; Bourke, 2000, 26; L.L.

Name	Date	Location	Detail	References
				no. 6070, 6/12/1825
<i>Nancy</i>	15/11/1847	Near Drogheda	sailing vessel had been 'in contact'.	
<i>Nellie Wood</i> , Wreck No, 009101020	c. 1944	53° 52 38N, 05° 42 50W	75 foot trawler of Kilkeel, Co. Down was <b>scuttled</b> . The engine or winch/05/have been towed to Clogher Head where it broke from the net.	Admiralty Wreck Data 1996
<i>Nelson/William Nelson</i>	13/11/1874 or 1875	Dundalk Bar/Bay	10 year-old wooden brigantine of Dundalk weighed 177 ton. She was built in Prince Edward Is. and was classed by Lloyd's as 'cont.,/07/1873, 3 A1, 1.74'. Her Official No. was 51,922. She was <i>en route</i> from Irvine/Troon to Dundalk with a cargo of 318/400 tons of coal. There was one passenger and six crew aboard. Failing to get a pilot, the master navigated into the harbour and anchored in a dangerous berth. A heavy gale and sea arose and an hour before low water <b>the vessel struck</b> the ground. The vessel became a total wreck. The ship's bell was brought to De La Salle School in Castletown, Dundalk. An attempt was made to lift the vessel by a Mr. Dillon of Dublin, but it did not succeed.	Bourke, 1994, 9; Bourke, 1998, 46; CSP, 1876, Vol. LXVII, 81, 222, 400, 401; Hoey et al., 1987, 109-110
<i>Neptune</i>	27/10/1855	Entrance to Drogheda Bar	sloop of Dublin, with a cargo of whiting, struck the entrance of the bar in a heavy gale. The masts went over the side	
<i>New Active</i>	24/10/1800	Dundalk	Vessel <b>went ashore</b> behind the rocks at Dundalk.	Bourke, 1998, 43
<i>Night Watch</i>	8/02/1866 or 1888	Dundalk Bay (later Quay at Dundalk)	328 ton vessel measured L. 116 x B. 26 x D. 16 ft. As she entered the river she grounded close to No. 5 beacon on the east side of the channel. On 17th February she was freed by the tug and taken into port. The crew went ashore when she docked, leaving her unattended. During their absence a heavy wind forced her from her moorings. She swung out and round and came to rest against the quay, under the town sewer. She was eventually <b>taken out to sea and sunk</b> . The wreck remained on the slob until 1960s. A local builder bought the cargo.	Bourke, 1998, 48; De Courcy Ireland, 1983, 114; Hoey et al., 1987, 102-103
<i>Nightingale</i>	9/06/1767	North Rock, Dundalk	Vessel from Dundalk, under Master John Rice, was <i>en route</i> to Belfast with a cargo of oatmeal when <b>wrecked</b> .	Bourke, 2000, 25
<i>Northern Lights</i>	7/03/1908	near Dundalk	Schooner was carrying a cargo of coal for Mr. O'Neill when she <b>went ashore and was lost</b> . The crew survived.	Bourke, 1998, 45
<i>Osprey</i>	c. 25/01/1883	Cardy Rocks, near Balbriggan	25 year-old wooden cutter of Dublin weighed 37 tons. She was owned by J. Campbell of Ringsend and her master was J. Dalton. She was out	

Name	Date	Location	Detail	References
			fishing from Ringsend, in ballast, with four crew when she became stranded and totally wrecked.	
<i>Parkside</i>	15/02/1880	near Dunany Point	26 year-old wooden brigantine/brig of Whitehaven weighed 132 tons. She was classed by Lloyd's as "A1 cont. 72, 8 years" and had last been surveyed in November 1879. She was <i>en route</i> from Newport, Mon. to Dundalk with six crew and a cargo of coal. She became <b>stranded</b> in a SE force 8 gale and was <b>totally wrecked</b> .	Bourke, 1994, 10; CSP, 1881, Vol. LXXXII, 115
<i>Peggy</i>	25/12/1802	Dundalk Bar	Vessel was <i>en route</i> from Liverpool, under M'Callan, when she was <b>lost</b> .	Bourke, 1998, 45; L.L no. 4313, 4 January 1803
<i>Pembroke</i>	20/02/1833	Dunany Point	97 ton vessel was <i>en route</i> from Milford to Dundalk when she was <b>wrecked</b> . Nine lives were lost.	Bourke, 1994, 11; Bourke, 1998, 44; CSP, 1836, Vol. XVII, 300
<i>Pilot Queen</i>	11 or 15/01/1887	near 'Rocksbill', Clogher Head/3 miles N of Clogher Head/Rock Hole or Clogher Head	49 year-old wooden smack of Carnarvon weighed 25 tons. She was carrying a cargo of slates for Williamson's of Dundalk when she was caught in an S force 7 gale, became <b>stranded and was wrecked</b> .	Bourke, 1994, 9; Bourke, 1998, 48; CSP, 1888, Vol. XC, 134; De Courcy Ireland, 1983, 110; Hoey et al., 1987, 103
<i>Pontoloon</i>	26/07/1847	Drogheda	256 ton sailing vessel had 'been in contact'.	
<i>Pride (of Newry)</i>	15/04/1858	Blackrocks, Dundalk	Vessel of Newry, <i>en route</i> from Camolin to Irvine, became <b>stranded</b> with an estimated loss of 50 L.	Bourke, 1998, 42, 48; CSP, 1857-1858, Vol. LII, 10
<i>Prince George</i>	5/01/1847	Soldier's Point, Dundalk	Sailing barque was <b>on the shore and filled with water</b> . The remains (hull and materials) of the vessel were auctioned on 9/04/1847. Bourke, 2000, 26; CSP, 1851, Vol. LII, 2	
<i>Princess of Wales</i>	2/07 or 29/07/1873	<sup>3</sup> / <sub>4</sub> mile SSE of Dundalk Lighthouse/ on or near Dunany Reef	513/514/525 ton Glasgow barque was built in the U.S./Canada. Her Official No. was 46,178. She was <i>en route</i> from Liverpool/Glasgow to Baltimore, U.S., with 17 men and a general cargo, including £2,500 of iron railworks (340 tons), Guinness porter, Alsops ale, soda lime. A WNW course was steered from Point Lynas. The vessel was then hauled to the wind on a starboard tack, and in fifteen minutes she grounded in 17 ft. of water at low neap tide. An attempt to get her back into deep water with the sails failed. The port anchor was let go with 15 fathoms of chain but it did not hold. The second anchor was not let go.	Bourke, 1998, 46; CSP, 1875, Vol. LXX, 194; De Courcy Ireland, 1983, 91; Hoey et al., 1987, 107-108

Name	Date	Location	Detail	References
			The vessel drifted until 5 a.m. in the morning when a pilot boarded. Shortly after, the anchor cable parted and by 6 a.m. she was fast aground. The wind veered more easterly so the sails were set and the vessel forged ahead. In all probability she would have made port, but the tide was low by then and the barque <b>struck a bar</b> . Efforts were made to re-float the vessel but they failed. The masts were still visible in 1892, the same year the wreck was bought from the owners by Mr. Oakes who hoped to salvage some of the steel rails. He subsequently sold her to the Harbour Commissioners so that her mast might be used as a beacon - a tide gauge was attached in 1889. The vessel was blown up at a later stage.	
<i>Promenade</i>	prior to 12/1904	on the sands in Dundalk Bay	Vessel was <b>wrecked</b> during a storm.	Bourke, 1994, 9; Hoey et al., 1987, 104
<i>Ramsey</i>	1861	Dundalk Bay?	Vessel was <b>lost</b> in a terrible storm along with her crew of two local men.	Hoey et al., 1987, 106
<i>Raven</i>	20/11/1830	Drogheda	vessel captained by a Mr. Dale was en route from Bangor to Dundalk when wrecked.	
<i>Rebecca</i>	29/02/1760	between Drogheda and Portaferry	Vessel was <i>en route</i> from Dublin to Fyall, under Capt. Scott, when she <b>went ashore and was lost</b> .	Bourke, 1998, 43
<i>Regina</i>	1874	Clogherhead	Vessel was carrying a cargo of coal when it <b>grounded near Port (Oriel)</b> .	Garry (ed.), 2000, 195
<i>Richard Cobden / Richard Cobbleon</i>	4/03 or 04/1874	North Bull, Drogheda	barque of Liverpool was entering the Boyne when she was driven ashore outside the Bull.	
<i>Rob the Ranter</i>	8/10/1870	4 miles N of Clogher Head	29 year-old schooner weighed 66 tons. She was <i>en route</i> from Garston to Newry with coal when she was <b>stranded</b> in an E force 8 gale and became a <b>total wreck</b> . Two of three aboard were lost.	CSP, 1871, Vol. LXI, 40, 52
<i>Salus</i>	23/03/1855	Dundalk Bay	Brig, <i>en route</i> to Maryport became <b>stranded</b> .	Bourke, 1998, 41; CSP, 1857-1858, Vol LII, 8
<i>San Nicolo</i>	2/02/1853	reef off Dunany Point	378 ton brig of Gibraltar was <i>en route</i> from Liverpool to Gibraltar with 13 crew and a cargo of coal. She encountered a SW force 7 wind with squalls and rain. She became <b>stranded on the reef and was</b>	CSP, 1854, Vol. XLII, 12-13



Name	Date	Location	Detail	References
			<b>damaged.</b>	
<i>Sarah / Sarah of Runcorn / Sarah Ann</i>	1 or 5/02/1873	Black Rock, near Balbriggan	27 year-old Runcorn schooner weighed 67 tons. The owner was R. Jones and the master was J. Hughes. She was carrying coal from Garston / Widness to Bray when she ran aground and was wrecked during an ESE force 9 gale.	
<i>Sara and Loisa</i>	10/10/1820	Drogheda River	This vessel was en route from New Brunswick to Drogheda, under Mortimer when it went ashore.	
<i>Severn</i>	17/02/1809	Dundalk Bay	Vessel was <i>en route</i> from Cork to Liverpool when she was <b>lost</b> .	L.L no. 4328, 17 February 1809
<i>Sra dos Martigues</i>	8/09/1824	Dunany Point	Vessel was <i>en route</i> from St. Ubes to Dundalk, under Capt. Contente, when she <b>went ashore</b> .	Bourke, 1998, 44
<i>St. George</i>	8/02/1861	Ballynagerath Bay, 3 miles north of Balbriggan	This Drogheda schooner went ashore.	
<i>St Patrick</i>	19/09/1840	the mouth of the River Dee, ie Annagassan	Vessel, under a Captain Murray, was bound for Dundalk. It is reported to have ' <b>went to pieces</b> ' on 30 December.	Bourke, 2000, 25
<i>St. Peter</i>	11/01/1909	¼ mile E. of Dunany Point	Unregistered wooden fishing yawl of Drogheda was 7 years old and weighed 4 tons. She was <i>en route</i> to Clogher Head, in ballast, with five crew when she stranded and became a <b>total loss</b> .	CSP, 1910, Vol. LXXXI, 114.
<i>Sir William Stamer</i>	30/09/1855	off Drogheda	The <i>Irishman</i> was towing this vessel when she was grounded, subsequently the <i>Boyne</i> ran into her causing considerable damage.	
<i>Sirius</i>	2/02/1853	2 miles north of Balbriggan	This 236 ton brig of Liverpool was en route from Liverpool to Para with 11 crew and a general cargo. She encountered a SW force 4 wind with thick conditions and was wrecked.	
<i>Sisters</i>	11/01/1876 -7	about 1½ miles SSE of Drogheda Bar, Bettystown strand	8 year-old wooden barque of Sunderland weighed 354 tons. The owner was Mrs. M. Thompson of Sunderland and the master was W. Thompson. She was classed by Lloyds as '10 A1, 11.75'. She was en route from Baltimore to Drogheda with 11 crew and a cargo of Indian corn. She was stranded in an ESE force 7 gale and was totally wrecked.	
<i>Star of Erin</i>	13/06/1871	Dundalk Bay	Dundalk based fishing yawl weighed 2 tons. She left Black Rock, in ballast, to fish but she <b>capsized in a gale force 8 and was a partial loss</b> . Three of the five people aboard were lost.	CSP, 1872, Vol. LIII, 46, 56

Name	Date	Location	Detail	References
<i>Star of the Sea</i>	10/08/1887	near Clogher Head	13 year-old unregistered fishing yawl weighed 3 tons. She was anchored at Clogher Head, in ballast, with six crew aboard, when the fishing lugger, <i>Fondling of Drogheda</i> , <b>collided</b> with her in a NNW force 6 wind. She was <b>totally wrecked</b> but there was no loss of life.	CSP, 1889, Vol. LXIX, 146
<i>Success</i>	21/12/1819	Dundalk Bay	Vessel was <i>en route</i> from Whitehaven to Ireland, under Cringle, when she was <b>totally lost</b> .	Bourke, 1998, 44; L L no. 5449, 21 December 1819.
<i>Sunhill</i>	5/02/1913	1 mile SW of Dundalk Light house.	30 year-old wooden fishing lugger from Dundalk weighed 3 tons. It was <i>en route</i> to Dundalk from fishing grounds with three crew when it <b>foundered becoming a total loss</b> .	CSP, 1914, Vol. LXX, 88
<i>Swallow</i>	30/12/1803	near Dundalk	Vessel was <i>en route</i> from Lisbon to Greenock, under Blackler, when she <b>went ashore</b> . The crew survived.	Bourke, 1998, 45; L L no. 4415, 30 December 1803
<i>Swallow</i>	1/12/1825	near Rath, Drogheda	vessel of Bristol was carrying a cargo of tobacco, turpentine and palm oil. All crew were lost.	
<i>Swan</i>	6 or 16/04/1852	2 miles ENE of Drogheda Bar	30 ton smack of Barmouth was en route from Liverpool to Drogheda, with a cargo of 'small coal'. She encountered an ESE force 7 wind with hazy conditions when she sprung a leak on the Drogheda Bar, leaving her in a sinking state. The cargo shifted causing the vessel to capsize and founder.	
<i>Syren</i>	4/11/1865	Dundalk	Vessel was owned by Mr Hamlet of Balbriggan and was carrying 250 tons of coal. She became <b>stranded</b> .	Bourke, 1998, 48
<i>Tartar</i>	13/02/1880	Drogheda Bar	13 year-old unregistered wooden dandy weighed 30 tons. She was out fishing from Balbriggan, in ballast, with four crew aboard. She became <b>stranded and was lost</b> in a SE force 10 gale, along with all those aboard.	CSP, 1881, Vol. LXXXII, 114
<i>The Argus</i>	1867	Clogherhead	Vessel was carrying a cargo of coal when it <b>went ashore</b> at Casey's on the Head. All those aboard were saved. The vessel later broke up.	Garry (ed.), 2000, 195
<i>Thetis</i>	22/11/1814	North Bull, near Drogheda	Vessel of and for Newry was <i>en route</i> from Liverpool, under Morgan, with coals. She became <b>stranded</b> and seven crew were lost.	L L no. 4927, December 1814.
<i>Thomas</i>	22/04/1855	Drogheda Bar	This vessel of Dumfries became stranded.	

Name	Date	Location	Detail	References
<i>Thomas</i>	2/07/1883- 13/05/1892	Dundalk Quays/ Bellurgan Beach	Brigantine of Dundalk was built in 1815 in Ulverston, Lancaster, and weighed 56 tons. She was owned by Michael Hann of Dundalk and her Official Number was 17,005. On 2nd/07/1883 she was <b>berthed at the quays</b> , with the brigantine <i>Sunshine</i> lying outside her. She came too close when taking the ground and damaged the <i>Thomas</i> . She lay waterlogged at the quay until/05/13th 1892 when the tug <i>Oscar</i> towed her wreck from opposite O'Neill's quay to the beach at Bellurgan, west of Mr. Tipping's Quay, where she was later broken up.	Hoey et al., 1987, 104-105 (photo)
<i>Thomas Miller / Thomas Millar</i>	7/01/1854	North side of Drogheda Bar	250 ton barque, of Liverpool, was en route from Liverpool to Shields with a cargo of salt. She encountered an ESE force 10 wind with cloud and rain and developed a leak while at sea. She was run on to the shore / the bar in order to save the eight crew.	
<i>Three Sisters</i>	30/12/1803	near Dundalk	This snow <b>went ashore</b> near the same place as the <i>Swallow</i> .	Bourke, 1998, 45; L L no. 4415, 30 December 1803
<i>Tom</i>	11/05/1878	3 miles off Drogheda Bar	39 year-old wooden sloop of Chester weighed 45 ton. She was built in Ulverstone and her Official No. was 1,556. Her owner was J. Williams of Liverpool and her master was J. Ashton. She was en route from Bangor to Dublin with two crew and an 84 ton cargo of slates, 'stowed in tiers'. She sprang a leak in moderate conditions - a force 6 SE wind and became totally wrecked.	
<i>Tongoy</i>	3/10/1870	Near Ben Head	484 ton vessel of Swansea was en route from Liverpool to Iquique in Peru. She was 'laden with 615 tons of coal, spirits, wine, beer, iron and iron castings' when she went ashore.	
<i>Topaz</i> , Wreck No. 009000161	28/12/1891	near 'Dunanet' (sic. Dunany) Reef. Off Dunany Point, 53° 52' 02N, 06° 10' 28W 320139.738E 292395.536N 53.8672222210N 06.1744444514W	Glasgow registered iron steam ship weighed 168/353 tons and measured 161 ft. in length. It was <i>en route</i> from Workington to Dundalk, carrying a cargo of steel rails, with a crew of nine when it was <b>lost</b> in a WSW force 4 wind. She struck a reef, drifted into deeper water and sank. The crew took to their lifeboat and landed at Greenore. The ship and cargo being Insured Lloyd's employed a diver called Rigden/Rizdon to salvage the steel rails during the years 1892-1893. The rails, engines and working gear were removed. The vessel's masts were also removed and the area was buoyed. In 1977 the hull was still almost intact. The boiler and stern stand almost 3m high and the greatest depth recorded was 23m. Marked on Admiralty Chart 44.	Admiralty Wreck Data 1996; Bourke, 1998, 163; Bourke, 1994, 7; CSP, 1893-1894, Vol. LXXX, 130; CSP, 1894, Vol. LXXVI, 86; De Courcy Ireland, 1983, 113; <i>Dundalk Democrat</i> , 2/01/and 23 Jan, 1892; Garry (ed.), 2000, 35-36

Name	Date	Location	Detail	References
<i>Tredegar</i>	23/03/1862	Dundalk	Vessel was carrying a cargo of coal for the Enniskillen railway company when she was wrecked. Captain Hall and four crewmen were rescued.	Bourke, 1998, 47
<i>Troubadour</i>	15/11/1882	Entrance to Drogheda Bar	26 year-old iron screw steamer of Liverpool weighed 170 tons. The owner was W. King of Liverpool and the master was J. Henry. She was en route from Drogheda to Garston with ten crew, one passenger and a cargo of coal. She became stranded in a SSE force 6 wind and was totally wrecked.	
<i>Tyger</i>	24-25/11/1766	Drogheda Bar	Amery, when she struck the bar in bad weather despite having a pilot aboard. The ship and 11 crew were lost but some of the cargo was to be saved.	
<i>Undaunted</i>	post 19/03/1882	between Dundalk and Dublin	27 year-old wooden brigantine of Belfast weighed 126 tons. She was <i>en route</i> from Belfast to Dublin with five crew and a cargo of moulding sand. <b>'Not heard of since being spoken off Dundalk Bay 19<sup>th</sup> March 1882.'</b>	CSP, 1883, Vol. LXIII, 151
unknown	unknown	53 53 05.304N 06 02 08.772W 329140.914E 294613.448N	Irish Seabed Survey (ISS) Wreck G-125, located 7 miles ENE of Dunany Point in 29m of water, an anomaly, c. 5m long, 2m wide, standing c. 3m above the seabed	ISS courtesy of the DoEHLG
unknown	8/01/1725	near Drogheda, between Truss (Clogher) Head and Maiden tower	Ship <b>went ashore</b> .	Bourke, 1998, 43, 44
Unknown	9/04/1749	Near Drogheda	vessel was en route from Drunton to Dublin with a cargo of 20,000 deals. She was under the command of Mr. Albo / Abbo when she was stranded and became a total loss.	
Unknown	22/02/1766	Near Drogheda	This vessel from Irwin was wrecked.	
unknown	24/01/1777	near Dundalk	Brig was <i>en route</i> from Ostend to Newry with flax seed when she was <b>lost</b> .	L L no. 818, 24 January 1777
unknown	15/12/1787	6 miles off Clogher Head	Fishing boat from Drogheda, with four crew, was <b>overset by a sudden squall</b> . The crew spent eight hours on her bottom and were then rescued by a Swedish brig from Dublin, and landed in Warrenpoint the next morning.	Dublin Chronicle 20/12/1787, 807
Unknown	26/01/1796	The Nanny, Laytown	The vessel was a brig.	

Name	Date	Location	Detail	References
Unknown	26/01/1796	1 league north of Drogheda bar	Large square-rigged vessel.	
unknown	1797	Haggardstown, Dundalk	In an extract from the diary of one Mary Anne Fortescue, 'Friday and Saturday were terrible days and stormy for Captain Morton's vessel.' This vessel was <b>wrecked</b> and all those aboard perished.	De Courcy Ireland, 1983, 33; Swan, 1970, 68
unknown	03/1810	Clogher Head	Brig <b>ran ashore and broke up</b> .	Bourke, 1998, 44
Unknown	22/10/1820	Drogheda coast	Preston vessel lost.	
Unknown	07/1832	Drogheda	half-decked pleasure boat, belonging to Nicholas Whitworth, was out sailing when she became fowled in a steamer's ropes, a little below the North Crook, and capsized.	
unknown	11/08/1849	off the South Light, Dundalk	Schooner <b>foundered</b> .	CSP, 1852-1853, Vol. XCVIII, 3
unknown	10/11/1852	near Clogher Head	Large ship was <b>lost</b> .	Bourke, 1998, 39; CSP, 1857-1858, Vol. LII, 43
unknown	16/11/1852	Clogher Head	Large ship was <b>wrecked</b> .	Bourke, 1994, 7; CSP, 1852-1853, Vol. XCVIII, 7
unknown	17/11/1852	between Bettystown and Clogher Head	Three-masted Swedish barque was <i>en route</i> to Liverpool with sugar, rum and tobacco when she was <b>wrecked</b> . Only the captain and a cabin boy survived.	Bourke, 1994, 9; De Courcy Ireland, 1983, 53
Unknown	1859	Laytown	schooner drifted ashore and heeled over.	
Unknown	29/10/1863	Off Drogheda Bar	Smack foundered in NW force 10 winds, resulting in total loss.	
unknown	29/10/1863	Clogherhead Pier	Seven smacks ran for the shelter of the harbour in a great storm but 'three of them came with all <b>force against the pier and split open</b> .' Thomas A. Newcomen assisted by about 150 others helped rescue the crews.	Garry (ed.), 2000, 118; Swan, 1970, 75-76
unknown	27/04/1868	between Soldier's Point and Dunany	Five members of the coastguard were lost when their boat <b>sank</b> . They were Grinston (Chief Officer), Clancy, Frazer, McCracken and Sweeney.	Garry (ed.), 2000, 60
unknown	27/06/1868	Dunaney (sic. Dunany) Reef	Coastguard cutter <b>sank</b> .	Bourke, 1994, 7

Name	Date	Location	Detail	References
Unknown	5/12/1873	Laytown	large schooner was wrecked.	
Unknown	24/10/1881	Ben Head	large vessel, believed to be Canadian, was seen in distress during a storm. The masts had been cut away and the lifeboat was unable to go out and assist them.	
unknown	19/12/1883	lighthouse at the Boyne	Collier brig was caught in heavy seas at Clogher Head, and one man was lost overboard. The vessel sank near the lighthouse.	Bourke, 1994, 10
unknown	17/03/1897	off Annagassan	Herring yawl <b>sank</b> in what later became known as the 'Annagassan Disaster'. James Coogan, Michael Mathews, James Byrne, Patrick Connolly, Patrick Mathews, and James Mathews were all lost.	Garry (ed.), 2000, 61.
unknown	26/02/1903	near Giles Quay Station, Dundalk Bay	Two second-class boats <b>broke up on the beach</b> during a storm.	Report on the Sea and Inland Fisheries...for 1903 [1904], Cd. 2154 xi, 20
Unknown	16/07/1903	Cardy Rocks	This first-class vessel was stranded on the rocks and became a total wreck.	
unknown	unknown	Ballagan Point	Liverpool vessel was <b>wrecked</b> . The master, Nathaniel Marks, was buried at Carlingford. The ship name is inscribed but is not clearly visible. It appears as E.. bo... .	Bourke, 1994, 6
Unknown	Unknown	Offshore of Castlebellingham, 53 54 15N 06 19 00W 310687.154E 296275.684N 676275.334E (UTM) 5976195.680N (UTM)	Wreck showing portion of superstructure at Low Water marked on Admiralty Chart 44 in 1.2m of water	
Unknown	Unknown	Off Laytown beach	This coal boat lies in 25m of water.	
unknown	unknown	54 01 12 05 45 30	Submerged wreck marked at 15m depth on Admiralty Chart 44	
unknown	unknown	54 01 12 05 49 00	Submerged wreck marked at 15m depth on Admiralty Chart 44	
unknown	unknown	53 59 06 05 43 24	Submerged wreck marked at 40m depth on Admiralty Chart 44	

Name	Date	Location	Detail	References
unknown	unknown	53 59 48 05 45 24	Submerged wreck marked at 44m depth on Admiralty Chart 44	
Unknown Wk no 009100829	Unknown	53 40 24N, 005 58 50W	This wreck is thought to be a metal vessel as there is a lot of metal material in the area.	
Unknown, Wk No. 009000136	Unknown	53 38 14N, 06 03 26W 328550.537E 267004.875N	Two large iron barges lie in 19m. In 1977 they were still intact and upright standing 4m high. They are a recognised 'nuisance to fishermen'.	
Unknown, 02E467	Unknown	Off Gormanston Beach 53 38.917N 06 12.41086W 318622E 268012N	c. 7m long wooden logboat, or dugout canoe, recovered during dredging operations for the Irish Subsea Interconnector gap pipeline in 2002.	
<i>Urania</i>	18/01/1876	c. 1 mile N of Drogheda Bar	23 year-old iron steam ship of London weighed 159 tons. She was classed by Lloyds as '90 A1, 7.75'. Her owner was J. Casey of London and the master was P. Blampied. She was en route from Swansea to Newry with 12 crew and a cargo of coal when she was stranded and partially wrecked.	
<i>Utility</i>	23/11/1847	Near Drogheda	89 ton sailing vessel was reported as being 'on shore'.	
<i>Velocity</i>	15/01/1894	No. 4 perch on the North Bull, Dundalk/c. ½ mile east of the lighthouse at Dundalk Bay/ Rineshark	63 year-old wooden schooner of Carnarvon weighed 58 tons. She was <i>en route</i> from Carnarvon to Dundalk with three crew and a cargo of slates for Messrs. Williamson of Dundalk. She <b>struck the bar</b> while attempting to cross it an hour before high water. She lay exposed to heavy seas for some time before the <b>rising tide floated her</b> . She was <b>put ashore</b> to save the cargo and crew. The R.N.L.I. reports that the <i>Providence</i> lifeboat, stationed at Gyles' Quay rescued three people on the 15th/01/1894. <b>She became a total wreck.</b>	Bourke, 1998, 48; CSP, 1894, Vol. LXXVI, 87; Hoey et al., 1987, 103
<i>Via</i>	05.06.1931	54° 00 40N 006° 02 00W & 54° 01 20N  328976.693E 308656.795N  694385.016E 5988831.340N	Topsail schooner, struck rocks, foundered	CMA UU



Name	Date	Location	Detail	References
<i>Violet</i>	22/12/1895	Dundalk Bay	29 year-old wooden schooner from Castletown in the Isle of Man weighed 44 tons. It was <i>en route</i> from Castletown to Dublin with a crew of four, and a cargo of barley, when it became <b>stranded in a SE force 8 wind, and became a total loss.</b>	Bourke, 1994, 10; CSP 1897, Vol. LXXVIII, 129; De Courcy Ireland, 1983, 115
<i>Walter Scott</i>	3/01/1877	2 miles S of Clogher Head at Maguire's Burrow	12 year-old wooden schooner of St. John, N.B. weighed 130 tons. She was <i>en route</i> from Maryport to Dublin with five crew with a cargo of coal. She became <b>stranded and was totally wrecked</b> but there was no loss of life.	CSP 1877, Vol. LXXV, 105; Garry (ed.), 2000, 195
<i>Wellington</i>	03/1841	Off Drogheda	This smack belonged to the port of Skerries and the master was Grimley. She was <i>en route</i> from Stranraer to Dublin when she was lost.	
<i>Welsford</i>	3/01/1877	Lowther Ledge, 2 miles north of Balbriggan	This wooden brigantine of Maryport weighed 106 tons. The owner was J. Graham of Maryport and the master was J. Vaughan. She was <i>en route</i> from Maryport to Dublin with four crew and a cargo of coal. She was stranded and totally wrecked in an ESE force 9 gale.	
<i>William</i>	27/12/1803	Termonfeckin River	Vessel was <i>en route</i> from Ayr to Glasgow, under Campbell, when she was <b>stranded.</b>	Bourke, 1998, 44; L L no. 4414, 27 December 1803
<i>William Pitt</i>	11/11/1852	A reef north of/near Clogher Head	78 ton sloop/schooner of Dublin was <i>en route</i> from Whitehaven to Dublin with coal. There were five men aboard and the master was John French/Pile. She encountered an ESE force 8 wind with thick conditions and was <b>driven ashore</b> . She <b>hit the reef and sank</b> , but all those aboard survived.	Bourke, 1994, 7; Bourke, 1998, 39; CSP, 1852-1853, Vol. LXI, 180-181; CSP, 1852-1853, Vol. XCVIII, 6; CSP, 1857-1858, Vol. LII, 5; De Courcy Ireland, 1983, 53; Garry, (ed.), 2000, 49
<i>Williamson</i>	27/01/1873	Bettystown	126 ton vessel was <i>en route</i> from Whitehaven to Cardiff with coal when she was wrecked.	
<i>Wilson</i>	02/1853	North Bull, Drogheda	schooner of Whitehaven was forced ashore in strong winds.	
Wreck No. 007600021	unknown	Soldier's Point, Dundalk, 54° 00 27N, 06° 20 46W  308483.472E 307730.487N  673910.729E	Two wrecks lie alongside the old slip on Soldiers Point. The position of the centre of the wrecks is at 103°, 345 ft from the end of the training wall. The two wrecks dry out but do not reach above MHWS. There are described on the chart as 'stranded wreck of firm outline'.	Admiralty Wreck Data 1996

Name	Date	Location	Detail	References
		5987615.887N		
Wreck No. 007702383	unknown	54° 01 20N, 05° 43 28W	This wreck was shown in Decca in 1983.	Admiralty Wreck Data 1996
Wreck No. 007702619	unknown	54° 00 29N, 05° 36 22W	In 1982 the remains were described as a 'well-defined, upright wreck'. This wreck was further examined in 1984 and found to lie in a general sea depth of 75m (least depth of 70.9m) orientated 080°/260° and measuring L. 31m, B. 8.9m, with a scour depth of 1m. Identified at 71m on Admiralty Chart 44.	Admiralty Wreck Data 1996
Wreck No. 009101007	unknown	53° 51 02N, 05° 35 36W	This wreck was located by sonar in 1976 in a depth of 100m. The sonar image revealed the predominant bottom-type in the vicinity of the wreck to be small sand ripples with intermittent trawling scours. There appeared to be a build-up of sand against the wreck and the sonar shadow revealed the wreck to be c. 1.5m in height. The wreck area itself is thought to be around 5m <sup>2</sup> with an associated area of scour measuring 13 x 25 m. Identified at 98m on Admiralty Chart 44.	Admiralty Wreck Data 1996
Wreck No. 009101068	unknown	53° 56 33N, 05° 43 38W	This wreck was located in 1976 and found to lie in a general sea depth of 57m (least depth 44m). The wreck was further examined in/04/1984 and the least depth recorded was 34.9m in a general sea depth of 59m. The wreck was orientated 155°/335°, measured L. 39m, B. 10m and lay partially buried on a 'soft grey mud'. The highest part of the wreck was at the NW end. Identified at 35m on Admiralty Chart 44.	Admiralty Wreck Data 1996
Wreck No. 009101081, possibly <i>Crusader</i>	18/02/1892	53° 57 14N, 05° 55 11W	This wreck was located in 1974 and found to lie on a stony seabed in a general sea depth of 43m. The vessel is thought to weigh c. 500-1000 tons, and measured L. 240 ft. and B. 30 ft. In 1977 the wreck was further examined and found to stand 5m high although it was 'decayed and broken up'. It was initially thought that the remains were those of a luxury yacht built and fitted before 1900. This theory was based upon observations made regarding the vessel's portholes. In 1981 silver cutlery with the name 'Crusader' was recovered and it has since been suggested that the remains are those of the wreck of the Brazilian barque <i>Crusader</i> . This vessel left Birkenhead on the 18/02/1892 for Santos but was never heard of again. In 1984 the wreck was found to be lying in two parts and orientated 035°/215° in a general sea depth of 35m (least depth 31.2m). The wreckage measured L. 24m and B. 9m. Identified at 24m on Admiralty Chart 44.	Admiralty Wreck Data 1996

Name	Date	Location	Detail	References
Wreck No. 009101299	unknown	53° 46 39N, 05° 38 24W	In 1984 this wreck was found to lie partly buried in a general sea depth of 88m (least depth 78m) orientated 172°/352° and measuring L. 250 ft. and B. 36 ft. Identified at 78m on Admiralty Chart 44.	Admiralty Wreck Data 1996
Wreck No. 009101317	unknown	53° 44 29N, 05° 39 45W	This fisherman's fastener was shown in decca in 1983. In 1984 a dual-channel side-scan survey was carried out in the area. Nothing was found.	Admiralty Wreck Data 1996
Wreck No. 009101329	unknown	53° 42 12N, 05° 59 13W	This 'bad wreck' was shown in decca.	Admiralty Wreck Data 1996
Wreck No. 009101354	unknown	53° 44 53°N, 05° 34 21W	This fisherman's fastener was shown in 1983 in decca. In 1984 a dual-channel side scan sonar survey was carried out in the area but nothing was found.	Admiralty Wreck Data 1996
Wreck No. 009101640	unknown	53° 56 57N, 05° 22 03W	This wreck was located in 1983 and examined in 1984. She was L. 226 x B. 36 ft. She lay in a least depth of 91.4m (echo-sounded), and a general depth of 98m. She was orientated 165°/345° and was upright with a superstructure at the N end. There was a scour depth of 1m. Identified at 90m on Admiralty Chart 44.	Admiralty Wreck Data 1996
Wreck No. 009101731	unknown	53° 57 25N, 05° 34 12W	This wreck lies in a least depth of 98m (echo-sounder) and a general depth of 102m. It was described in 1984 as a small intact wreck. The vessel was L. 35m and B. 9m. She was orientated 100°/280° and had a scour depth of 1m. Identified at 97m on Admiralty Chart 44.	Admiralty Wreck Data 1996
<i>Wrestler</i>	24/12/1895	Dundalk	Liverpool tug <b>ran aground</b> . She may have been refloated.	Bourke, 2000, 25
<i>Young England / Young Englander</i>	14 or 22/11/1842	near Cardy Reef, Bremore Bay, north of Balbriggan Harbour (within 100 yards of <i>Bower Hill</i> )	408 / 409 ton barque of Kincardine was 8 years old and classed as 'A1' by Lloyd's. She was en route from Singapore to Liverpool with a general cargo. There were 16 men aboard and the master was Robertson. They encountered an ESE force 9 wind with thick conditions when she became stranded after mistaking a light.	

**9.0 APPENDIX B: MARINE GEOPHYSICAL ANOMALIES, ORIEL OFFSHORE WINDFARM**

**Side-scan sonar Anomalies**

		Description	Image
ID	SS1	Outlying rock adjacent to cobbled area, c. 25m S of centreline	
Fix	2709-11		
Line	5_CL		
Lat	53 55.7080		
Long	06 02.2318		
E	328914.24		
N	299472.77		



<b>ID</b>	SS2	Outlying rocks adjacent to boulder field, either side of centreline	
<b>Fix</b>	1447		
<b>Line</b>	3_N50		
<b>Lat</b>	53 56.7260		
<b>Long</b>	06 03.9384		
<b>E</b>	326991		
<b>N</b>	301312.97		
<b>ID</b>	SS3	Isolated rocks with acoustic shadows on rippled gravel bed	
<b>Fix</b>	1454		
<b>Line</b>	3_N50		
<b>Lat</b>	53 56.7329		
<b>Long</b>	06 04.4576		
<b>E</b>	326422.53		
<b>N</b>	301297.48		



<b>ID</b>	SS4	Irregularity, unclear image, but perhaps a boulder anomaly within a sand/silt hollow, 30-40m S of centreline	
<b>Fix</b>	2640		
<b>Line</b>	4_S30		
<b>Lat</b>	53 56.2221		
<b>Long</b>	06 04.6638		
<b>E</b>	326228.94		
<b>N</b>	300345.69		
<b>ID</b>	SS5	Concentration of cobbles in gravel area, suggesting a localized area of entrapment, 40m from centerline. See also ss15, which is the same anomaly viewed on a different survey line.	
<b>Fix</b>	3459		
<b>Line</b>	K_W25		
<b>Lat</b>	53 54 1074		
<b>Long</b>	06 04.2749		
<b>E</b>	326762.32		
<b>N</b>	296440.43		



<b>ID</b>	SS6	Localized anomaly creating gravel ripples to one side in larger area of gravel/soft sediment. Anomaly lies 40m from centreline but scour area crosses survey window		
<b>Fix</b>	3501			
<b>Line</b>	K_W25			
<b>Lat</b>	53 56.1157			
<b>Long</b>	06 03.0218			
<b>E</b>	328029.21			
<b>N</b>	300205.57			
<b>ID</b>	SS7	Oblong anomaly at centreline creating scour filled with ripples to one side. Same anomaly as SS12		
<b>Fix</b>	None given			
<b>Line</b>	6_S30			
<b>Lat</b>	53 55.3100			
<b>Long</b>	06 06.1009			
<b>E</b>	324698.48			
<b>N</b>	298611.82			



<b>ID</b>	SS8	Seriesq of irregular anomalies, probable rocks//boulders				
<b>Fix</b>	3506					
<b>Line</b>	H_CL					
<b>Lat</b>	53 56.8593					
<b>Long</b>	06 04.1929					
<b>E</b>	326711.25					
<b>N</b>	301550.32					
<b>ID</b>	SS9	Anomaly				
<b>Fix</b>	2564					
<b>Line</b>	4_CL					
<b>Lat</b>	53 56.2036					
<b>Long</b>	06 06.3115					
<b>E</b>	324424.26					
<b>N</b>	300263.67					



<b>ID</b>	SS10	Anomaly, creating localized irregularity at break of slope.	
<b>Fix</b>	2601		
<b>Line</b>	4_CL		
<b>Lat</b>	53 56.2036		
<b>Long</b>	06 02.9715		
<b>E</b>	328079.41		
<b>N</b>	300362.85		
<b>ID</b>	SS11	Single well defined isolated boulder 15m N of centreline in sandy area	
<b>Fix</b>	None given		
<b>Line</b>	6_CL		
<b>Lat</b>	53 55.3437		
<b>Long</b>	06 06.6058		
<b>E</b>	324138.71		
<b>N</b>	298652.54		



<b>ID</b>	SS12	Anomaly 40m N of centreline, causing localized entrapment. Same anomaly as SS7	
<b>Fix</b>	2864		
<b>Line</b>	6_CL		
<b>Lat</b>	53 55.3359		
<b>Long</b>	06 06.1275		
<b>E</b>	324733		
<b>N</b>	298646		
<b>ID</b>	SS13	Gravel line c. 20m long, lying 10-30m S of centerline	
<b>Fix</b>	584		
<b>Line</b>	N50		
<b>Lat</b>	53 54.3339		
<b>Long</b>	06 15.7893		
<b>E</b>	314135.27		
<b>N</b>	296525.93		



<b>ID</b>	SS14	Unclear, anomaly in area of clay. Irregular feature, probably natural in origin.	
<b>Fix</b>	4543		
<b>Line</b>	SALT550		
<b>Lat</b>	53 54.0219		
<b>Long</b>	06 15.2594		
<b>E</b>	314730.38		
<b>N</b>	295961.56		
<b>ID</b>	SS15	Cobbles 30m N of centerline. See also SS5 for image of this anomaly on a different survey line	
<b>Fix</b>	799		
<b>Line</b>	K_CL		
<b>Lat</b>	53 54.1142		
<b>Long</b>	06 04.2563		
<b>E</b>	326773.48		
<b>N</b>	296440.74		



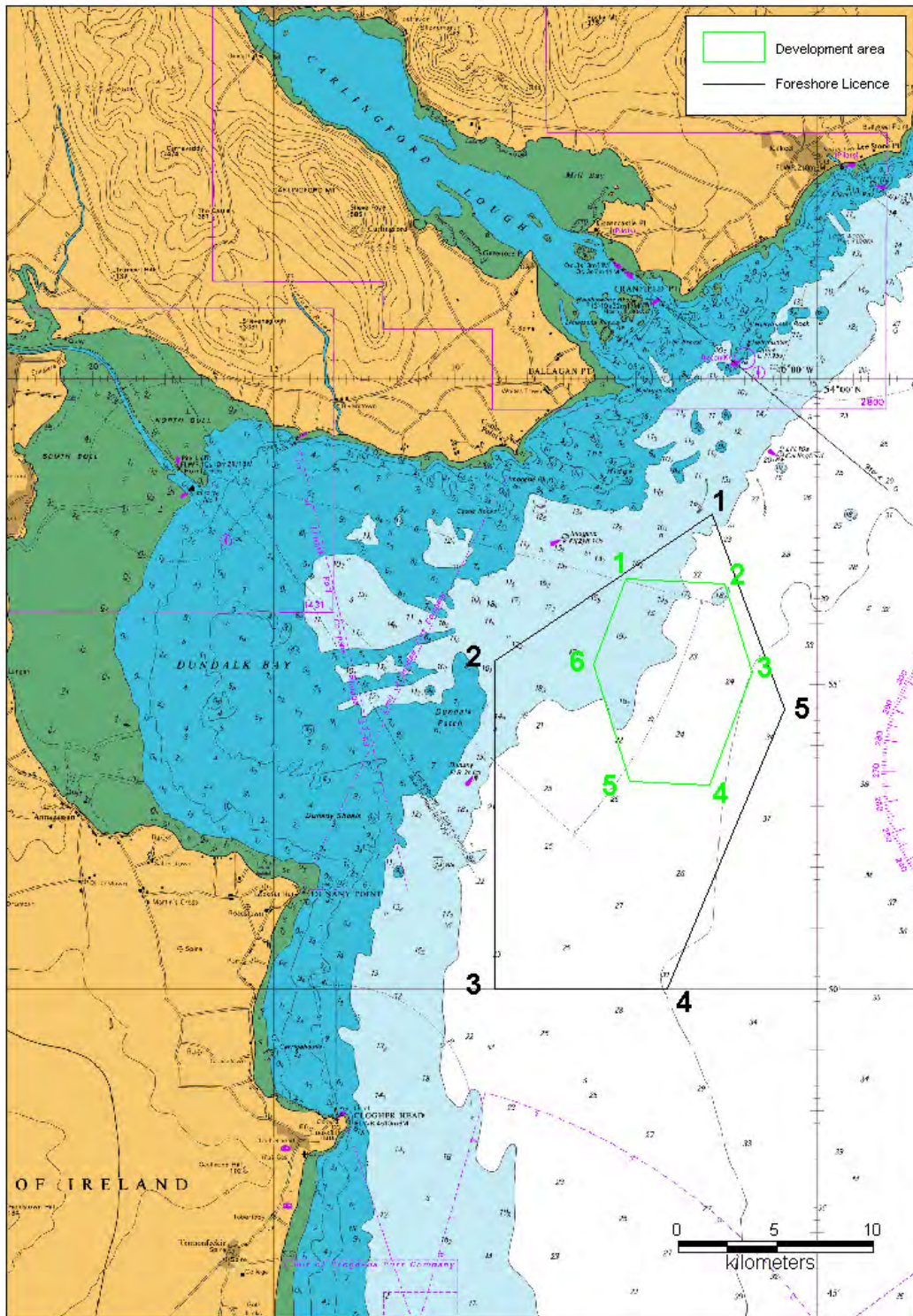


Figure 1: Extract from Admiralty Chart indicating location of Foreshore Licence Area (in black) and the Development Area (in green)

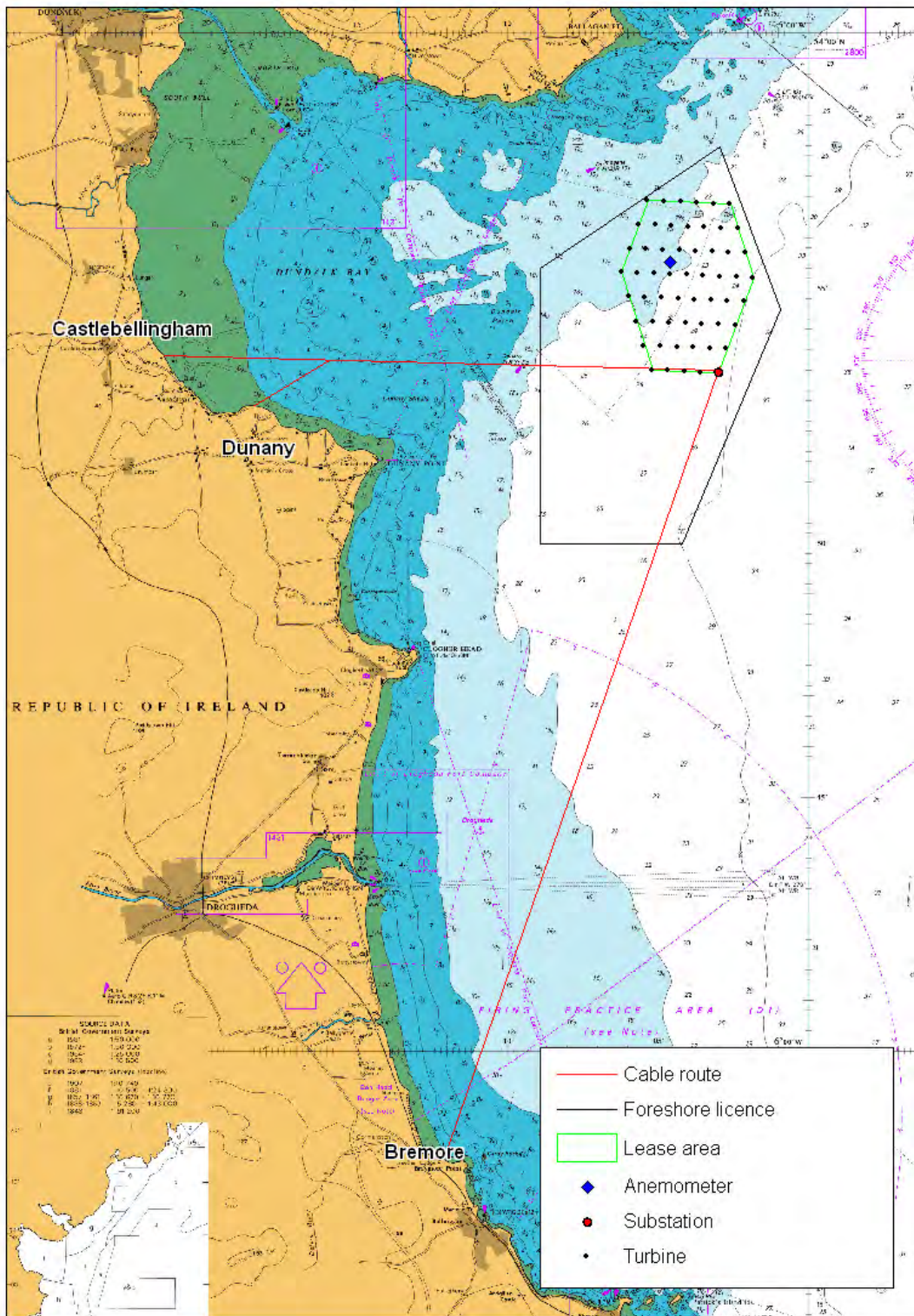


Figure 2: Extract from Admiralty Chart showing the proposed cable routes to shore, at Castlebellingham, Co. Louth, and Bremore, Co. Dublin



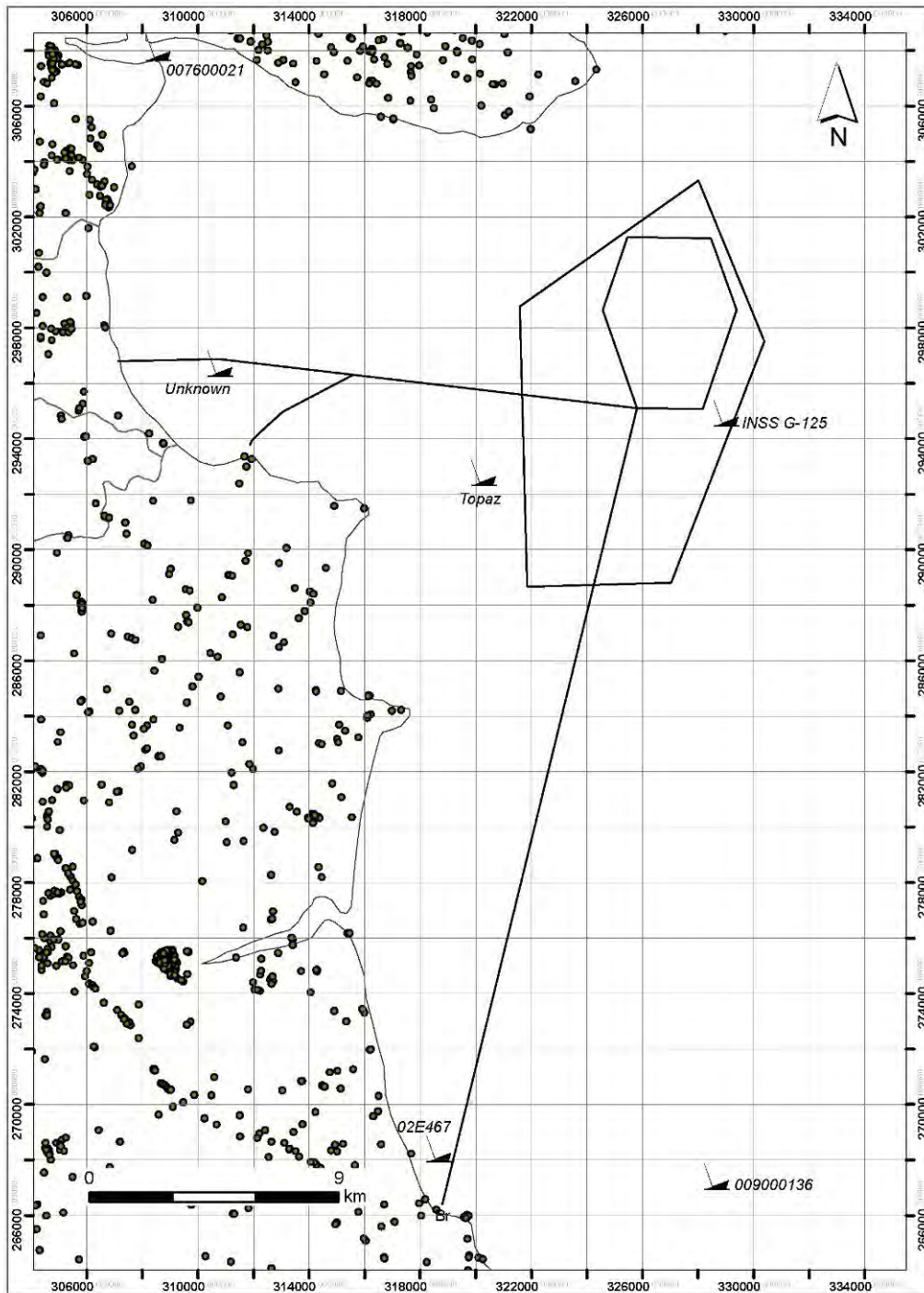


Figure 3: Distribution of known archaeological sites and monuments from Dundalk Bay to Bremore, with overlay of development features

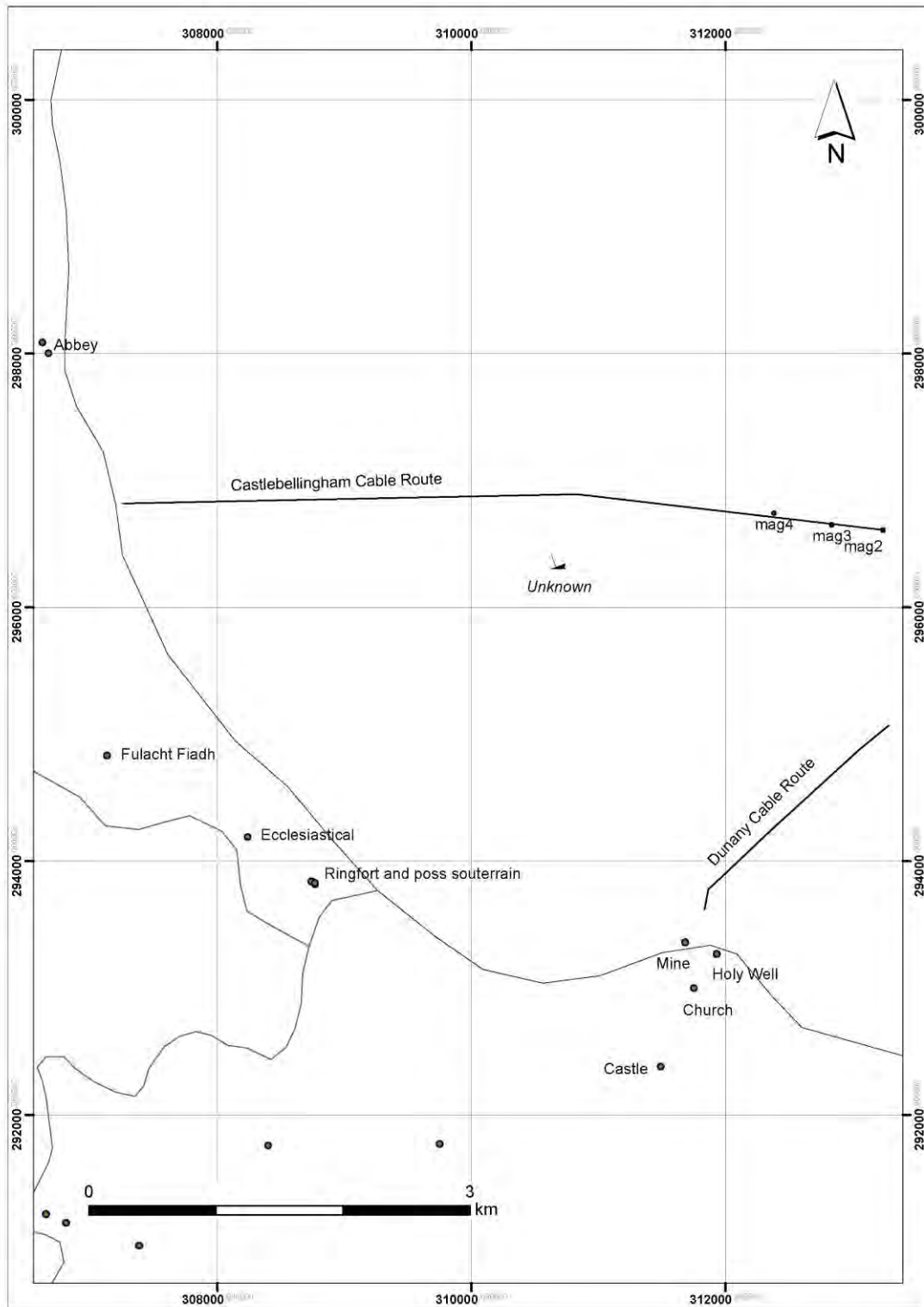


Figure 4: Detail showing existing archaeological sites in vicinity of possible cable route landfalls at castlebellingham and Dunany





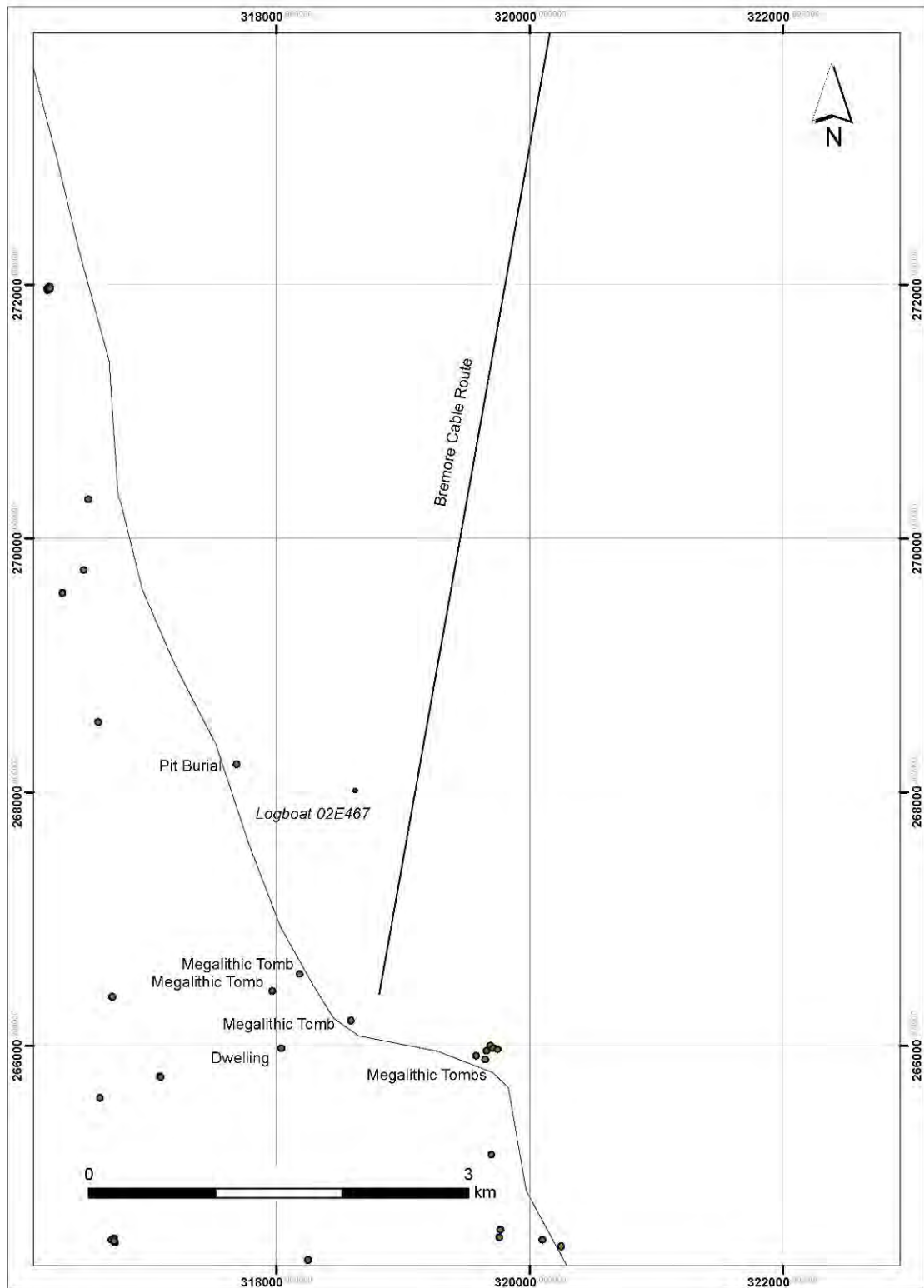


Figure 6: Detail showing existing archaeological features in vicinity of proposed cable route landfall at Bremore

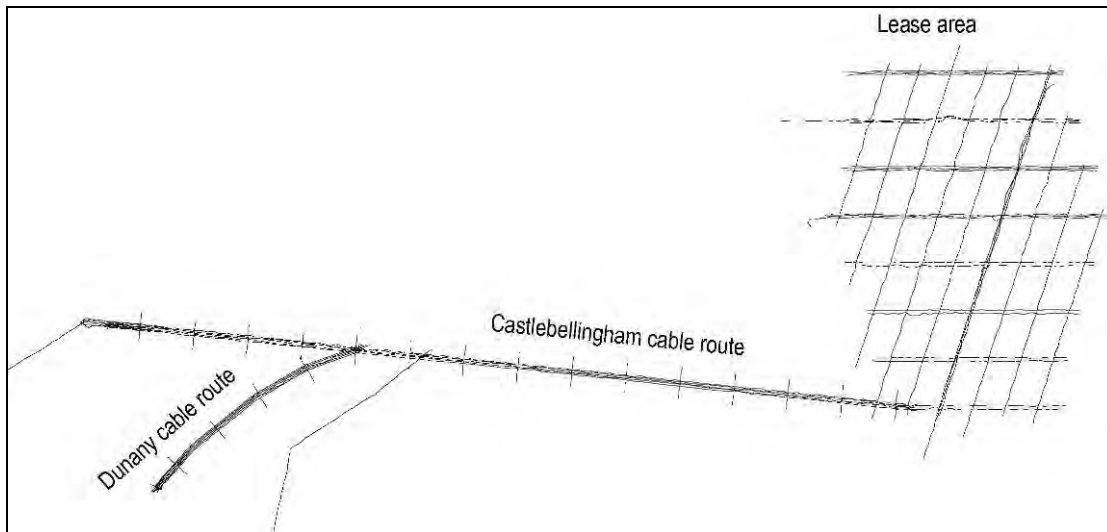


Figure 7: Trackplot map of marine geophysical survey lines within proposed Lease area and along the Castlebellingham and Dunany cable routes

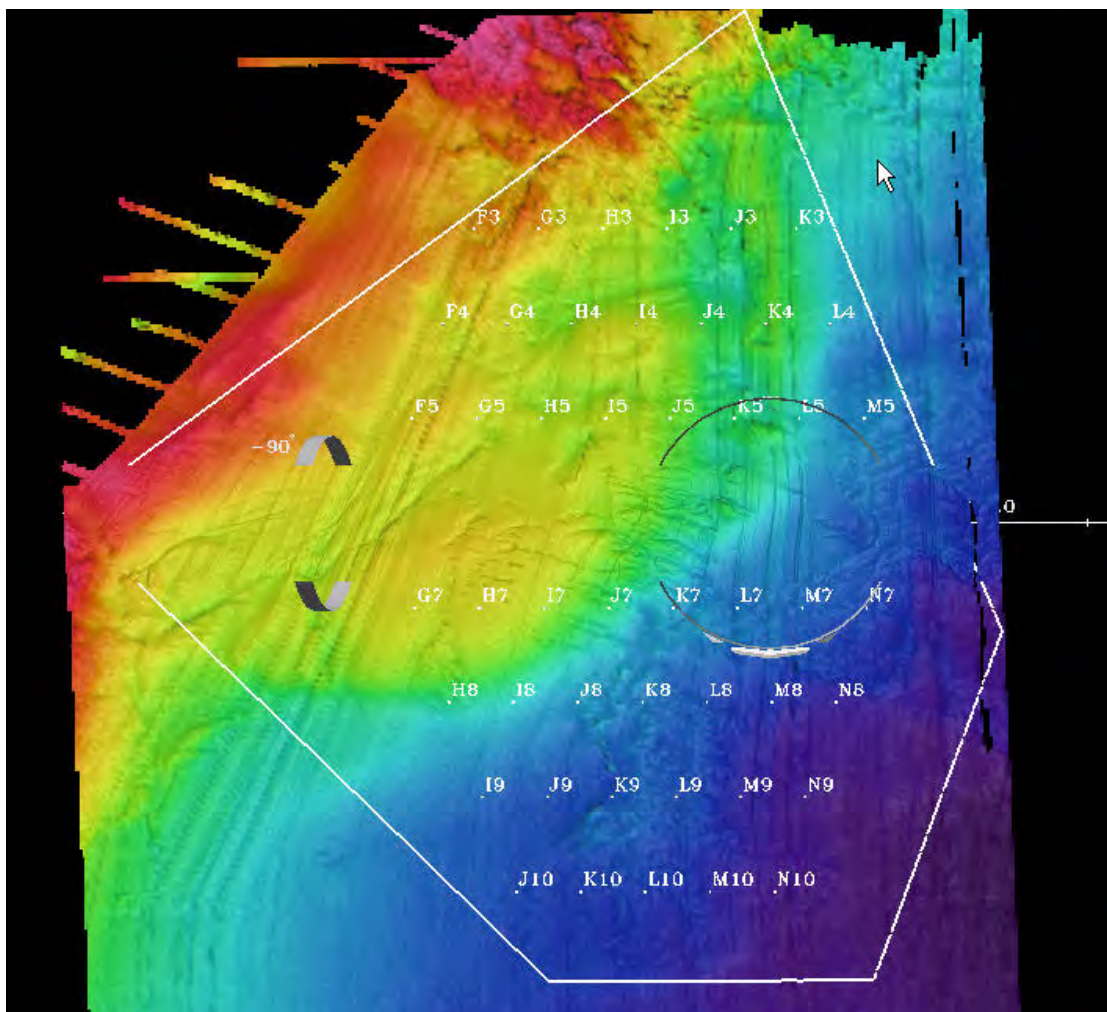


Figure 8: Extract from GSI Multi-beam survey showing bathymetry, with overlay of proposed Licence area and possible distribution of turbine grid

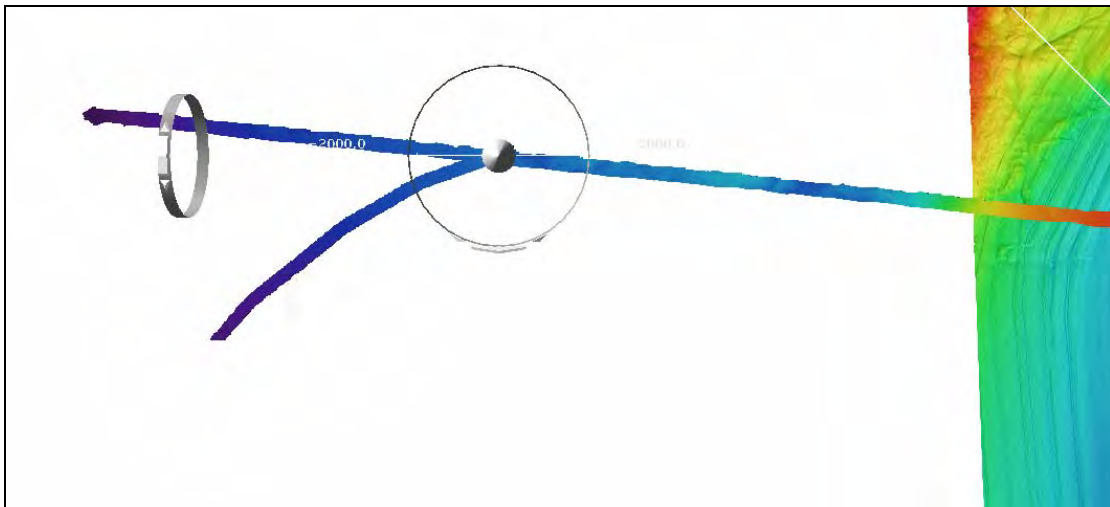


Figure 9: Extract from Multi-beam data acquired for this project showing bathymetry along proposed Castlebellingham and Dunany cable routes

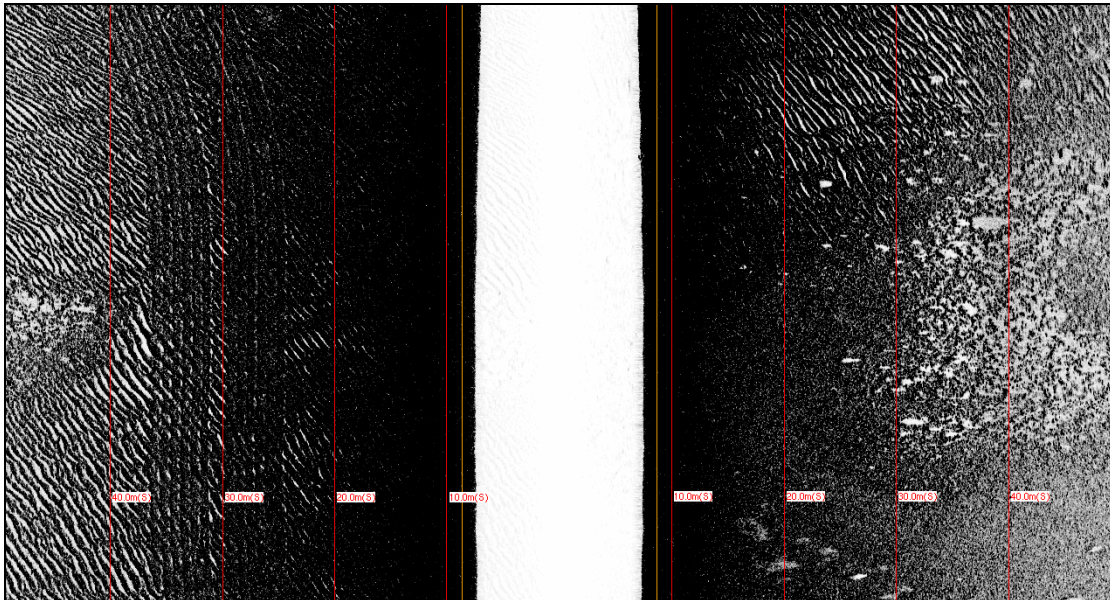


Figure 10: Detail of seabed from Side-scan Sonar survey, showing typical gravel ripples with some boulders spread on the surface and an indication of modern trawl scars on the seabed.



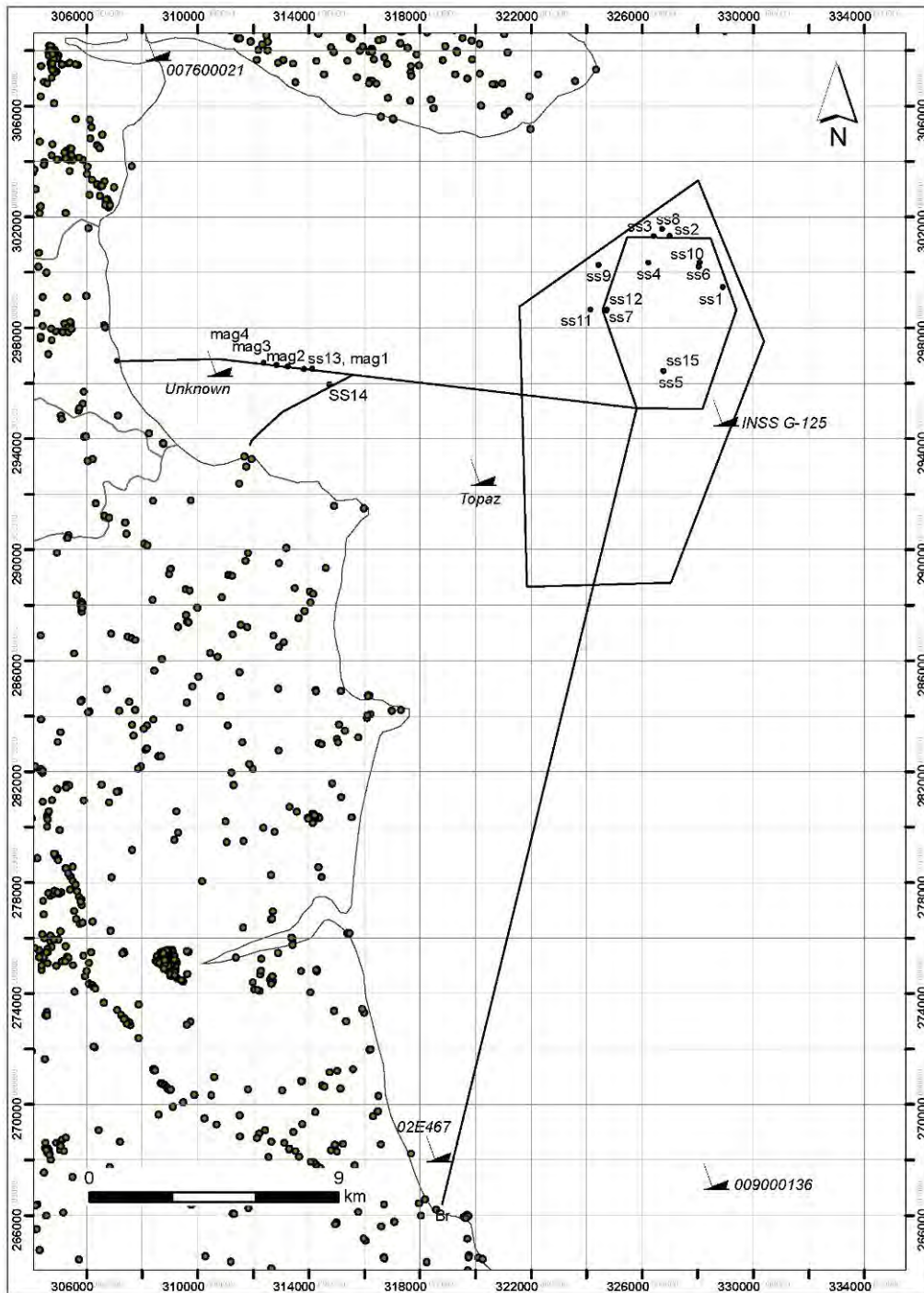


Figure 11: Distribution of marine geophysical anomalies

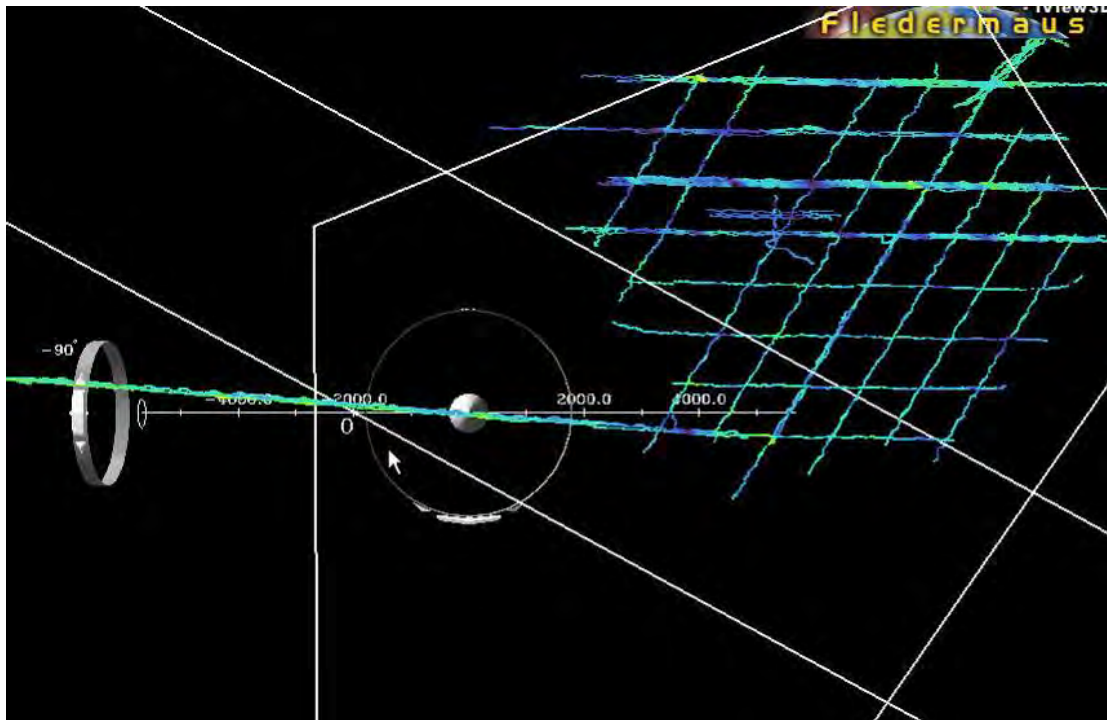


Figure 12: Mosaic of magnetometry readings acquired within the Lease area

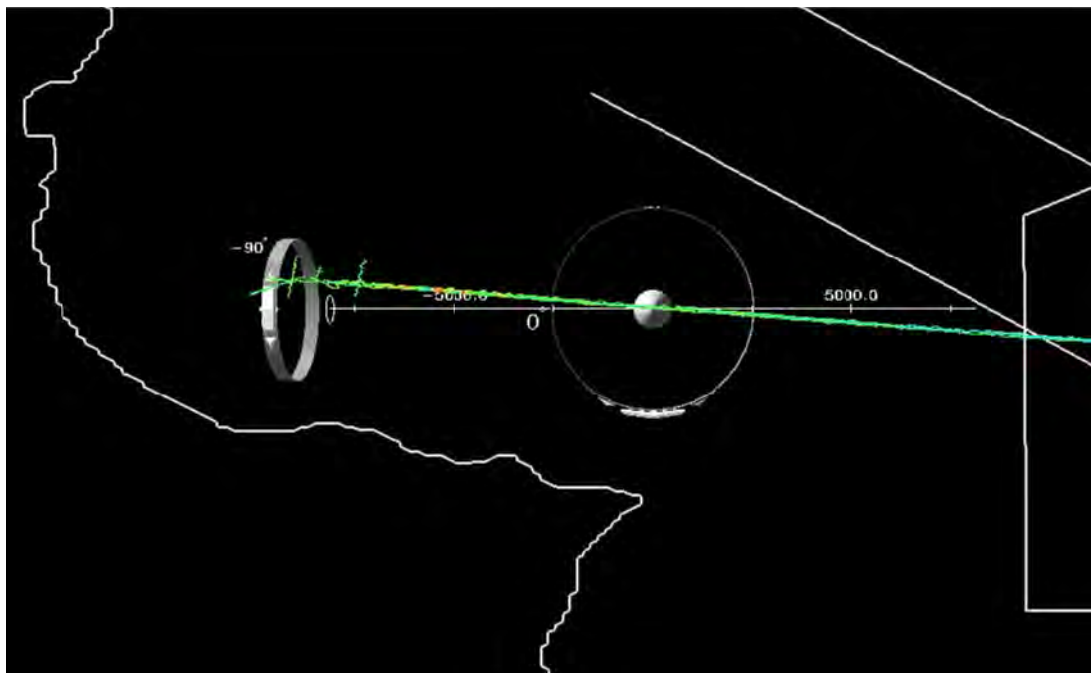


Figure 13: Mosaic of magnetometer data acquired along Castlebellingham cable route. Note the series of localized highpoints towards the wesend.

# A D C O

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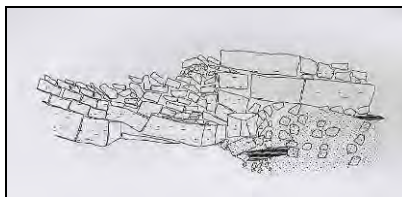
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Recording prehistoric logboat at  
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GAS 2025 Irish Sea  
Interconnector



Underwater elevation of bridge pier collapsed in  
1763. River Nore Flood Alleviation Scheme



Iron cannon on site of 17<sup>th</sup>-century  
timber wreck discovered during  
dredging programme, Waterford  
Harbour



**A.2 ADCO (2021) Underwater Archaeological  
Impact Assessment Oriel Wind Farm,  
Dundalk Bay off Dunany, Co. Louth Lease  
Area and Cable Routes**



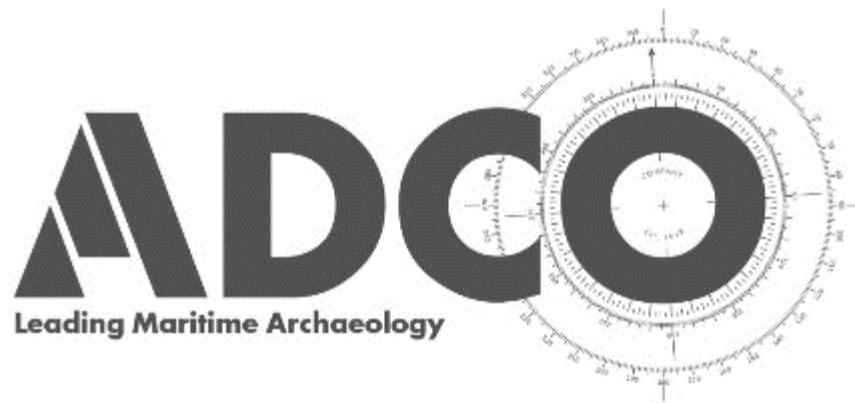
**ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT**

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**Underwater Archaeological Impact Assessment  
Oriel Wind Farm, Dundalk Bay off Dunany, Co. Louth  
Lease Area and Cable Routes**





**Underwater Archaeological Impact Assessment  
Oriel Wind Farm, Dundalk Bay off Dunany, Co. Louth  
Lease Area and Cable Routes**

Date

26/03/2021

Client

**Parkwind**

Project Director

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## Abbreviations

ADCO -	Archaeological Diving Company Ltd
AIA -	Archaeological Impact Assessment
AEZ -	Archaeological Exclusion Zone
AMP -	Archaeological Management Plan
CR -	Cable Route
DCHG -	Department of Culture, Heritage and the Gaeltacht
DHLGH -	Department of Housing, Local Government and Heritage
E -	Easting
EIS -	Environmental Impact Statement
GI -	Geotechnical Investigations
ITM -	Irish Transverse Mercator
LA -	Lease Area
LAT -	Lowest Astronomical Tide
MHW -	Mean High Water
N -	Northing
NGR -	National Grid Reference
NIAH -	National Inventory of Architectural Heritage
OD -	Ordnance Datum
OWF -	Oriel Wind Farm
SI -	Site Investigations
SMR -	Sites and Monuments Record
UAIA -	Underwater Archaeological Impact Assessment
UTM -	Universal Transverse Mercator

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## Executive Summary

Subject: Oriel Wind Farm  
Location: Dundalk Bay off Dunany, Co. Louth  
LA, UTM 29N: 692319E 5978623N  
Landfall, UTM 29N: 682072E 5971056N  
Status: Archaeological seascape

### *Introduction*

An Underwater Archaeological Impact Assessment (UAIA) was carried out of the Foreshore Licence application area of proposed wind farm development, Oriel Wind Farm, located in Dundalk Bay off Dunany, Co. Louth.

The centre of the wind farm Lease Area is at UTM29N 692319E 5978623N (ITM 726690E 798489N, WGS84 53.920255 Latitude -6.071247 Longitude Decimal Degrees). The export cable corridor extends 10.5 km southwest from the wind farm to make landfall at Dunany, Co. Louth, at UTM29N 692346E 5978432N (UTM29N 682072E 5971056N (ITM 716337E 791067N, WGS84 53.856024 Latitude -6.231577 Longitude Decimal Degrees).

The UAIA is based on a desktop review of existing archaeological sources, a review of marine geophysical survey data sets and report acquired in 2019, and a review of marine geotechnical work completed in 2020.

### *Receiving environment*

Dundalk Bay has a significant number of recorded shipwreck events but only a small number of known shipwreck locations. Two known shipwreck locations occur within the proposed export cable route corridor. The registration of side-scan sonar anomalies as potential wreck sites adds ten such locations within the proposed lease area.

A series of cultural heritage sites exist in the vicinity of the proposed landfall location.

### *2019 Marine geophysical survey*

A new and comprehensive marine geophysical survey was completed in 2019 by Ultrabeam for Alpha Marine on behalf of Parkwind that focussed on the Arklow Bank and three cable route options to shore. The 2019 survey comprised multi-beam bathymetry; side-scan sonar; magnetometry and sub-bottom profile surveys, and included survey along 13 pre-defined transect lines. Archaeological review has focused on the side-scan sonar and magnetometry data sets.

The 2019 survey identified 88 side-scan sonar contacts, all but one of which are interpreted as boulders. This is in keeping with the results of the 2006 survey. The exception is 2019 survey target sss087, which is identified as a piece of debris that measures 3.3 m in length. The feature is located on the southern border of the LA, at

UTM29N 693154E 5974937N. There was no observation of features that might be associated with shipwreck. Archaeological review of the 2019 data set confirms the findings of the 2019 survey report.

A programme of geotechnical investigations was conducted in 2019, including seven boreholes within the proposed LA and six boreholes within the proposed export cable route corridor. The boreholes within the LA typically revealed a stratigraphy of clay or sand at the surface, overlying clay, overlying gravel, which in turn sits on top of limestone. The shallower boreholes along the export cable route (extending to only 3.3 m below seabed level) revealed deposits of clay except for BH-018, which recorded clay and sand over cobble.

None of the borehole logs report the observation of anthropogenic features such as timber, metal or ceramic, and none record peat or related organic strata that might indicate the presence of submerged palaeo-landscapes.

### *Impact assessment*

The potential principal impacts on archaeology and cultural heritage arising from the development of the Oriel Wind Farm will occur during the construction and decommissioning phases, with less potential impacts during the operational phase. The impacts will comprise:

- Sediment disturbance and deposition, leading to effects on known heritage assets.
- Direct impact on historic shipwreck sites.
- Direct impact on intertidal sites.

A series of mitigation measures can be designed-in to minimise these potential impacts on cultural heritage, including:

- The principal of avoidance.
- Archaeological Exclusion Zones (AEZ) will be established around each known shipwreck/cultural heritage site.
- In the event that installation activities are unable to avoid impacts within an AEZ, the works can only proceed with the consent of the National Monuments Service.
- Pre-construction marine geophysical surveys, ROV surveys and geotechnical surveys conducted for the proposed development will be reviewed by a maritime archaeologist.
- An Archaeological Management Plan (AMP) will be prepared to inform the construction and maintenance works, to facilitate the recording and reporting of any archaeological material discovered during installation and maintenance works should this occur. Preservation by record is the last resort once all other options have been considered.
- Project maritime archaeologists, operating under licence from the DHLGH, will be engaged on the project to monitor construction activities and observe any works where material of archaeological importance may be uncovered.

### *Recommendations, pre-construction*

The UAIA recommends the location of the landfall sites are inspected archaeologically by means of intertidal walkover survey licensed by the DHLGH. The inspection should

take place in advance of any open excavation works, so that such works can avoid impacts on locations of archaeological interest.

The UAIA recommends that marine geophysical survey comprising high frequency side-scan sonar and magnetometry survey is conducted at the two known shipwreck locations W00248 (*Topaz*) and W00276 (unnamed) and may be supported by archaeological dive inspection. An Archaeological Exclusion Zone (AEZ) measuring 100 m in radius from the centre-point of each site will be identified for both locations, within which no intrusive work should take place.

The absence of the indication of wreckage at the side-scan sonar features recorded from the 2006 survey data suggests that these are not wreck site locations. Additional survey should be carried out to further assess the locations.

The piece of debris recorded in the 2019 survey (sss0087) should be further assessed. Such assessment would include high frequency side-scan sonar and magnetometry survey and may include archaeological dive inspection.

The undertaking of further surveys and geotechnical investigations for the proposed development should continue to be subject to archaeological inputs and assessment of the data arising. Such work should be conducted under licence from the Department of Housing, Local Government and Heritage, and should anticipate that the National Monuments Service may require additional measures.

#### *Recommendations, construction*

Instigate the following principal measures:

- Adopt the principal of avoidance
- Establish Archaeological Exclusion Zones
- Adopt an Archaeological Management Plan

#### *Recommendations, archaeology management*

A series of measures are identified to ensure the smooth running of the archaeological inputs required for the project as a whole.

The recommendations contained in this report are subject to the approval of the National Monuments Service at the Department of Culture, Heritage and the Gaeltacht.

## 1.0 Introduction

The Archaeological Diving Company Ltd (ADCO) was appointed by Parkwind to carry out an Underwater Archaeological Impact Assessment (UAIA) of the proposed Lease Area (LA) and export Cable Route (CR) corridor for the Oriel Wind Farm. The UAIA absorbs preliminary assessments conducted in 2007 and 2019 based on existing desktop information.<sup>1</sup> The UAIA includes an archaeological review of marine geophysical survey conducted in 2019 and marine geotechnical investigations conducted in 2020.<sup>2</sup>

The proposed wind farm is located in Dundalk Bay (Figure 1). The LA occupies a hexagon-shaped area measuring 6.7 km long by 5.4 km wide and occupying 28km<sup>2</sup>. It is centred at UTM29N 692319E 5978623N (ITM 726690E 798489N, WGS84 53.920255 Latitude -6.071247 Longitude Decimal Degrees) (Figure 1). The export cable corridor tapers in width from 4 km at the LA to 1 km close to the landfall. It extends 10.5 km southwest from the wind farm to Dunany Point, Co. Louth, approaching landfall on the south side of the point, at UTM29N 682072E 5971056N (ITM 716337E 791067N, WGS84 53.856024 Latitude -6.231577 Longitude Decimal Degrees). The combined LA and CR corridor occupies an area of 52.29km<sup>2</sup>.

The principal archaeological archive relating to the proposed development is the Historic Shipwreck Inventory maintained by the National Monuments Service (NMS) at the Department of Housing, Local Government and Heritage. The Shipwreck Inventory for Co. Louth was published by the NMS in 2008, and more recent records are contained in the national wreck site database, accessible as an online portal maintained by the NMS and updated to 2018.<sup>3</sup> The Irish National Seabed Survey, INFOMAR, is a further resource that is accessible online.<sup>4</sup> The Sites and Monuments Record archive, also maintained by the NMS and accessible online, was examined for archaeological information relating to the landfall locations.<sup>5</sup> Additional sources

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<sup>1</sup> Niall Brady, 'Archaeological assessment for Oriel offshore windfarm development North-western Irish Sea. 06R118', Archaeological Diving Company Ltd, 2007; Niall Brady, 'Archaeological Impact Assessment, Oriel Offshore Windfarm, Dundalk Bay and Dunany, Co. Louth', Archaeological Diving Company Ltd, 2019.

<sup>2</sup> The marine geophysical surveys were completed by Ultrabeam for Alpha Marine on behalf of Parkwind; 'Oriel Windfarm. Operations, processing and results report', 2019, and supporting data sets. The marine geotechnical work was completed by Geoquip Marine on behalf of Parkwind; 'Oriel Wind Farm Geotechnical Site Investigation, volume 1 field operations and preliminary results', 2020.

<sup>3</sup> Karl Brady, *Shipwreck inventory of Ireland: Louth, Meath, Dublin and Wicklow* (Dublin: Stationary Office, 2008), pp 448–496; <https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=89e50518e5f4437abfa6284ff39fd640>

<sup>4</sup> [www.infomar.ie](http://www.infomar.ie)

<sup>5</sup> <https://webgis.archaeology.ie/historicenvironment/>

include the National Inventory of Architectural Heritage and historic Ordnance Survey maps.<sup>6</sup> A ground model and cable route interpretation report has also been consulted.<sup>7</sup>

The UAIA includes an archaeological review of marine geophysical survey data acquired for the proposed development in 2019.<sup>8</sup> The 2019 survey comprised multi-beam bathymetry; side-scan sonar; magnetometry and sub-bottom profile surveys, to further inform an understanding of the topography and underlying geological formations of the seabed. The archaeological review has focused on the side-scan sonar and magnetometer data sets and has included an examination of the primary side-scan sonar data files. A marine geotechnical survey report on site investigations completed for the proposed development in 2020 has also been reviewed.<sup>9</sup>

The sources examined represent a sequence of data sets that allow for an assessment of the archaeological constraints associated with the LA, the CR corridor and the associated landfall location.

## **2.0 Receiving environment**

### **2.1 Marine**

#### **2.1.1 Context**

The wind farm is located to the east of Dundalk Bay, which is a broad shallow inlet. A terrace extends across the LA and the CR corridor, with the deeper water increasing towards the southeast (Figure 2). Water depths in the LA range from 14.4 m Lowest Astronomical Tide (LAT) along the terrace to 32 m LAT off the terrace, while water depths areas are less than 1 m LAT close inshore along the CR corridor and up to 29 m LAT off the terrace.

The project area is within the Western Irish Sea Mud Belt (WISMB), a palaeo-glacial basin filled with marine Holocene sediment.<sup>10</sup> While there is no indication of exposed bedrock, the seabed substrate within the LA and CR corridor includes a band of rocks and boulders on the north side, which in places is co-eval with the top of the marine terrace feature. Rock and boulder is also present within the eastern part of the LA, while coarse sediments, sand and mud occupy much of the central area of the LA (Figure 3). Coarse sediments and mud also occupy much of the CR corridor. From an archaeological perspective, sands and muds provide good holding content for the preservation of cultural heritage material such as shipwreck that might lie on such surfaces or become buried in them. In contrast, rock and boulder areas present aggressive environments where material remains lying there can be eroded away quickly. This is particularly the case in shallow water environments where tidal flow and extreme weather will produce impacts. Coarse

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<sup>6</sup> [www.buildingsofireland.ie](http://www.buildingsofireland.ie); <http://map.geohive.ie/mapviewer.html>

<sup>7</sup> 'Oriel ground model update & cable route interpretation', Gavin and Doherty Geosolutions, 2020.

<sup>8</sup> As per note 2 above.

<sup>9</sup> As per note 2 above.

<sup>10</sup> GDG, p. 24

sediments, comprising gravel and sandy gravel also present a harsh environment for archaeological remains, where timber elements may be reduced, and only the more robust elements such as substantial metal pieces (for example metal-plating and munitions) might be expected to survive.

### 2.1.2 Recorded historic shipwreck events

From a navigation perspective, Dundalk Bay is described as foul and shallow with an irregular bottom.<sup>11</sup> The southern entry point to the bay is at Dunany Point, where the Dunany reefs ('Dunany Shoals' on current Admiralty Charts) present irregular depths in the order 5.5 m and extend NNE for 2.5 nautical miles where depths shallow to 4.6 m, with even shallower water between it and the shore.<sup>12</sup> It comes as little surprise that Dundalk Bay has a significant number of recorded ship wreck events.

The loss of shipping through wrecking starts to be recorded systematically after c. 1750, which represents the burgeoning hey-day of pre-modern navigation. There are one hundred and seventy-two (172) historic wrecking events associated with Dundalk Bay, which is a significant number for a bay that measures only 14 km long (between Cooley Point in the North and Dunany Point in the South) and 11 km wide. This includes 163 recorded wreckings whose specific locations are not known and nine known wreck-site locations, two of which occur within the proposed export cable corridor. There are also 15 locations where features observed in marine geophysical survey have been registered by the National Monuments Service as potential wreck sites, ten of which occur within the proposed LA. Appendix 1 presents a list of the 163 recorded shipwrecking events associated with Dundalk Bay, and Appendix 2 presents a list of the nine known wrecks and the 15 marine geophysical survey feature locations in Dundalk Bay.

There is one wrecking event attributed to the year 1594 (Wreck reference W00255), and none attributed to the seventeenth century. The low numbers is in keeping with the absence of systematic record-keeping until the mid-1700s. This explains the relative surge to 20 wrecking events in the eighteenth century. However, such losses pale in comparison to those associated with the nineteenth century, when 83 wrecking events were recorded. The numbers of losses and the associated financial and related implications at this time led to improvements in shipping and in navigation, and help to explain the very low numbers of loss attributed to the twentieth century, when only eight shipwreck events in Dundalk Bay were recorded.

In an attempt to convey a sense of the spatial distribution and density of recorded wrecking events within Dundalk Bay, Figure 4 shows the numbers of recorded wreckings attributed to a known topographic reference point. There are, for example, 53 events attributed broadly to Dundalk Bay, while 14 events are particular to Annagassan. In relation to the proposed development area it is to be noted that Dunany Point is the reference location for 16 recorded

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<sup>11</sup> Lords Commissioners of the Admiralty, *Irish Coast Pilot* 10th edition (London, 1954), p. 162.

<sup>12</sup> *Ibid.*



shipwreck events. The Dunany reefs present a key navigation hazard in this area and the reefs are mentioned in several of the records for wrecking at Dunany.

The vessels that wrecked at or close to Dunany appear to have been wooden ships for the most part, including several schooners, a barque, a brig and also a small fishing vessel or yawl. There is one eighteenth-century loss, which is that of the *Mary Ann*; a vessel of New York that was *en route* to Liverpool with a cargo of rum, tobacco and slaves (W00209). She became stranded on a beach opposite the house of Robert Subthorpe. The crew mutinied and a large number of people tried to board the vessel. The captain and Mr Subthorpe's armed servants acted in protecting the vessel and cargo. Almost a century later, in 1880, the *Parkside* was a wooden brigantine or brig of Whitehaven that weighed 132 tons (W00224). She was *en route* from Newport to Dundalk with six crew and a cargo of coal when she became stranded in a SE force 8 gale and was totally wrecked at Dunany.

#### 2.1.4 *Known historic shipwreck events*

It is not possible to deduce from such records where the actual wreck sites are located, and if indeed wreckage survives. The reference to the wrecking event would typically be made by those watchers and reporters who are shore-based, or who were part of rescue parties dispatched to save crews and passengers and recover cargo. Their records will typically position the ship in relation to the nearest topographic reference point (as indicated on Figure 4). The records do not record where a vessel may have finally foundered. For further insight, it is necessary to consider other sources, including fishermen's records of 'snag points', divers' records of discoveries underwater, and marine geophysical survey records. The latter will include official surveys by the UK Hydrographic Survey Office (UKHO), which tend to record only substantial wreckage that causes navigation hazards, and more discrete surveys commissioned for marine development projects or undertaken for research purposes. The results of such work permit the positioning of nine wreck sites with some confidence. Fifteen features observed in side-scan sonar records are also registered as potential wreck site locations (Appendix 2, Figure 4).

The rocky environment of Dunany reefs presents a harsh seabed for the preservation of wreckage, particularly timber wreckage, where the shallow water depths and the exposed nature of the reefs would ensure that any vessel running aground there would be broken up quickly or would be pushed off the reefs into calmer waters. Two of the nine known shipwrecks in Dundalk Bay are located close to the reefs and both are located within the proposed export cable corridor (Figures 4–5, wrecks W00248 and W00276). When the locations of the two wrecks are considered in relation to the underlying substrate (Figure 3), it is evident that both wreck W00248 and W00276 are located within that portion of the cable corridor that has a substrate primarily determined to be mud.

Wreck W00248 is that of *Topaz*, a Glasgow registered iron steam ship that weighed 168/353 tons and measured 161 feet long. The ship was *en route* from Workington to Dundalk, carrying a cargo of steel rails, with a crew of nine when it was lost in a WSW force 4 wind. The record

reports that she struck a reef, drifted into deeper water and sank. The reef must have been Dunany reef, and the WSW gale would have blown her into the muddy substrate of deeper water where she now lies. The crew took to their lifeboat and landed at Greenore, Co. Louth. The ship and cargo were insured, so Lloyds employed a diver called Rigden/Rizdon to salvage the steel rails during 1892–1893. The rails, engines and working gear were removed. The vessel's masts were also removed and the area was buoyed. In 1977 the hull was still almost intact. The boiler and stern stand almost 3 m high off the seabed and the greatest depth recorded was 23 m.

Wreck W00276, for its part, is simply recorded as an unidentified wreck beside that of *Topaz*. The charted position places W00276 350 m SSE of *Topaz*.

Wrecks W00248 and W00276 are the only known wreck sites within the proposed development area. There is a series of features identified on side-scan sonar traces from the 2006 survey of the development area that the NMS has registered as features in the Historic Shipwreck Inventory and these suggest the presence of wreck sites within the LA (Figure 5). However, the report that identified those features concluded that they are 'probably not archaeological in nature'.<sup>13</sup> The 2006 survey was based on survey data acquired from a series of transect lines that crossed the LA forming a grid pattern (Plate 1). The features identified comprise isolated rock or boulders (W11148, W11149, W11150, W11154) SS1-3, 8) and concentrations of cobbles or other possible snag points (W11144, W11145, W11146, W11147, W11148, W11153, W11155, W11156, W11157). Snag-point locations were highlighted because they can represent areas where material appears to be entrapped. Entrapment can occur naturally, where lighter materials are deposited around a rock outcrop or boulder feature. Entrapment can also occur around debris associated with a shipwreck. Some level of qualification is possible to assess whether the snag is natural or manmade in origin, by cross-referencing the magnetometer data for the same location. The 2006 data had one instance of correspondence (W11144) suggesting that this feature was manmade in origin. W11144 is located outside the current proposed development area. None of the features within the proposed LA registered in the Historic Shipwreck Inventory are clearly indicative of shipwreck.

#### 2.1.5 Comment

Dundalk Bay is a location with a significant number of shipwreck events that reach back to the sixteenth century but are for the most part nineteenth century in date. The proposed export cable route corridor making landfall to the south of Dunany Point contains two known shipwreck sites, W00248 and W00276 respectively. Although the proposed LA includes a series of Historic Shipwreck Inventory entries, none of these features are proven shipwreck locations and all are based on features observed on side-scan sonar data traces that are probably natural in origin.

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<sup>13</sup> Brady, Archaeological assessment for Oriel offshore windfarm development North-western Irish Sea. 06R118', p. 12.

## **2.2 Landfall location**

### *2.3.1 Context*

An archaeological assessment of the proposed landfall location for the export cable in 2019 considered Dunany Point and the shore area to the north of the point.<sup>14</sup> The proposed landfall location has since moved to the south of Dunany Point (Figure 6). The assessment findings remain essentially the same.

The proposed landfall is positioned along a stretch of shingle beach. There is a series of archaeological features at Dunany, principal of which is the site of a former promontory fort (LH019-002) at Dunany Point, which overlooks the shingle beach. The promontory fort is referred to locally as the *Dún*-Fort and it stood at Dunany Point but was destroyed by coastal erosion. The National Monuments record indicates that there are no visible surface traces of the fort today. Promontory forts are considered to have served as principal places during the Iron Age and their owners were invested in maritime trade and activities.

Dunany Church and graveyard (SMR LH-016-005001/2) lie on the north side of the point and are at a remove from the proposed landfall location. The church and graveyard's standing remains appear to be sixteenth century in date.

A series of other archaeological sites are located further south, as indicated on Figure 6, in Mitchelstown and Port townlands (LH019-014001-014003, LH019-015002). They comprise a series of enclosures and a church site, which suggests a medieval context.

A number of sites of architectural heritage are also located at Dunany, and are protected sites. They include the eighteenth-century Dunany House (NIAH 13901902), which is regarded as being of regional importance. The house is removed from the proposed landfall but its property boundaries extend to the foreshore area and consideration should be given to the possibility for the presence of associated demesne features here, such as boat houses, gate ways or other features that are not recorded on official registers.

Two nineteenth-century houses are located close to the landfall as well. Seagrave House (NIAH 13901903) was built c. 1850 and is regarded as being of regional interest, and an adjacent house 'Roadstone' was built c. 1840 and is regarded as a fine house that retains important features such as the early fenestration and is considered to be of regional importance.

### *2.3.2 Comment*

There is no record of archaeological interventions at Dunany Point but it can be anticipated that archaeological inspection and intertidal survey will be required once the landfall location is confirmed.

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<sup>14</sup> Brady, 'Archaeological Impact Assessment, Oriel Offshore Windfarm, Dundalk Bay and Dunany, Co. Louth', 2019.

### **3.0 2019 Marine geophysical survey**

A new marine geophysical survey was completed in 2019. The survey was completed by Ultrabeam Ltd for Alphamarine Survey Ltd on behalf of Parkwind and aimed to gather bathymetric and geophysical survey data for the development of a ground model to inform the Wind Turbine foundation concept for the proposed wind farm.<sup>15</sup> The survey deployed devices to acquire multi-beam bathymetry; side-scan sonar; magnetometry and sub-bottom profile data along 13 pre-defined transects. Twelve of the transects were located within the LA and one transect extended along the export cable route corridor. The data of the 2019 surveys was made available and has been reviewed archaeologically.

#### **3.1 Operational**

Project data was mapped according to UTM29N

The surveys were carried out between 28 August and 15 September 2019. Delays were incurred due to fishing gear being presented.

The side-scan sonar unit deployed was an Edgetech 4200, operating at 300kHz and 900kHz, ensuring Low Frequency and High Frequency data acquisition. The range was set at 50 m and the device was towed astern.

The magnetometer unit was a Geometrics G8824, and the device was towed 10 m astern of the side-scan sonar.

The sub-bottom profiler employed was a Geo-Source 200 Sparker unit and was towed in a surface catamaran off the starboard quarter of the survey vessel. The Boomer and hydrophone were towed at 40 m layback from the vessel.

Post-processing of the 2019 data identified side-scan sonar targets over 300 mm in size and classified them as: boulder; mound, cable, debris, possible unexploded ordnance (UXO) or wreck. The side-scan sonar JSF data files were made available to ADCO for archaeological review.

Post-processing of magnetometer data on a line-by-line basis highlighted targets using a minimum amplitude of 5nT. The data was made available to ADCO for archaeological review.

All target observations were mapped and exported as .xlsx files and as shape files to allow for mapping and interrogation.

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<sup>15</sup> Ultrabeam, 'Oriel Windfarm. Operations, processing and results report', p. 2.

### **3.2 Archaeological review: General**

Archaeological review of the data sets has focused on the side-scan sonar and magnetometer survey results as these two data sets are the most useful for identifying wreck-site and potential wreck sites on the seabed.

### **3.3 Archaeological review: Side-scan sonar and magnetometer**

#### **3.3.1 Survey**

A total of thirty side-scan sonar data files were made available for review and were examined using Edgetech Discover 4200 viewing software that simultaneously shows the High Frequency and Low Frequency data trace.

The survey lines completed are indicated on Figure 7. The survey lines follow a similar transect plan to that achieved in 2006 but represent more partial coverage (compare Plate 1 with Figure 7). The presence of fishing gear prohibited more extensive coverage in 2019.<sup>16</sup>

The 2019 survey identified 88 side-scan sonar contacts, all but one of which are interpreted as boulders. This is in keeping with the results of the 2006 survey. The exception is 2019 survey target sss087, which is identified as a piece of debris that measures 3.3 m in length.<sup>17</sup> The feature is located on the southern border of the LA, at UTM29N 693154E 5974937N. There was no observation of features that might be associated with shipwreck.

Archaeological review of the 2019 data set confirms the findings of the 2019 survey report. The quality of the data is good and provides clear images of the seabed, revealing sand ripples, boulders and expanses of coarse sands/gravel (Plates 2–3). The presence of trawl lines from fishing activities also populate the seabed (Plate 4). The piece of debris stands out clearly in the sonar data trace as an isolated piece in a location where the seabed is a coarse sand/gravel (Plate 5).

There is only one survey line completed in 2019 that overlaps with one of the features identified in the 2006 data set; namely Line EW4.001, which crosses over the location of 2006 feature ss15 and ss5 (W11148 and W11153), interpreted as an area of cobbles (Plate 6). However there was no indication of the feature identified in 2006 on the 2019 survey line. It is an area where the substrate is considered to be sand with rock and boulder as well. It is possible that the feature has been buried by mobile sand.

The magnetometer data set reveals a lot of noise, and the 2019 report notes that '[i]t was not possible to correlate any datasets with the Magnetometer data as the dataset remained

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<sup>16</sup> Ultrabeam, 'Oriel Windfarm. Operations, processing and results report', p. 38.

<sup>17</sup> Ultrabeam and Alpha Marine, 'Oriel Windfarm. Operations, processing and results report', p. 54, figure 27.

incomplete and with errors at the time of demobilisation'.<sup>18</sup> The magnetometer tracklines cross the location of ss5 and ss15 (W11148 and W11153) and the processed data does not show any localized variation at this location. The tracklines do not cross the locations of any other of the side-scan sonar features identified in 2006 but do cross the piece of debris identified in the 2019 survey (Figure 8). The magnetometer registers a slight localized variation at this location, suggesting that the debris retains a ferrous metal content.

There is no indication of shipwreck material in the 2019 data set, and this report agrees with the identification of the single piece of debris, which was observed on survey line OLF\_Line\_03 (Plate 6).

#### **4.0 2019 Marine geotechnical investigation**

A programme of geotechnical investigations was conducted in 2019, including seven boreholes within the proposed LA and six boreholes within the proposed export cable route corridor.<sup>19</sup>

The distribution of the boreholes acquired are shown on Figure 9. The borehole locations maintained a distance from all the 2006 side-scan sonar feature locations within the LA and from the known shipwrecks in the cable route corridor. The closest borehole location to one of these features was 300 m.

The boreholes within the LA were tasked to penetrate the seabed to a depth of 40 m below seabed level, while those along the proposed cable route corridor sought a depth of 3 m below seabed level. In the event, the depths achieved within the LA were less than 40 m, and those within the cable route corridor were on average 3.3 m, with only BH-018 achieving the slightly shallower depth of 2.5 m.

The boreholes within the LA typically revealed a stratigraphy of clay or sand at the surface, overlying clay, overlying gravel, which in turn sits on top of limestone. The depth of the bedrock varies across the site; it was recorded closest to the surface at Borehole BH-07 where it lies at 9.1 m below seabed level, it was recorded more deeply at BH-04 where it lies at 16.85 m below seabed level.

The shallower boreholes along the export cable route revealed deposits of clay except for BH-018, which recorded clay and sand over cobble.

None of the borehole logs report the observation of anthropogenic features such as timber, metal or ceramic, and none record peat or related organic strata that might indicate the presence of submerged palaeo-landscapes.

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<sup>18</sup> Ultrabeam and Alpha Marine, 'Oriel Windfarm. Operations, processing and results report', p. 42.

<sup>19</sup> Geoquip, 'Oriel Wind Farm Geotechnical Site Investigation, volume 1 field operations and preliminary results', p. 2.



## 5.0 Impact assessment

The potential principal impacts on archaeology and cultural heritage arising from the development of the Oriel Wind Farm will occur during the construction and decommissioning phases, with less potential impacts during the operational phase. The impacts will be associated with WTG and Offshore Platform foundation installations, and with export cable installations and maintenance. The impacts will comprise:

- Sediment disturbance and deposition, leading to effects on known heritage assets.
- Direct impact on historic shipwreck sites.
- Direct impact on intertidal sites.

A series of mitigation measures can be designed into the project programme to minimise these potential impacts on cultural heritage. The principal designed-in measures include:

- The principal of avoidance will inform the design process, whereby impacts on known cultural heritage sites will be avoided wherever possible.
- Archaeological Exclusion Zones (AEZ) will be established around each known shipwreck site/cultural heritage within which no installation activities should take place.
- In the event that installation activities are unable to avoid impacts within an AEZ, the works can only proceed with the consent of the National Monuments Service.
- Pre-construction marine geophysical surveys, ROV surveys and geotechnical surveys conducted for the proposed development will be reviewed by a maritime archaeologist as part of the project design team and the findings communicated to the NMS and will inform the wider design process.
- An Archaeological Management Plan (AMP) will be prepared to inform the construction and maintenance works, to facilitate the recording and reporting of any archaeological material discovered during installation and maintenance works should this occur. The AMP will address protocols for the archaeological review and assessment of target features that cannot be avoided by construction activities, and that include ROV and/or archaeological diver inspection and preservation by record. Preservation by record is the last resort once all other options have been considered.
- Project maritime archaeologists, operating under licence from the DHLGH, will be engaged on the project to monitor construction activities and observe any works where material of archaeological importance may be uncovered.

## 6.0 Recommendations

### 6.1 *Pre-construction phase measures*

#### INTERTIDAL SURVEY

- The UAIA recommends the locations of the landfall sites are inspected archaeologically, and that such inspection includes the intertidal foreshore. The inspections would take the form of archaeological intertidal survey, which is a walkover inspection and survey that is licensed by the DHLGH. The inspection should take place in advance of any open excavation works in the intertidal zone, so that these works can avoid impacts on locations of archaeological interest.

#### MARINE SURVEY

- The UAIA recommends that marine geophysical survey comprising high frequency side-scan sonar and magnetometry survey is conducted at the two known shipwreck locations W00248 (*Topaz*) and W00276 (unnamed). Such survey would provide additional information on each wreck site that allows for the accurate positioning and mapping of each site. Such survey may be supported by an integrated multi-beam bathymetry survey and sub-bottom profile survey, and by archaeological dive inspection. An Archaeological Exclusion Zone (AEZ) measuring 100 m in radius from the centre-point of each site will be identified for both locations, within which no intrusive work should take place. The exclusion zone will protect each site from indirect impacts associated with anchor placement, side-casting of cable trench risings and related activities.
- The absence of the indication of wreckage at the side-scan sonar features recorded from the 2006 survey data suggests that these are not wreck site locations. Additional survey should be carried out to further assess the locations. Such survey would include high frequency side-scan sonar and magnetometry survey and may include archaeological dive inspection. If the results do not reveal wreckage, consideration should be given to delisting the locations from the Historic Shipwreck Inventory. However, if wreckage potential is indicated, then the sites should be continue to be listed and protected from impacts by establishing AEZs around each location.
- The piece of debris recorded in the 2019 survey (sss0087) should be further assessed. Such assessment would include high frequency side-scan sonar and magnetometry survey and may include archaeological dive inspection. If wreckage potential is indicated, then an AEZ should be established around the site location.
- The undertaking of further surveys and geotechnical investigations for the proposed development should continue to be subject to archaeological inputs and assessment of the data arising. Such work should be conducted under licence from the Department of Housing, Local Government and Heritage, and should anticipate that the National Monuments Service may require additional measures.

## **6.2 Construction phase measures**

### **AVOIDANCE**

- The principal of avoidance should be adopted to protect any known cultural heritage site from impacts during construction work where possible.

### **AEZ**

- Archaeological Exclusion Zones (AEZs) should be established around all known cultural heritage sites, within which no construction activities will take place where possible.
- In the event that avoidance is not possible, such work can only proceed within AEZs with the permission of the National Monuments Service and will be subject to any additional requirements that the NMS will impose.

### **AMP**

- An Archaeological Management Plan (AMP) will be prepared to inform the construction and maintenance works, to facilitate the recording and reporting of any archaeological material discovered during installation and maintenance works should this occur. The AMP will address protocols for the archaeological review and assessment of target features that cannot be avoided by construction activities, and that include ROV and/or archaeological diver inspection and preservation by record. Preservation by record is the last resort once all other options have been considered
- The AMP will also address archaeological monitoring protocols required for seabed disturbance activities that will take place across the proposed Lease Area and export cable corridor more generally.

## **6.3 Archaeology management measures**

**RETAINING AN ARCHAEOLOGIST/S.** An archaeologist experienced in maritime archaeology will be retained for the duration of the relevant works.

**THE TIME SCALE** for the pre-construction and construction phase works should be made available to the archaeologist, with information on where and when ground and seabed disturbances will take place.

**SUFFICIENT NOTICE.** It is essential for the developer to give sufficient notice to the archaeologist/s in advance of the pre-construction and construction phase works commencing. This will allow for prompt arrival on site to resolve further survey work, and to monitor ground and seabed disturbances. As often happens, intervals may occur during the construction phase. In this case, it is also necessary to inform the archaeologist/s as to when ground disturbance works will recommence.

**ARCHAEOLOGICAL MONITORING.** Archaeological monitoring is licensed to the Department of Housing, Local Government and Heritage and licences must be applied for and granted before site works commence. Licence applications take four weeks to be processed once received by the Department. Sufficient lead-time must be allowed for the project programme to facilitate such work. ADCO recommends lead-times of not less than eight weeks.

**DISCOVERY OF ARCHAEOLOGICAL MATERIAL.** In the event of archaeological features or material being uncovered during the construction phase, it is crucial that any machine work cease in the immediate area to allow the archaeologist/s to inspect any such material.

**ARCHAEOLOGICAL MATERIAL.** Once the presence of archaeologically significant material is established, full archaeological recording of such material is recommended. If it is not possible for the construction works to avoid the material, full excavation would be recommended. The extent and duration of excavation would be a matter for discussion between the client and the licensing authorities.

**ARCHAEOLOGICAL TEAM.** It is recommended that the core of a suitable archaeological team / archaeological dive-team be on standby to deal with any such rescue excavation. This would be complimented in the event of a full excavation.

**SECURE SITE OFFICES** and facilities should be provided on or near those sites where excavation is required.

**BUOYING/FENCING** of any such areas would be necessary once discovered and during excavation.

**ADEQUATE FUNDS** to cover further survey, excavation, post-excavation analysis, and any testing or conservation work required should be made available.

**MACHINERY TRAFFIC** during construction must be restricted as to avoid any of the selected sites and their environs.

**SPOIL** should not be dumped on any of the selected sites or their environs

The recommendations contained in this report are subject to the approval of the National Monuments Service at the Department of Housing, Local Government and Heritage.

## 7.0 Appendix 1: Recorded shipwreck events Dundalk Bay and adjacent waters

Source: Brady, *Shipwreck inventory of Ireland*

Reference	Name	Date of Loss	Place of Loss	Description
W00115	<i>Aisthorpe</i>	30/12/1837	Dundalk, North Bull	<b>Ran ashore</b> while entering harbour, expect to become a wreck.
W00116	<i>Alexander</i>	12/11/1852	2 miles S. of Soldier's Pt./near Black Rock, Dundalk Bay	45-ton sloop was 21 years old and classed as $\text{æ} 1$ by Lloyd's. She was <i>en route</i> from Troon to Dundalk with a cargo of coal for Carton & Sons. There were four men aboard and the master was Mooney. They encountered an ESE force 11 wind with thick and hazy conditions. Her chain cable was carried away in the gale and she <b>drifted ashore</b> . There was no lifeboat or rockets to help them and all those aboard were lost/survived. The estimated loss on the vessel was £100 and £25 on the cargo.
W00117	<i>Ally and Betty/Sally and Betty</i>	11/11 or 12/1852	1½ miles S of Soldier's Point/Dundalk Bar/near Black Rock	26-ton smack of Ardglass was 38 years old. She was <i>en route</i> from Belfast to Dublin, under Smyth, with three crew and a cargo of 'moulding and leather'. She encountered an ESE force 11 wind with thick and hazy conditions. Her mainboom was carried away, and she sprung a leak. She was then <b>driven ashore</b> with the loss of one life. The estimated loss on the vessel was £50 and £40 on the cargo.
W00119	<i>Andromeda</i>	16/04/1877	near Dundalk Bar, close to the lighthouse	16 year-old wooden schooner, of London weighed 99 tons. She was owned by T. Barnsey of Goole, and the master was T. Earnshaw. She was <i>en route</i> from Garston to Dublin with five crew, two passengers (the master's wife and daughter) and a cargo of coal when she became stranded in an ESE force 9 gale along with the <i>Jane</i> . The lifeboat took off the four crew and the master's wife and daughter. The master took to the mast in the hope that the vessel would be re-floated. Eventually the coastguard took him off before the <b>vessel broke up and sank</b> . There was no loss of life.
W00120	<i>Ann</i>	5/12/1786	near Dundalk	The <i>Ann</i> , captained by Swann, was on passage from Liverpool for Newry when she <b>went ashore</b> near Dundalk. The cargo was saved.
W00121	<i>Ann</i>	17/12/1787	Dundalk Bay	<b>Went ashore</b> , of Glasgow <i>en route</i> to Dublin.
W00122	<i>Ann</i>	01/11/1844	Annagassan, off	<b>Went ashore</b> , total wreck.
W00123	<i>Anne McCloud</i>	1861	Dundalk Bay	After a violent storm this vessel was found in the bay <b>in about 12 fathoms of water</b> . She had been bound for Newry with a cargo of coal. Her master and owner Captain Darby and the three crew were lost.

Reference	Name	Date of Loss	Place of Loss	Description
W00124	<i>Anthea</i>	WW1, post	Annagassan bridge, River Glyde	Fishing boat, owned by Mr. King of Annagassan, was <b>abandoned on the mill side of the bridge</b> after the fishing season.
W00125	<i>Arion</i>	07/10/1863	Dundalk Lighthouse, opposite, W of the bar	<b>Ran ashore</b> , coal cargo.
none	<i>Ardendee</i>	12/1895	Lurgangreen S. of Blackrock	629-ton Liverpool-owned iron barque was built in Whitehaven in 1876. She was <i>en route</i> to Falmouth from Rangoon with a cargo of rice when she <b>ran aground</b> . The crew were saved. Source: De Courcy Ireland, 1983, 123.
W00126	<i>Arizona</i>	16/11/1901	west bank, Dundalk	Vessel was <i>en route</i> from Miramichi, New Brunswick to Dundalk with a cargo of timber for Jennings. Whilst being towed by a tug she <b>grounded</b> and could not get off despite the help of lighters.
W02912	<i>Blue Bell</i>	10/1870	between Whitehaven and Annagassen	78 ton schooner was <i>en route</i> from Annagassen to Whitehaven with a crew of four. It is supposed she foundered and became a <b>total loss</b> .
W00127	<i>Boucalais</i>	27/04/1859	near Dundalk	110 ton French lugger was <i>en route</i> from Bayonne to Belfast with a cargo of corn. She encountered a gale and <b>went ashore</b> . The crew survived.
W00128	<i>Brothers</i>	14/04/1879	off Dundalk	15 year-old vessel of Greenock was either a 135 ton wooden brigantine or a 220 ton collier. She was built in Prince Edward Is. and her Official No. was 50,946. Her owner was T. Stewart of Lamlash and the master was P. Mailey/Melia. She was <i>en route</i> from Ardrossan to Dundalk with four crew and 210 tons of coal for a Mr. Oakes. She sprang a leak and as the water gained on the pumps the crew abandoned the vessel and saw her <b>founder</b> . The vessel was laid up for some months and despite the moderate weather, her seams are supposed to have opened and she became a total wreck. It was thought that a defective hull was the cause of the loss.
W00129	<i>Castor</i>	26/01/1832	Drogheda/ Dundalk	Brig of Workington was carrying a cargo of deals, under the command of McGelton of Dundalk, when <b>lost</b> .
W00130	<i>Catherine</i>	23/05/1855	Soldier's Point, Dundalk	Vessel of Dundalk, carrying a cargo of coal, became <b>stranded</b> on 'Rock Perch' as a result of 'the low tides.'
W00131	<i>Catherine Lathom</i>	09/12/1904	Dundalk Bay, off Blackrock (?)	Chester dandy <b>grounded</b> .
W00132	<i>Ceres</i>	20/11/1820	Dundalk Bay	<b>Went ashore</b> .



Reference	Name	Date of Loss	Place of Loss	Description
W00133	<i>Clytie/Clythie</i>	02/05/1841	Ballagan Point/Cooley Point	69-ton schooner <i>en route</i> to Drogheda, cargo of coal. <b>Struck reef and broke up.</b>
W00134	<i>Cocker</i>	19/10/1881	½ mile NW of Dunany Harbour	38 year-old wooden schooner of Whitehaven weighed 53 tons. She was owned by E. Jones of Dunany and the master was T. Hanratty. She was <i>en route</i> from Whitehaven to Dunany with three crew and a cargo of coal. She became stranded and was <b>totally wrecked</b> in a SE force 9 gale.
W00136	<i>Cumberland</i>	24/03/1890	Annagassan, 2 mile NNW of Coastguard Station	Drogheda schooner, <b>stranded.</b>
W00137	<i>Cumberland</i>	14/10/1891	Annagassan Beach	35 year-old, 64/65 ton schooner was built in 1856. It was owned by P. Hanratty, Adamston, Co. Louth, and registered in Drogheda. It was <b>moored when it was wrecked</b> in a SW force 7 wind.
W00138	<i>Daggry</i>	11/04/1899	Dundalk Harbour	Wooden barquentine of Norway weighed 361 tons and was 44 years old. The master was O. J. Petersen and the owner was W. Augensen of Frederickstadt, Norway. The vessel was <i>en route</i> from Frederickstadt to Dundalk with nine crew and a cargo of timber. She became stranded in a NNW force 6 and was a <b>total loss.</b>
none	<i>Dalila</i>	1865	off Dundalk	Schooner of Nantes became <b>stranded and broke up.</b> The seven crew were saved by the Blackrock lifeboat. Source: De Courcy Ireland, 1983, 81,
W00139	<i>Day Star</i>	5/02/1887	end of the jetty at Dundalk	Vessel was lost and been broken up by a Mr. Oakes.
W00140	<i>Derwent</i>	08/11/1828	Cooley Point, near	Of Whitehaven, <b>driven ashore.</b>
W00141	<i>Diligent</i>	14/08/1829	Dundalk	Collier brig was <b>wrecked</b> in a gale.
W00142	<i>Dorothy</i>	28/01/1803	Dundalk Bay	<b>Standed.</b>
W00143	<i>Duddon</i>	10/1883	South Bull, opposite Dundalk Lighthouse	Vessel <b>broke up.</b> The Giles's Quay lifeboat assisted the crew.
W00144	<i>Eagle</i>	10/07/1837	off the quay at Dundalk	Vessel had travelled from Ayr.
W00145	<i>Edward Henry</i>	1833	Dundalk	62-ton, <b>foundered.</b>
W00146	<i>Elizabeth</i>	26/01/1768	Dundalk	The <i>Elizabeth</i> , captained by Pool, was sailing from Liverpool to Waterford and Jamaica when she parted from her anchors and cables and <b>went ashore.</b> It was hoped at the time that the vessel could be got off.

Reference	Name	Date of Loss	Place of Loss	Description
W00147	<i>Elizabeth</i>	1833	Dundalk?	30-ton, <b>went missing</b> .
W00148	<i>Emilie</i>	1834	Dundalk Bay	24 year-old vessel of Newry and Strangford weighed 63 tons and classed as E1 when she was <b>lost</b> .
W00150	<i>Endeavour</i>	08/04/1858	Cooley Mount, Dundalk	50 ton sloop of Amlwich was 8 years old. She was <i>en route</i> from Dundalk to Bangor with a cargo of slates when she became stranded in an E by S force 10 wind and was <b>partially wrecked</b> . All three men aboard were lost.
W00151	<i>Entered Apprentice</i>	21/11/1881	1 mile SW of Dunany Point	17-year old unregistered wooden smack weighed 4 tons. The owner was G. Percival of Balbriggan and the master was P. Walsh. She was out fishing from Balbriggan, in ballast, with three crew when she <b>foundered</b> in a SW force 10 gale. All lives were lost.
W00152	<i>Enterprize</i>	21/12/1798	Dundalk Bay	<b>Went ashore</b> .
W00153	<i>Erin</i>	24/12/1895 or 18/01 1896	Mitchelstown/ Dunany Point	33 year-old single-decked, double-masted wooden schooner from Wexford weighed 70/89 tons. Built in 1862, the <i>Erin</i> was <i>en route</i> from Gloucester to Dublin, under Master J. Whelan, with four crew and a cargo of bricks, retorts and clay, when it became <b>stranded</b> in a SE force 11 wind, and became a total loss. Registration was cancelled on 18/01/1896 on word that the vessel had been totally wrecked.
W00154	<i>Fairy Queen</i>	19/12/1874	Dundalk Bay	Following the sinking of this vessel, the masts were still visible above water.
W00156	<i>Fanny Bailey</i>	19, 26 or 28/01/1879	Dundalk Bar/ lighthouse at Dundalk	22 year-old wooden brigantine or brig weighed 138 tons. She was <i>en route</i> from Troon to Dundalk with five crew and a 220-ton cargo of coal and iron. She arrived behind the tide and ran aground on the bar in a severe SE force 7 gale. Completely <b>broken up</b> .
W00157	<i>Favorite</i>	24/12/1848	near Dundalk	Vessel was <i>en route</i> from London to Newry when she was <b>lost</b> .
W00158	<i>Felicity</i>	02/12/1825	Spanish Battery, Dundalk	<b>Stranded on rocks</b> entering harbour.
W00159	<i>Fortune</i>	11/11/1773	Dundalk Bay	Vessel was <i>en route</i> from Glasgow to Dublin, under Bolton, when she was <b>driven ashore</b> . It was feared she would be lost.
W00160	<i>Frances and Ann</i>	11 or 12/10/1824	Dundalk	Vessel was sailing from Liverpool to Strangford, under Quail, when it was <b>driven ashore</b> and filled with water. The crew were saved.
W00161	<i>Frederick</i>	21/08 or 13/09/ 1861	Dundalk Bar	Vessel was carrying a cargo of timber for Williamsons when it was <b>driven onto the bar</b> . The lifeboat rescued the 21 people aboard. On the 13 <sup>th</sup> September the <i>Frederick</i> broke up in squally weather.

Reference	Name	Date of Loss	Place of Loss	Description
W00163	<i>Gebrude Zelling/Gebruder/Gebroeder Zelling</i>	6/04/1858	Black Rock, near Dundalk	Galliot of Eckster, Holland, was <b>wrecked</b> . The cargo was salvaged and was sold at the German consulate at Dundalk.
none	<i>Georgina White</i>	30/03/1850	Annagassan	Glasgow schooner was <i>en route</i> to Opporto when she was <b>wrecked</b> . Dource: Bourke, 1994, 8.
W00164	<i>Goldman</i>	around 1862	Dundalk Bar	Vessel was <b>wrecked</b> .
none	<i>Grace</i>	22/02/1858	Dundalk	Vessel of Harringdon became <b>stranded</b> . Source: Bourke, 1998, 42.
W00165	<i>Guess</i>	c. 9/02/1861	Annagassan	62 ton vessel was <b>wrecked</b> during a gale. The crew were rescued by local fishermen.
W00166	<i>Harriet McBeath</i>	28/10/1875	Salterstown, Dundalk Bay	358.37 ton, barque-rigged, wooden vessel of St. John's was built in that port in 1864. Classed by Lloyd's as 'cont., A1, 4.72', (i.e., from/04/1872), and her Official No. was 48,225. She was <i>en route</i> from Cameroon to Liverpool with fourteen crew, one passenger and a cargo of palm oil. On October 27th the ship was making water and it was decided to make for the Isle of Man. Carlingford lights were mistaken for the Bahama Light-vessel and the vessel <b>went ashore</b> . It was nearly low water when the vessel stranded and both anchors were let go to prevent her from driving inshore, but as the tide flowed she surged further upon the rock. The vessel had <b>struck heavily</b> when first stranded and when the pump was sounded there was 5 ft. of water in the well.
W00167	<i>Hebe</i>	25/01/1803	Dundalk Bay	Vessel was <i>en route</i> from Bristol to Dublin, under Hodson, when she <b>went ashore</b> and filled with water.
W00168	<i>Hebe</i>	3/10/1833	at Dundalk	Vessel was <i>en route</i> from Dundalk to Irvine when she <b>foundered</b> .
W00169	<i>Hop(k)</i>	08/01/1867	Annagassan	<b>Went ashore.</b>
W00170	<i>Hope</i>	11/10/1809	Dundalk Bay	<b>Lost.</b>
W00171	<i>Hope</i>	c. 9/02/1861	Annagassan	Drogheda-owned vessel was <b>wrecked</b> during a gale. The crew were rescued by local fishermen.
W00172	<i>Ibe</i>	14/11/1828	Dundalk Bay	41-ton sloop, <b>wrecked</b> .
W00173	<i>Ida</i>	27/02/1875	3 miles east of Soldiers Pt., Dundalk Bay	10 year-old wooden brigantine of Dundalk weighed 285 tons. She was <i>en route</i> from Troon to Dundalk with eight crew and a cargo of coal. She became <b>stranded</b> in an ESE gale, with the loss of one life.

Reference	Name	Date of Loss	Place of Loss	Description
W00174	<i>Imla</i>	Unknown	Dundalk Bay, near W00171	Wreck, lies in the River Fane channel.
none	<i>Industry</i>	30/03/1781	Dundalk	Vessel was <i>en route</i> from London to Dundalk, under Capt. Gordon, when she <b>ran onto a sandbank and was lost</b> . Source: Bourke, 1998, 45.
W00175	<i>Isca</i>	14/12/1810	Dundalk Bay	Vessel was <i>en route</i> from Whitehaven, under King, when she was <b>stranded</b> in Dundalk Bay.
W00176	<i>James</i>	20/11/1794	Dunany	<i>En route</i> to the West Indies, <b>wrecked</b> .
W00177	<i>Jane</i>	30/01/1789	Dundalk Bay	<i>Jane</i> was sailing from Greenock to Dublin with a cargo of tobacco when she was <b>totally lost</b> . All the crew perished.
W00178	<i>Jane</i>	16/04/1877	Dundalk Bar, 200 yards south of the lighthouse	62 year-old wooden schooner of Whitehaven weighed 114 tons. She was <b>stranded</b> in an ESE force 9 gale along with the <i>Andromeda</i> . A lifeboat rescued the crew. Although it was hoped to re-float the vessel, the storm did not abate and both vessels sank completely.
W00179	<i>Jean Anderson</i>	18/11/1882	Dundalk Bay, east of Dundalk Bar	Dundalk brigantine, cargo of coal, <b>stranded</b> .
W00180	<i>Johanna</i>	c. 9/02/1861	Annagassan	Drogheda-owned vessel was <b>driven ashore</b> in a gale. Local fishermen rescued the crew.
W00181	<i>Johannes</i>	29/06/1871	Dunany Point	48-ton Dundalk schooner, <b>broke up</b> .
W00182	<i>John and Ellanor/John and Eleanor</i>	c. 9/02/1861	Annagassan	71-ton vessel was <b>wrecked</b> during a gale. Local fishermen rescued the crew.
W00183	<i>John and Elizabeth</i>	c. 9/02/1861	Annagassan	Drogheda-owned vessel was <b>wrecked</b> during a gale. The crew were rescued by local fishermen.
W00184	<i>John and Ellen</i>	09/02/1861	Dundalk Bay, south side	<b>Wrecked</b> during gale.
W00185	<i>John Black</i>	10/12/1868	Soldier's Point	Dublin brigantine, cargo of coal. <b>Scuttled</b> .
W00186	<i>Julia</i>	23/03/1866/1886	Dundalk Bay	Liverpool barque was <i>en route</i> from Liverpool to Port-au-Prince, West Indies when she encountered a gale and was <b>wrecked</b> . One of the crew was lost but the lifeboat rescued the others.
W00187	<i>King of Prussia</i>	28/04/1812	Dundalk Bay	Vessel was <i>en route</i> from Liverpool to Newry, under Taylor, when she was <b>driven ashore</b> .

Reference	Name	Date of Loss	Place of Loss	Description
W00188	<i>Lady Anne</i>	23/12/1836	Dundalk Bay, north side	Struck ground and <b>sank</b> .
W00189	<i>Lady Endergally</i>	1827	off Dundalk	35-ton vessel of Lancaster was 24 years-old. She was <i>en route</i> from Dundalk to Duddon when she was <b>lost</b> .
W00190	<i>Lady Huntley</i>	20/06/1852	South Bull, Dundalk (later Soldier's Point)	Schooner of Maryport <i>en route</i> to/from Swansea with coal when she <b>went ashore</b> . She filled with water as the sea washed over her. The cargo was discharged into boats and the crew was saved. The vessel <b>was got off on the 24th and brought to Soldier's Point where she was laid 'on the hard to have her bottom examined'</b> . She stayed on the shore, filling with water at every high tide.
W00191	<i>Larry Bane</i>	13/11/1896	Dundalk, Outer Harbour	66-ton steamer, cargo of coal, <b>went ashore</b> .
W00192	<i>Laurel</i>	6/12/1825	Spanish Battery, Dundalk	Vessel was under the command of Captain Plowright when she was <b>wrecked</b> .
W00193	<i>Leviathan</i>	29/12/1764	off Dundalk	Vessel, under Captain Grisdal, sprung a leak whilst at sea and subsequently <b>sank</b> .
W00194	<i>Lisbon Packet</i>	24/01/1809	Dundalk Bay, near	<i>En route</i> from Lisbon to Dublin, <b>went ashore</b> .
none	<i>Liska</i>	3/01/1856	bank near Dundalk	Vessel of Dundalk, with its cargo of grain, lost sight of the lighthouse and <b>ran aground</b> . As a result the vessel was damaged. Source: Bourke, 1998, 41; CSP, 1857-1858, Vol. LII, 8.
W00195	<i>Lord Nelson</i>	28/01/1848	Dundalk Bay	Vessel was <i>en route</i> from Liverpool to Africa when she was <b>lost</b> .
W00196	<i>Loving Anne</i>	10/03/1774	Dundalk Bay, south side	Brig, <b>stranded</b> , cargo of coal, expected to be lost.
W00197	<i>Mail</i>	1859	Dundalk Bar, near the lighthouse	Screw steamer owned by Messrs. Malcomson sailed between the ports of Drogheda, Dundalk, Newry and Ardrossan and on this occasion was carrying a cargo of general merchandise and some coal. She was three hours behind the time of high tide and somehow <b>got caught in the sand</b> near the lighthouse as she was entering the port of Dundalk. The captain and crew got ashore. The vessel was badly damaged before she could be re-floated so a tug and lighters were engaged to tow her from where she lay. In 1893 Captain Rigden, contractor for the removal of wrecks, and his brother, were reported to be preparing for the blowing up of the <i>Mail</i> as she was a hazard to navigation.
W00198	<i>Margaret</i>	24 or 26/03/1810	off Dundalk	Vessel of Liverpool was <i>en route</i> from London to Newry, under Capt. Robert Bryan, when she was <b>wrecked and went to pieces</b> .
W00200	<i>Margaret and Mary</i>	06/01/1826	Cooley Point	40-ton sloop of Kinsale, <b>went ashore</b> .

Reference	Name	Date of Loss	Place of Loss	Description
W00201	<i>Maria</i>	16/05/1806	Lurgan Green, near Dundalk	Vessel was <i>en route</i> from Liverpool, under Gibson, when she became <b>stranded</b> .
W00202	<i>Maria</i>	18/02/1890	Cooley Point	90-ton wooden schooner of Liverpool, <i>en route</i> to Rostrevor, cargo of coal. Lost in SSE force 7, <b>wrecked</b> .
W00203	<i>Mary</i>	16/04/1765	Dundalk, near	Alicante to Newry, <b>stranded</b> .
W00204	<i>Mary</i>	17/12/1787	Dundalk Bay	Malaga to Dublin, <b>stranded</b> .
W00205	<i>Mary</i>	21/11/1810	near Dundalk	Vessel of Carnarvon was under the command of Davis when she became <b>stranded</b> .
W00206	<i>Mary</i>	8/02/1823	Dunany, near Ballanwal	Vessel of and for Whitehaven was <i>en route</i> from Dublin, under Mann, when she was <b>wrecked</b> . The crew survived.
W00208	<i>Mary &amp; Betty</i>	14/12/1837	Dundalk Bay, west side	Of Whitehaven, <b>went ashore</b> .
none	<i>Mary A Kersterer</i>	14/10/1881	Dundalk Bay	Vessel got into difficulties in the bay. Her masts were cut away and the deck cargo was thrown overboard in order to lighten her. It is thought that tugs towed her to the quay. Source: Bourke, 1998, 48.
W00209	<i>Mary Ann</i>	14/03 or 05/1783	Dunany, opposite the house of R. Sibthorpe	Vessel of New York was <i>en route</i> to Liverpool with a cargo of rum, tobacco and slaves. She became <b>stranded on a beach</b> opposite the house of Robert Subthorpe. The crew mutinied and a large number of people tried to board the vessel. The captain and Mr. Subthorpe's armed servants acted in protecting the vessel and cargo.
W00210	<i>Mary Ann</i>	19/02/1861	Dundalk, off	<i>En route</i> from Lytham, <b>went ashore</b> .
W00211	<i>Mary Ann</i>	16/02/1880	Dundalk Bay	Of Annagassan, laden with coal, <b>driven ashore, wrecked</b> .
W00212	<i>Mary Stoddart</i>	06/04/1858	Dundalk Lighthouse or opposite Blackrock	466-ton barque of Grangemouth/ Scarborough was 16 years old. She was <i>en route</i> from Alexandria to Glasgow with a general cargo, when she was caught in a SE force 12 storm, which raged for five days. Captain Johnson returned the next day in the <i>Independence</i> and boarded the <i>Mary Stoddart</i> . The crew took to the rigging and lashed themselves to the masts. Meanwhile, the vessel dragged her anchor and <b>grounded</b> opposite Black Rock, with her deck several feet below high tide level. The estimated loss on the vessel was 3,550 L. In 1879 a monument was erected in memory of the rescue.
W00213	<i>Mayflower</i>	8/02/1809	Dundalk Bay	<i>En route</i> from Waterford to Liverpool, under Magi, when she became <b>stranded</b> .



Reference	Name	Date of Loss	Place of Loss	Description
W00214	<i>Minerva</i>	19/11/1799	Dundalk	Vessel was <i>en route</i> from Chester to Newry, under Soules when she was <b>lost</b> . The crew survived.
W00215	<i>Mistletoe</i>	15/10/1910	Dundalk Harbour, entrance	7-ton screw steamer of Banff.
W00216	<i>Molly</i>	14/11/1778	Mount Bagnall, north side of Dundalk Bay	Campbeltown vessel <i>en route</i> from Campbeltown to Dublin with dried fish. The vessel was <b>driven ashore and became a total loss</b> . Fifteen tons of salted ling were saved and stored by Mr. Halson of Mount Bagnall.
W00217	<i>Nancy</i>	2/12/1825	south side of Dundalk Bay/Annagassen	Vessel was <i>en route</i> from Whitehaven to Rush, under Burns, when she <b>stranded</b> . The crew and cargo of coal were saved.
W00218	<i>Neath</i>	12/03/1863	Dundalk, North Bull	<b>Stranded</b> .
W00219	<i>New Active</i>	24/10/1800	Dundalk	Vessel <b>went ashore</b> behind the rocks at Dundalk.
W00220	<i>Newcastle</i>	02/12/1825	Dundalk, Tynemouth Castle	<i>En route</i> from Quebec to Stockholm, driven ashore, <b>wrecked</b> .
W00221	<i>Night Watch</i>	8/02/1866 or 1888	Dundalk Bay (later Quay at Dundalk)	328 ton vessel measured L. 116 x B. 26 x D. 16 ft. As she entered the river she grounded close to No. 5 beacon on the east side of the channel. On 17th February she was freed by the tug and taken into port. The crew went ashore when she docked, leaving her unattended. During their absence a heavy wind forced her from her moorings. She swung out and round and came to rest against the quay, under the town sewer. She was eventually <b>taken out to sea and sunk</b> . The wreck remained on the slobbs until 1960s. A local builder bought the cargo.
W00222	<i>Nightingale</i>	9/06/1767	North Rock, Dundalk	Vessel from Dundalk, under Master John Rice, was <i>en route</i> to Belfast with a cargo of oatmeal when <b>wrecked</b> .
none	<i>Northern Lights</i>	7/03/1908	near Dundalk	Schooner was carrying a cargo of coal for Mr. O'Neill when she <b>went ashore and was lost</b> . The crew survived. Source: Bourke, 1998, 48.
W00223	<i>Paragon</i>	24/12/1895	Dundalk Bay, 2 miles of Blackrock	172-ton Dublin steamer <i>en route</i> to Irvine, blown ashore, <b>expected to get off</b> .
W00224	<i>Parkside</i>	15/02/1880	near Dunany Point	26 year-old wooden brigantine/brig of Whitehaven weighed 132 tons. She was classed by Lloyd's as "A1 cont. 72, 8 years" and had last been surveyed in November 1879. She was <i>en route</i> from Newport, Mon. to Dundalk with six crew and a cargo of coal. She became <b>stranded</b> in a SE force 8 gale and was <b>totally wrecked</b> .

Reference	Name	Date of Loss	Place of Loss	Description
W00225	<i>Peggy</i>	25/12/1802	Dundalk Bar	Vessel was <i>en route</i> from Liverpool, under M'Callan, when she was <b>lost</b> .
W00226	<i>Pembroke</i>	20/02/1833	Dunany Point	97-ton vessel was <i>en route</i> from Milford to Dundalk when she was <b>wrecked</b> . Nine lives were lost.
W00227	<i>Pride (of Newry)</i>	15/04/1858	Blackrocks, Dundalk	Vessel of Newry, <i>en route</i> from Camolin to Irvine, became <b>stranded</b> with an estimated loss of 50 L.
	<i>Prince George</i>	5/01/1847	Soldier's Point, Dundalk	Sailing barque was <b>on the shore and filled with water</b> . The remains (hull and materials) of the vessel were auctioned on 9/04/1847. Bourke, 2000, 26; CSP, 1851, Vol. LII, 2
W00228	<i>Princess of Wales</i>	2/07 or 29/07/1873	<sup>3</sup> / <sub>4</sub> mile SSE of Dundalk Lighthouse/ on or near Dunany Reef	513/514/525-ton Glasgow barque was built in the U.S/Canada. Her Official No. was 46,178. She was <i>en route</i> from Liverpool/Glasgow to Baltimore, U.S., with 17 men and a general cargo, including £2,500 of iron railworks (340 tons), Guinness porter, Alsops ale, soda lime. A WNW course was steered from Point Lynas. The vessel was then hauled to the wind on a starboard tack, and in fifteen minutes she grounded in 17 ft. of water at low neap tide. An attempt to get her back into deep water with the sails failed. The port anchor was let go with 15 fathoms of chain but it did not hold. The second anchor was not let go. The vessel drifted until 5 a.m. in the morning when a pilot boarded. Shortly after, the anchor cable parted and by 6 a.m. she was fast aground. The wind veered more easterly so the sails were set and the vessel forged ahead. In all probability she would have made port, but the tide was low by then and the barque <b>struck a bar</b> . Efforts were made to re-float the vessel but they failed. The masts were still visible in 1892, the same year the wreck was bought from the owners by Mr. Oakes who hoped to salvage some of the steel rails. He subsequently sold her to the Harbour Commissioners so that her mast might be used as a beacon - a tide gauge was attached in 1889. The vessel was blown up at a later stage.
W00229	<i>Progress</i>	22/11/1895	Annagassan	Flat of Runcorn laden with flour, <b>went ashore</b> .
W00230	<i>Promenade</i>	prior to 12/1904	on the sands in Dundalk Bay	Vessel was <b>wrecked</b> during a storm.
W00231	<i>Ramsey</i>	1861	Dundalk Bay?	Vessel was <b>lost</b> in a terrible storm along with her crew of two local men.
W00232	<i>Rob the Ranter</i>	8/10/1870	4 miles N of Clogher Head	29 year-old schooner weighed 66 tons. She was <i>en route</i> from Garston to Newry with coal when she was <b>stranded</b> in an E force 8 gale and became a <b>total wreck</b> . Two of three aboard were lost.

Reference	Name	Date of Loss	Place of Loss	Description
W00233	<i>St Patrick</i>	30/08/1840	River Dee mouth, Dundalk Bay	<i>En route</i> from Flint to Dundalk.
W00234	<i>St Peter</i>	11/01/1909	¼ mile E. of Dunany Point	Unregistered wooden fishing yawl of Drogheda was 7 years old and weighed 4 tons. She was <i>en route</i> to Clogher Head, in ballast, with five crew when she stranded and became a <b>total loss</b> .
W00235	<i>Sappho</i>	16/11/1864	Cooley Point to Gyles Quay	13-ton fishing boat, <b>foundered</b> .
none	<i>San Nicolo</i>	2/02/1853	reef off Dunany Point	378-ton brig of Gibraltar was <i>en route</i> from Liverpool to Gibraltar with 13 crew and a cargo of coal. She encountered a SW force 7 wind with squalls and rain. She became <b>stranded on the reef and was damaged</b> . CSP, 1854, Vol. XLII, 12-13.
W00236	<i>Sarah</i>	27/02/1827	Annagassan, off	Schooner of London, <b>ran ashore</b> .
W00237	<i>Severn</i>	17/02/1809	Dundalk Bay	Vessel was <i>en route</i> from Cork to Liverpool when she was <b>lost</b> .
W00238	<i>Severn</i>	23/01/1810	Dundalk Bay	<i>En route</i> from Newry to Liverpool, <b>went ashore</b> .
W00239	<i>Sra dos Martigues</i>	8/09/1824	Dunany Point	Vessel was <i>en route</i> from St. Ubes to Dundalk, under Capt. Contente, when she <b>went ashore</b> .
W00240	<i>Star of Erin</i>	13/06/1871	Dundalk Bay	Dundalk based fishing yawl weighed 2 tons. She left Black Rock, in ballast, to fish but she <b>capsized in a gale force 8 and was a partial loss</b> . Three of the five people aboard were lost.
W00241	<i>Stella</i>	16/02/1880	Dundalk Bay	Laden with coal, SE gale, <b>driven ashore</b> .
W00242	<i>Success</i>	21/12/1819	Dundalk Bay	Vessel was <i>en route</i> from Whitehaven to Ireland, under Cringle, when she was <b>totally lost</b> .
W00243	<i>Sunhill</i>	5/02/1913	1 mile SW of Dundalk Light house.	30 year-old wooden fishing lugger from Dundalk weighed 3 tons. It was <i>en route</i> to Dundalk from fishing grounds with three crew when it <b>foundered becoming a total loss</b> .
W00244	<i>Swallow</i>	30/12/1803	near Dundalk	Vessel was <i>en route</i> from Lisbon to Greenock, under Blackler, when she <b>went ashore</b> . The crew survived.
none	<i>Syren</i>	4/11/1865	Dundalk	Vessel was owned by Mr Hamlet of Balbriggan and was carrying 250 tons of coal. She became <b>stranded</b> . Bourke, 1998, 48.
W0245	<i>Telegraph</i>	02/12/1825	Tynemouth Castle, Dundalk	<i>En route</i> from Bremen to Dundalk, <b>drive onto rocks</b> .

Reference	Name	Date of Loss	Place of Loss	Description
W00246	<i>Thomas</i>	2/07/1883- 13//05/1892	Dundalk Quays/ Bellurgan Beach	Brigantine of Dundalk was built in 1815 in Ulverston, Lancaster, and weighed 56 tons. She was owned by Michael Hann of Dundalk and her Official Number was 17,005. On 2nd/07/1883 she was <b>berthed at the quays</b> , with the brigantine <i>Sunshine</i> lying outside her. She came too close when taking the ground and damaged the <i>Thomas</i> . She lay waterlogged at the quay until/05/13th 1892 when the tug <i>Oscar</i> towed her wreck from opposite O'Neill's quay to the beach at Bellurgan, west of Mr. Tipping's Quay, where she was later broken up.
W00247	<i>Three Sisters</i>	30/12/1803	near Dundalk	This snow <b>went ashore</b> near the same place as the <i>Swallow</i> .
W00249	<i>Tredegar</i>	23/03/1862	Dundalk	Vessel was carrying a cargo of coal for the Enniskillen railway company when she was wrecked. Captain Hall and four crewmen were rescued.
W00250	<i>Velocity</i>	15/01/1894	Dundalk, North Bull, No. 4 Perch	58-tone Carnarvon schooner <i>en route</i> to Dundalk, SSW force 10 gale, struck the bar, <b>went ashore</b> .
W00251	<i>Vesta</i>	27/05/1857	Dundalk, near south side of river	Stettin brig from Danzig, cargo of railway sleepers, struck the bar, <b>went ashore</b> .
W00252	<i>Violet</i>	22/12/1895	Dundalk, No. 8 Perch	44-ton schooner <i>en route</i> from Isle of Man to Dublin with cargo of barley. SE force 8, <b>stranded</b> .
W00253	<i>William Nelson</i>	13/11/1874 or 1875	Dundalk Bar/Bay	10 year-old wooden brigantine of Dundalk weighed 177 ton. She was built in Prince Edward Is. and was classed by Lloyd's as 'cont./07/1873, 3 A1, 1.74'. Her Official No. was 51,922. She was <i>en route</i> from Irvine/Troon to Dundalk with a cargo of 318/400 tons of coal. There was one passenger and six crew aboard. Failing to get a pilot, the master navigated into the harbour and anchored in a dangerous berth. A heavy gale and sea arose and an hour before low water <b>the vessel struck</b> the ground. The vessel became a total wreck. The ship's bell was brought to De La Salle School in Castletown, Dundalk. An attempt was made to lift the vessel by a Mr. Dillon of Dublin, but it did not succeed.
W00254	<i>Woodbine</i>	27/09/1861	Dundalk Bar	Collier <i>en route</i> from Dublin, struck bar, <b>wrecked</b> .
W00255	Unknown	11/08/1594	Dundalk, near?	Bark, of Liverpool laden with hops, madder, alum, sugar, spices, with sea coal for ballast, <i>en route</i> to Dundalk, <b>wrecked</b> .
W00256	Unknown	02/01/1726	Dundalk, near	Several ships lost during a storm.
W00257	unknown	24/01/1777	near Dundalk	Brig was <i>en route</i> from Ostend to Newry with flax seed when she was <b>lost</b> .

Reference	Name	Date of Loss	Place of Loss	Description
W00258	unknown	02/02/1797	Haggardstown, Dundalk	In an extract from the diary of one Mary Anne Fortescue, 'Friday and Saturday were terrible days and stormy for Captain Morton's vessel.' This vessel was <b>wrecked</b> and all those aboard perished.
W00259	Unknown	01/01/1826	Dundalk Bay	Vessel <b>wrecked</b> .
W00260	Unknown	03/05/1841	Cooley Mountain, Dundalk	<i>En route</i> Workington to Drogheda, <b>wrecked</b> .
W00261	Unknown	16/11/1842	Corley/Cooley Point, near	Barque <b>went ashore</b> .
W00263	unknown	11/08/1849	off the South Light, Dundalk	Schooner <b>foundered</b> .
W00264	Unknown	06/12/1857	Dunany Point, near Soldier's Point	Wreckage washed ashore during gales.
W00265	Unknown	08/1863	Dundalk, outer harbour	<b>Ran aground</b> .
W00266	Unknown	08/1863	Dundalk, outer harbour	<b>Ran aground</b> .
W00266	Unknown	07/01/1864	Cooley, off	Chester vessel, <b>capsized</b> .
W00268	unknown	27/04/1868	between Soldier's Point and Dunany	Five members of the coastguard were lost when their boat <b>sank</b> . They were Grinston (Chief Officer), Clancy, Frazer, McCracken and Sweeney.
none	unknown	27/06/1868	Dunaney (sic. Dunany) Reef	Coastguard cutter <b>sank</b> . Bourke, 1994, 7.
W00269	unknown	27/02/1874	Dundalk Bay, Gyles Quay to Colley Mountain	<b>Capsized</b> wreck.
W00270	unknown	17/03/1897	off Annagassan	Herring yawl <b>sank</b> in what later became known as the 'Annagassan Disaster'. James Coogan, Michael Mathews, James Byrne, Patrick Connolly, Patrick Mathews, and James Mathews were all lost.
W00271	unknown	26/02/1903	near Giles Quay Station, Dundalk Bay	Second-class boat <b>broke up on the beach</b> during a storm.
W00272	unknown	26/02/1903	near Giles Quay Station, Dundalk Bay	Second-class boat <b>broke up on the beach</b> during a storm.
W00273	Unknown	16/03/1905	Dundalk Bay	3-masted vessel feared wrecked.

### 8.0 Appendix 2: Known shipwreck events and potential shipwreck events Dundalk Bay and adjacent waters

Source: Brady, *Shipwreck inventory of Ireland*; <https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=89e50518e5f4437abfa6284ff39fd640>

Reference	Name	Date of Loss	Latitude	Longitude	UTM29N E	UTM29N N	Description
W00112	Wreck No. 007600069	unknown	54 01 20N,	06 05 12W	690840	5989921	This is a stranded wreck. 3.4 cables from Haulbowline Rocks Light,
W00114	Wreck No. 007600136	unknown	54 01 19.9N	06 04 38.3W	691453	5989944	This wreck lay in a general depth of 7m. Wreckage was recovered during dredging operations in 1993. In 1994 the remains were marked on the chart as a foul.
W00149	<i>Empire of Peace</i>	23/10/1881	53 54 19.8N	06 19 07.20W	676138	5976339	22 year-old wooden ship/barque of Liverpool weighed 1,493 tons. She was owned by the Merchants' Trading Co. Ltd. of Liverpool and the master was A. Sandison. She was <i>en route</i> from Liverpool to New Orleans with 22 crew and a general cargo when she became <b>stranded and totally wrecked</b> in a SE force 10 gale. The crew took to their own boat and made the shore safely. c. 1 mile N of Annagassan Harbour/Dunany Point.  Wreck showing portion of superstructure at Low Water marked on Admiralty Chart 44 in 1.2m of water. Offshore of Castlebellingham
W00199	<i>Margaret &amp; Ann</i>	07/12/1888	53 53 05.48N	06 20 39.36W	674543	5973979	57-ton schooner, 66 feet long, 18 feet wide, <b>wrecked</b> and then incorporated into the Annagassan millrace breakwater.
W00248	<i>Topaz</i> , Wreck No. 009000161	28/12/1891	53 52 02N	06 10 28W	685779	5972449	Glasgow registered iron steam ship weighed 168/353 tons and measured 161 ft. in length. It was <i>en route</i> from Workington to Dundalk, carrying a cargo of steel rails, with a crew of nine when it was <b>lost</b> in a WSW force 4 wind. She struck a reef, drifted into deeper water and sank. The crew took to their lifeboat and landed at Greenore. The ship and cargo being Insured Lloyd's employed a diver called Rigden/Rizdon to salvage the steel rails during the years 1892-1893. The rails, engines and working gear were removed. The vessel's masts were also removed and the area was buoyed. In 1977 the hull was still almost intact. The boiler and stern stand

Reference	Name	Date of Loss	Latitude	Longitude	UTM29N E	UTM29N N	Description
							almost 3m high and the greatest depth recorded was 23m. Marked on Admiralty Chart 44. Off Dunany Point
W00274, W00275	Wreck No. 007600021	unknown	54 00 27N	06 20 46W	673910	5987615	Two wrecks lie alongside the old slip on Soldiers Point. The position of the centre of the wrecks is at 103°, 345 ft from the end of the training wall. The two wrecks dry out but do not reach above MHWS. There are described on the chart as 'stranded wreck of firm outline'. Soldier's Point, Dundalk,
W00276	Unknown	Unknown	53 52 02N	06 10 28W	685779	5972449	Unidentified wreck located beside the wreck of the <i>Topaz</i> (W00248).
W00529	unknown	unknown	53 53 05.304N	06 02 08.772W	694813	5974777	Irish Seabed Survey (ISS) Wreck G-125, located 7miles ENE of Dunany Point in 29m of water, an anomaly, c. 5m long, 2m wide, standing c. 3m above the seabed
W10003	Samaria	22/06/2000	53 50 30.202	06 06 51.252W	689852	5969773	12m long wooden fishing boat collided with the MFV <i>Golden Bells</i> and sank. Wreck surveyed by the INSS in 2004 and was found to be relatively intact and lying in 27m of water. It measures 13.5m long, 4.5m wide.
W11144	ss13	n/a	53 54 19.444N	6 15 48.101W	679770	5976466	Side-scan sonar feature recorded in 2006, gravel line c. 20m long, lying 10-30m S of centreline. Corresponded with localized variation in magnetometer data indicating the ss13 retains ferrous metal.
W11145	ss6	n/a	53 56 7.1N	6 3 5.689W	693540	5980350	Side-scan sonar feature recorded in 2006, Localized anomaly creating gravel ripples to one side in larger area of gravel/soft sediment. Feature lies 40m from centreline but scour area crosses survey window.
W11146	ss7	n/a	53 55 18.588N	6 6 6.048W	690314	5978716	Side-scan sonar feature recorded in 2006, oblong feature at centreline creating scour filled with ripples to one side. Same feature as ss12.
W11147	ss9	n/a	53 56 14.089 N	6 6 18.892W	690010	5980421	Side-scan sonar feature recorded in 2006, anomaly.
W11148	ss15	n/a	53°54'6.487"N	6 4 14.185W	692446	5976572	Side-scan sonar feature recorded in 2006, cobbles 30m N of centreline. SS5 is the same feature observed on a different survey line.



Reference	Name	Date of Loss	Latitude	Longitude	UTM29N E	UTM29N N	Description
W11149	ss2	n/a	53 56 44.795N	6 3 51.462W	692658	5981480	Side-scan sonar feature recorded in 2006, outlying rocks adjacent to boulder field, either side of centreline.
W11150	ss3	n/a	53 56 44.504N	6 4 26.355W	692022	5981445	Side-scan sonar feature recorded in 2006, isolated rocks with acoustic shadows on rippled gravel bed.
W11151	ss1	n/a	53 55 40.667N	6 2 13.33W	694529	5979573	Side-scan sonar feature recorded in 2006, outlying rock adjacent to cobbled area, c. 25m S of centreline.
W11152	ss4	n/a	53 56 11.747N	6 4 42.208W	691775	5980421	Side-scan sonar feature recorded in 2006, irregularity, unclear image, but perhaps a boulder within a sand/silt hollow, 30-40m S of centreline.
W11153	ss5	n/a	53 54 6.444N	6 4 16.5W	692404	5976569	Side-scan sonar feature recorded in 2006, concentration of cobbles in gravel area, suggesting a localized area of entrapment, 40m from centreline. Same features as ss15, observed on a different survey line.
W11154	ss8	n/a	53 56 52.066N	6 4 8.388W	692340	5981692	Side-scan sonar feature recorded in 2006, a series of irregular features, probable rocks//boulders.
W11155	ss10	n/a	53 56 12.615N	6 2 57.552W	693682	5980527	Side-scan sonar feature recorded in 2006, feature creating localized irregularity at break of slope.
W11156	ss11	n/a	53 55 20.882N	6 6 40.002W	689692	5978761	Side-scan sonar feature recorded in 2006, single well defined isolated boulder 15m N of centreline in sandy area.
W11157	ss12	n/a	53 55 20.09N	6 6 7.141W	690292	5978761	Side-scan sonar feature recorded in 2006, feature 40m N of centreline, causing localized entrapment. Same as ss7.
W11158	ss14	n/a	53 54 1.444N	6 15 10.575W	680477	5975937	Side-scan sonar feature recorded in 2006, unclear, anomaly in area of clay. Irregular feature, probably natural in origin.
W11435	unknown	n/a	53 55 4.015N	6 2 10.119W	694635	5978444	NMS has identified this location based on the 2007 archaeological report but that report does not indicate any target at this location. This location should be delisted.

## 9.0 References

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National Monuments Service, Sites and Monuments Record, <https://webgis.archaeology.ie/historicenvironment/>

National Monuments Service, National Inventory of Architectural Heritage, [www.buildingsofireland.ie](http://www.buildingsofireland.ie)

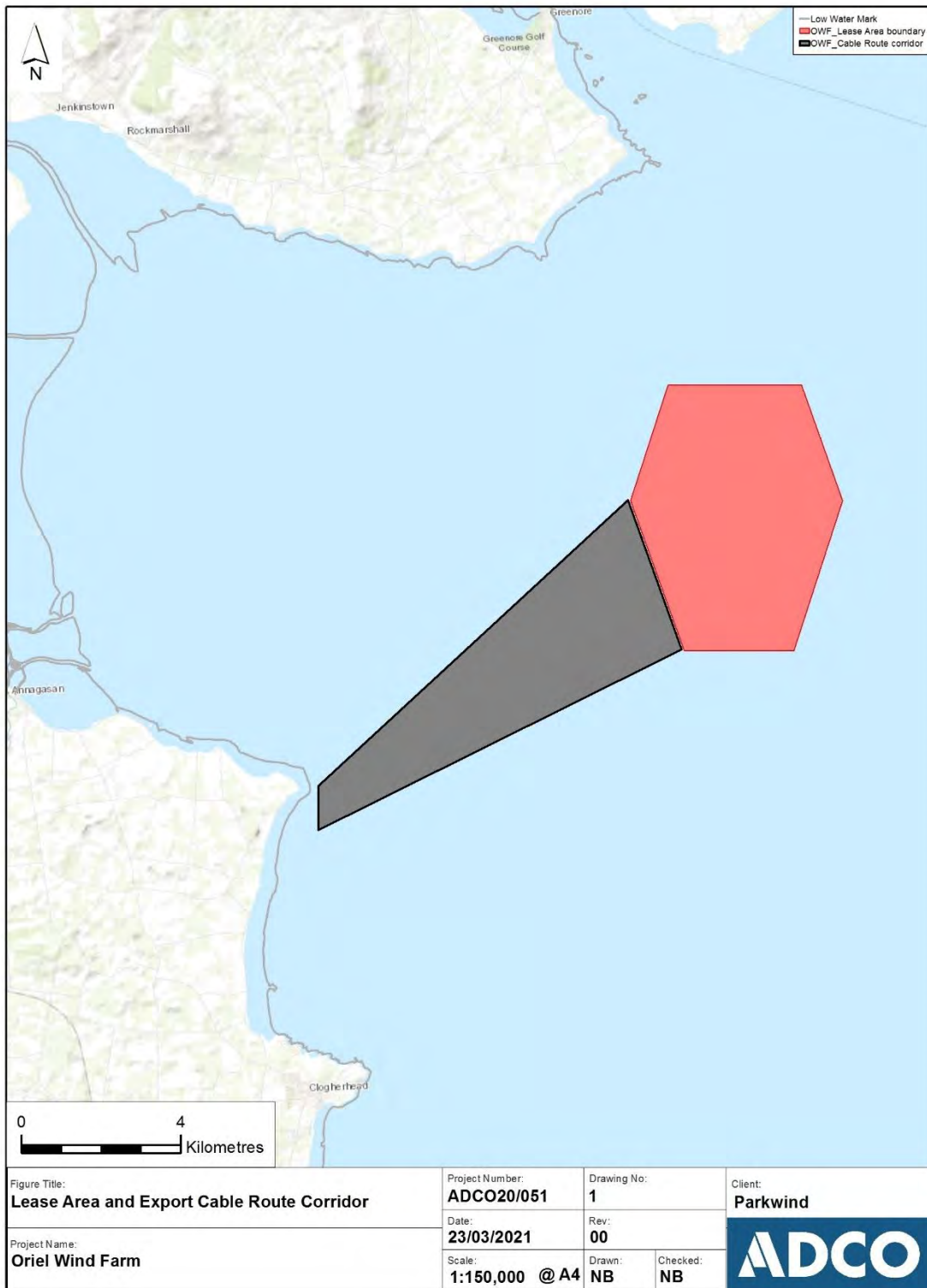


Figure 1: Location map showing proposed Oriel Wind Farm Lease Area and Export Cable Corridor.

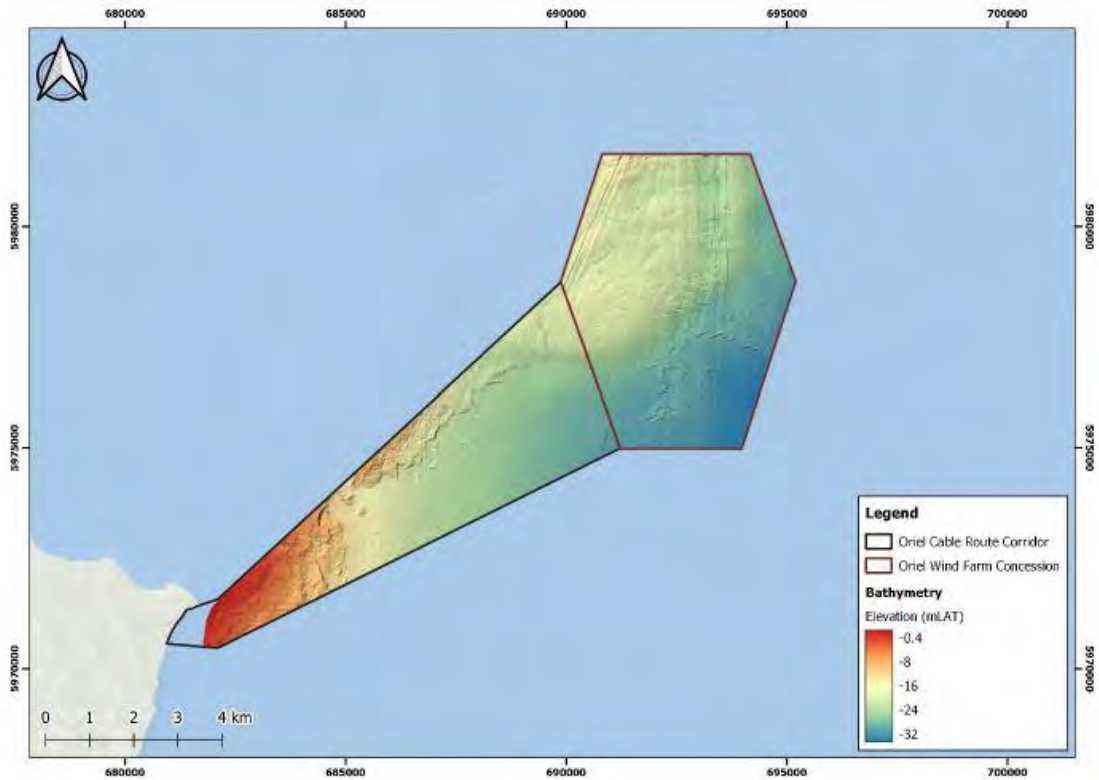


Figure 2: Bathymetry with hillshade for the proposed Oriel Wind Farm and cable corridor. Source GDG.

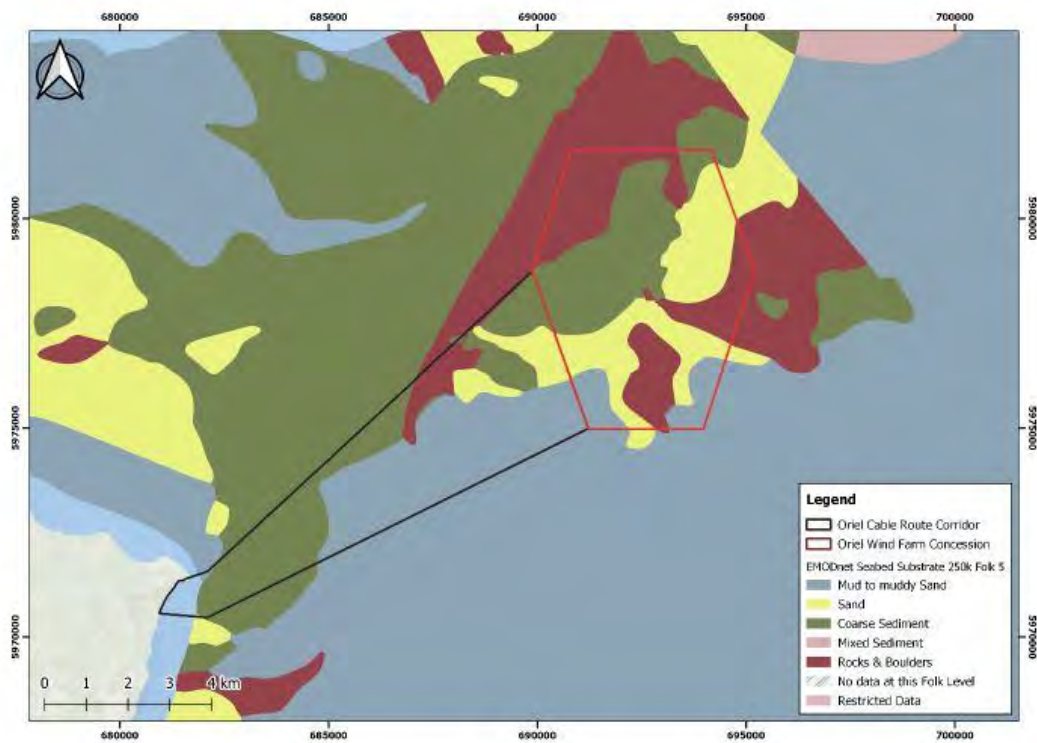


Figure 3: Seabed substrate classification, Folk 5 (EMODnet). Source: GDG.

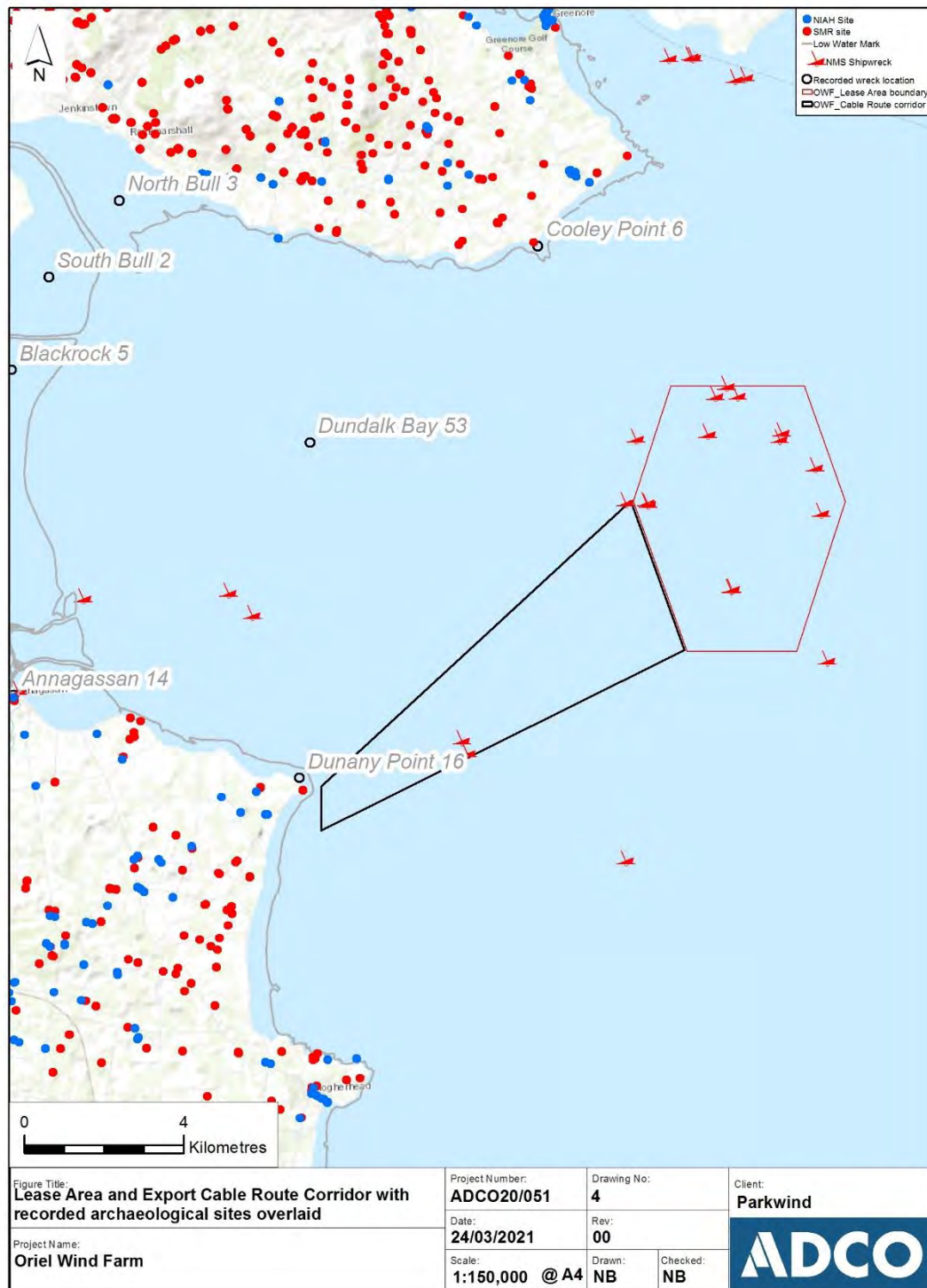


Figure 4: Lease Area and Export Cable Route Corridor with recorded archaeological sites overlaid.



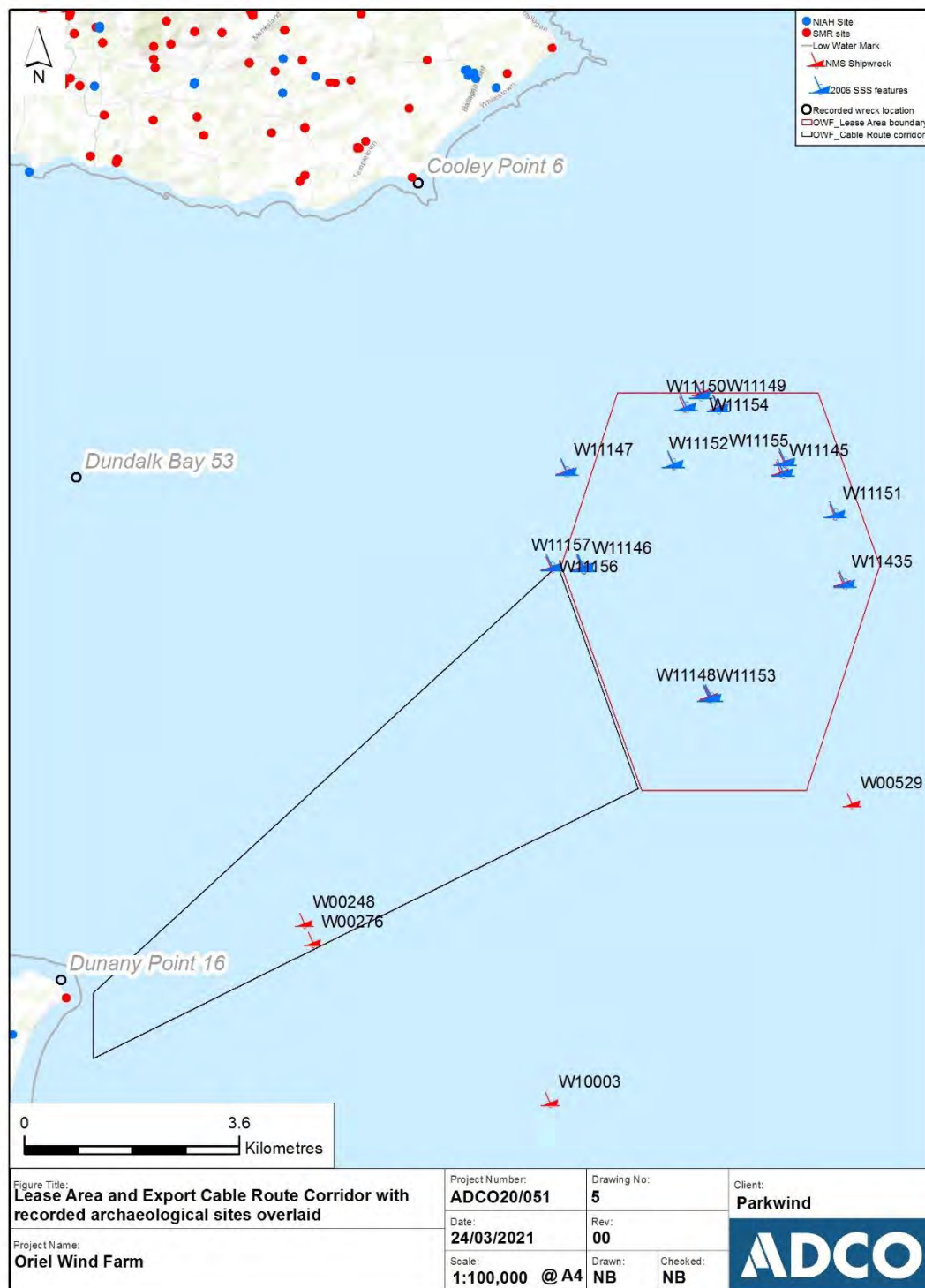


Figure 5: Lease Area and Export Cable Route Corridor with recorded archaeological sites overlaid, highlighting known shipwreck sites and side-scan sonar features recorded in 2006.

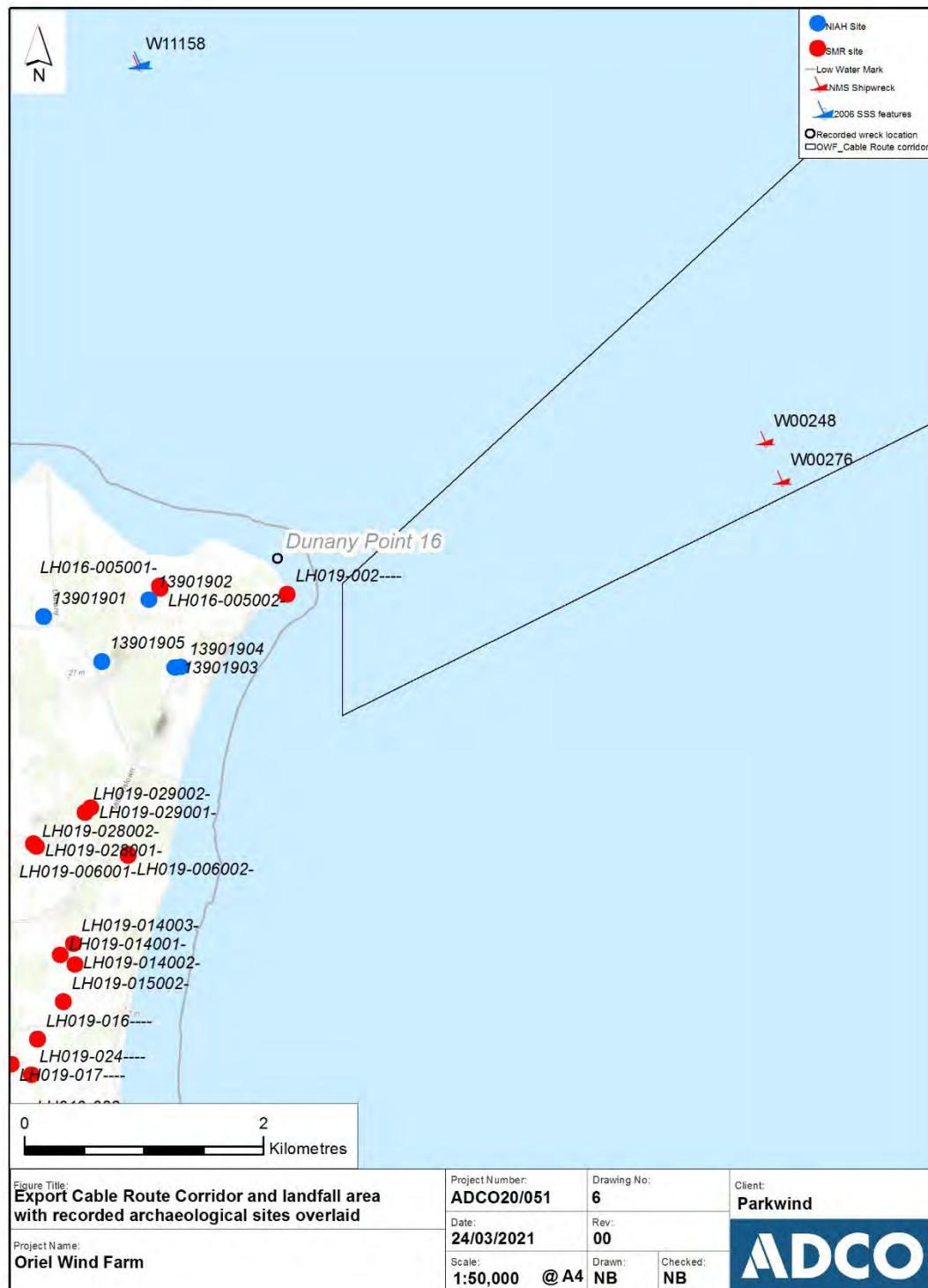


Figure 6: Export Cable Route Corridor and landfall area with recorded archaeological sites overlaid.



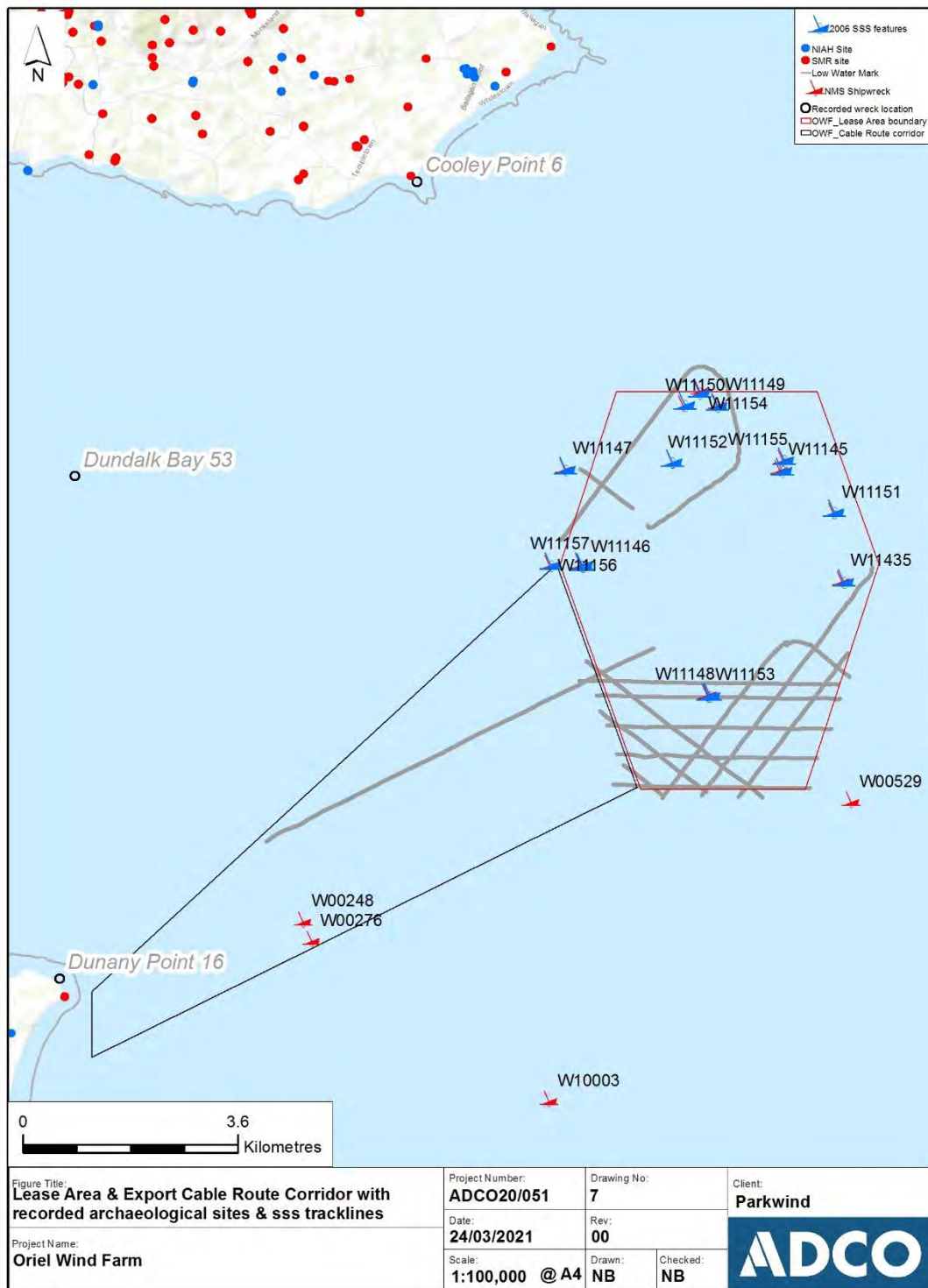


Figure 7: Lease Area and Export Cable Route Corridor with recorded archaeological sites and 2019 side-scan sonar tracklines overlaid.

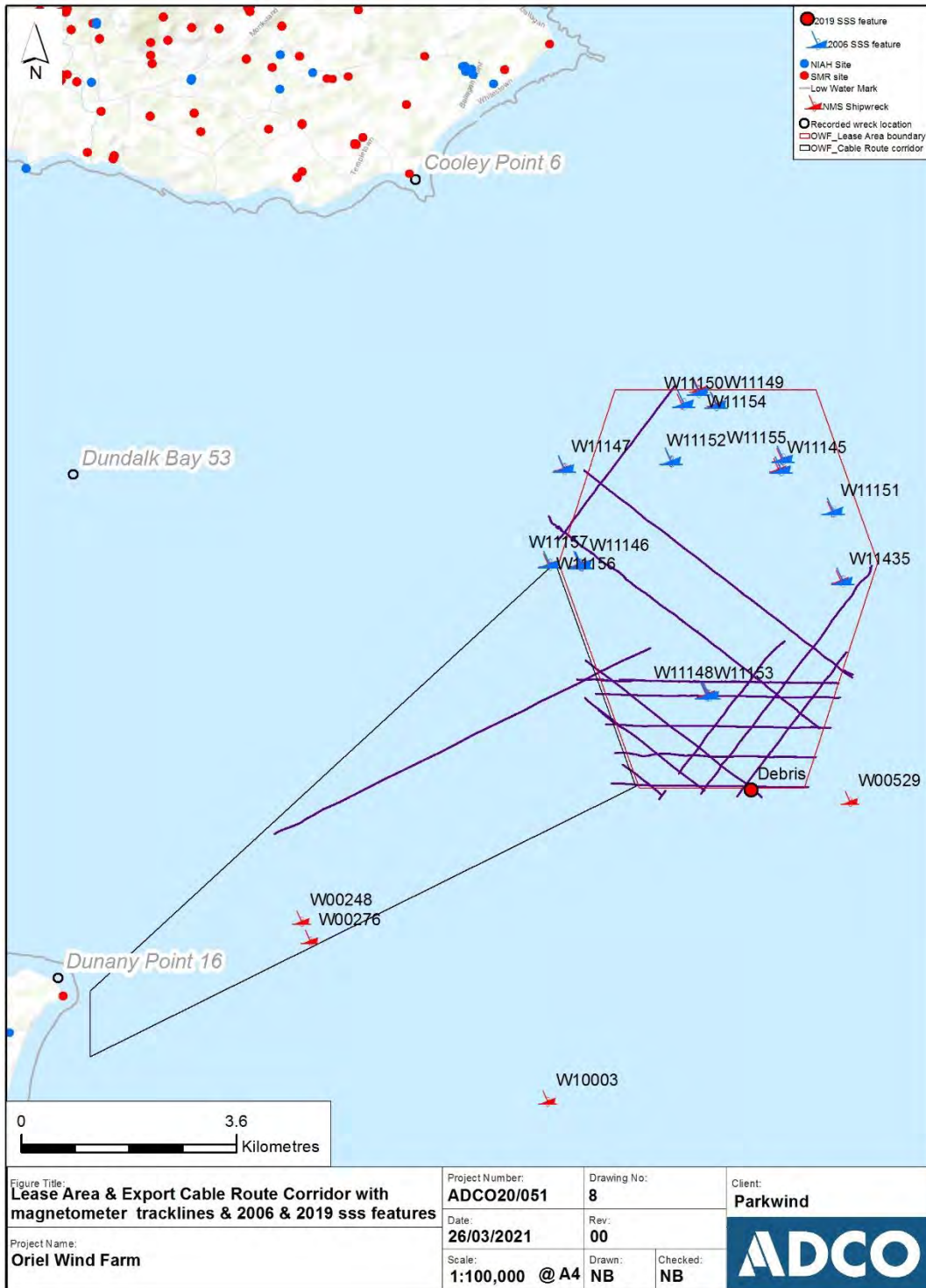


Figure 8: Lease Area and Export Cable Route Corridor with recorded archaeological sites and 2019 magnetometer tracklines overlaid. Location of side-scan sonar debris feature highlighted.

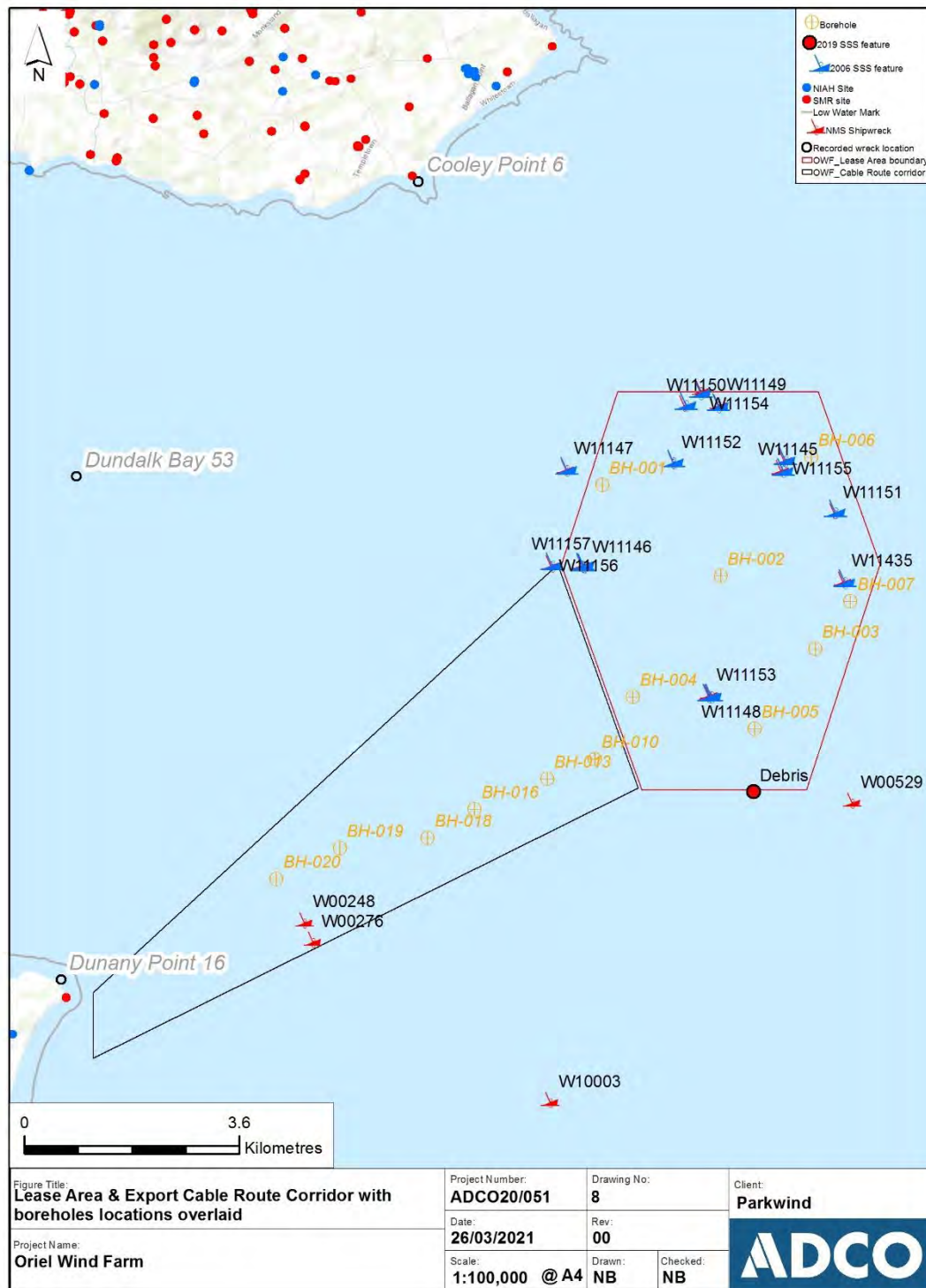


Figure 9: Lease Area and Export Cable Route Corridor with recorded archaeological sites and borehole locations overlaid.

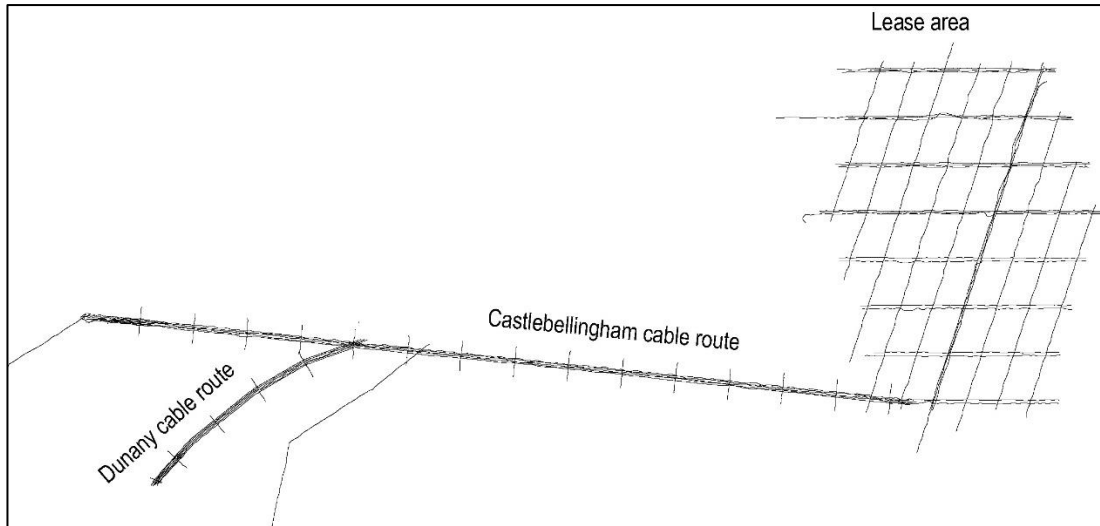


Plate 1: Trackplot from 2006 survey showing extent of marine geophysical survey covered.

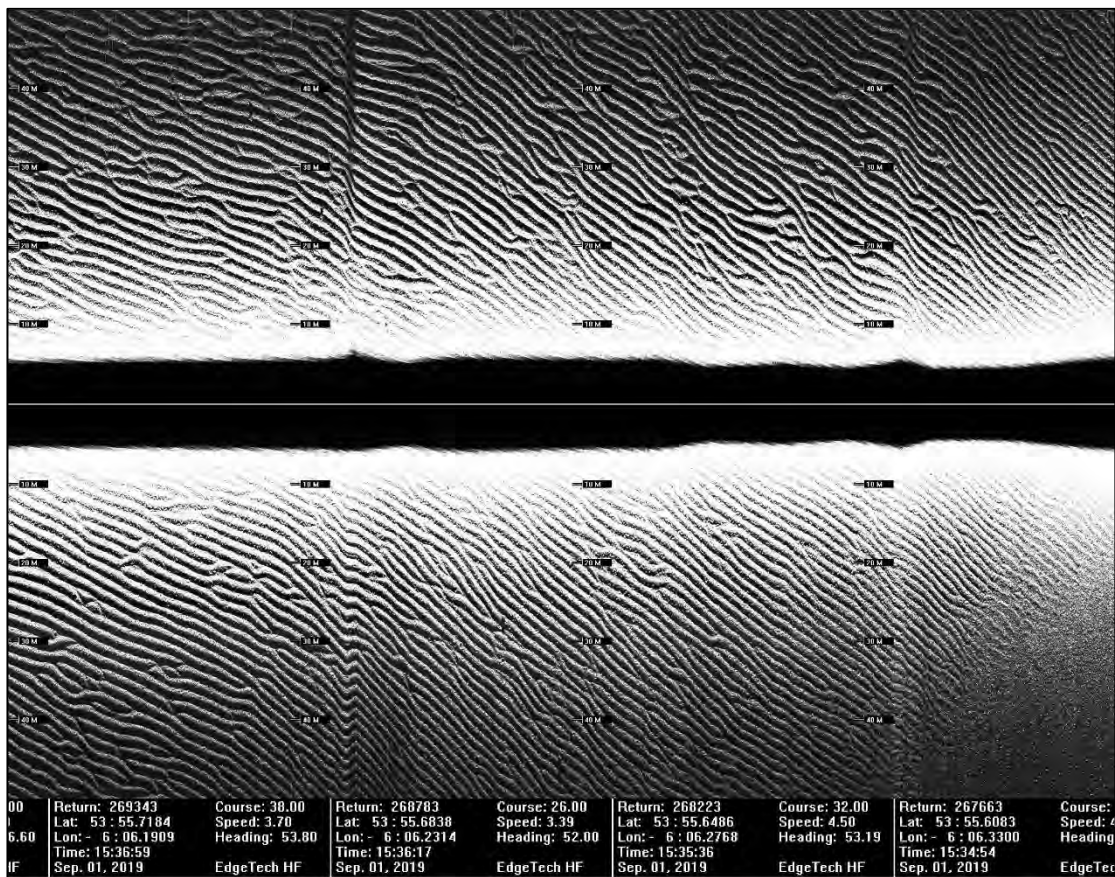


Plate 2: Side-scan sonar data trace from 2019 survey showing expanse of sand ripples.



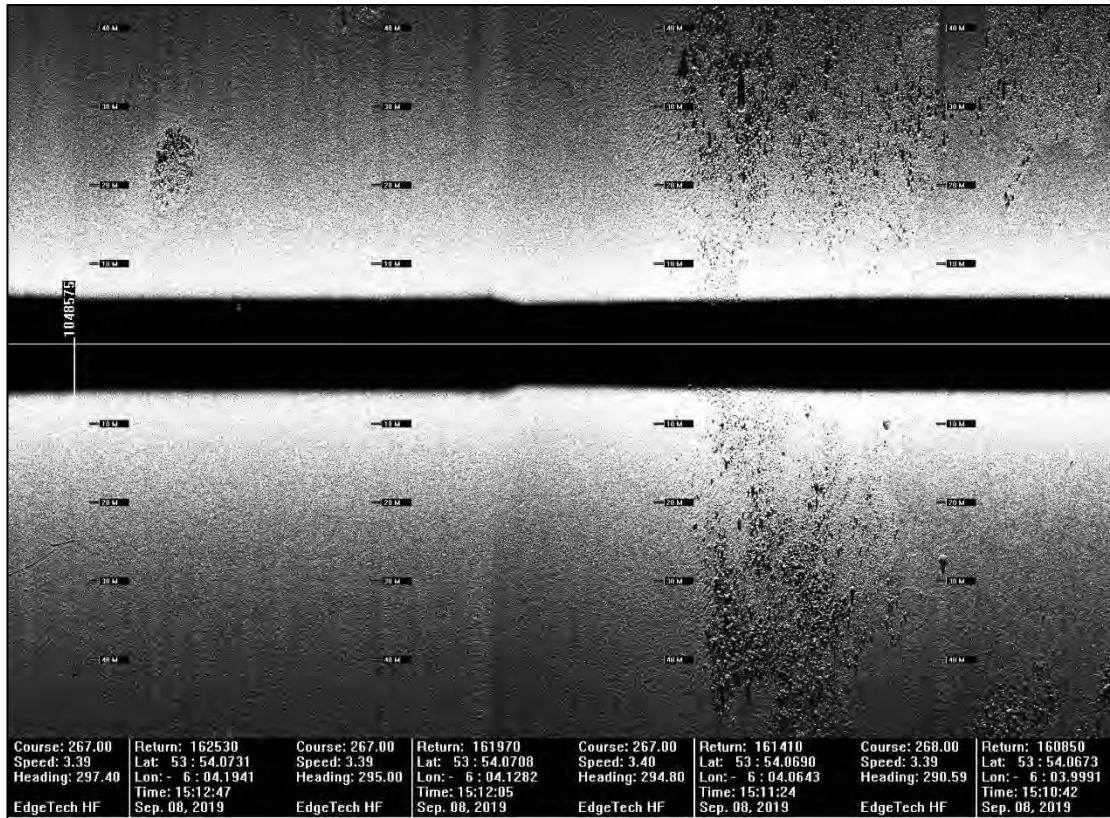


Plate 3: Side-scan sonar data trace from 2019 survey showing boulder field.

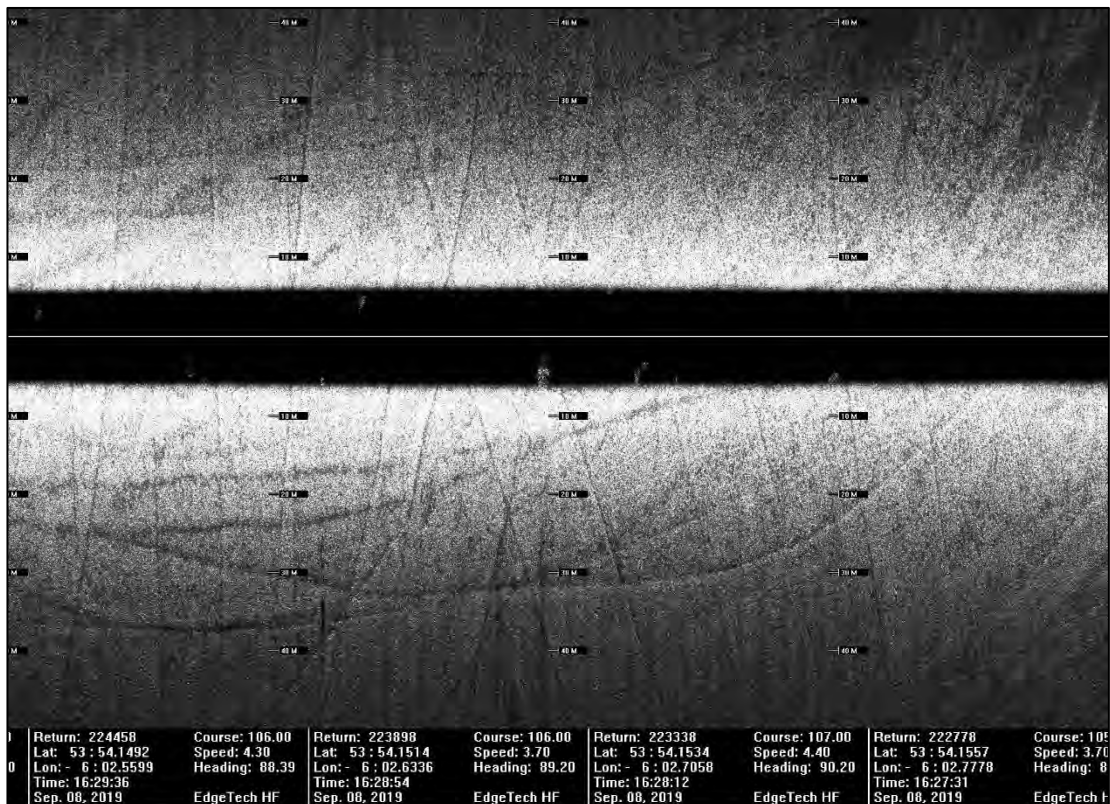


Plate 4: Side-scan sonar data trace from 2019 survey showing trawl scars from fishing activities.

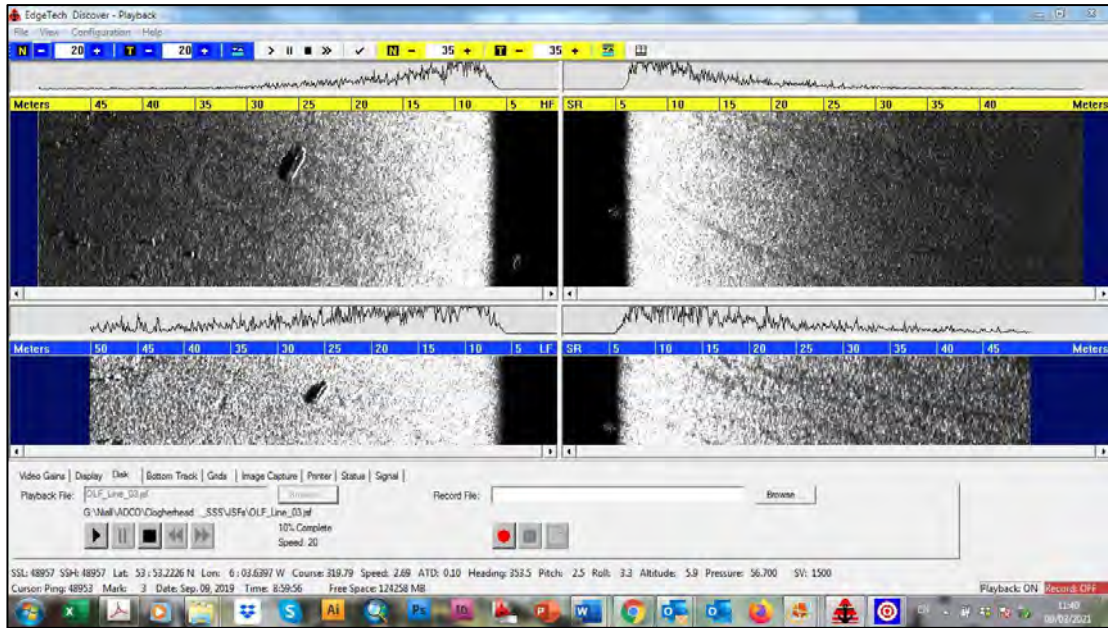


Plate 5: Side-scan sonar data trace from 2019 survey showing debris feature on survey line OLF\_Line\_03.001, and simultaneous display in high frequency (top) and low frequency (bottom).

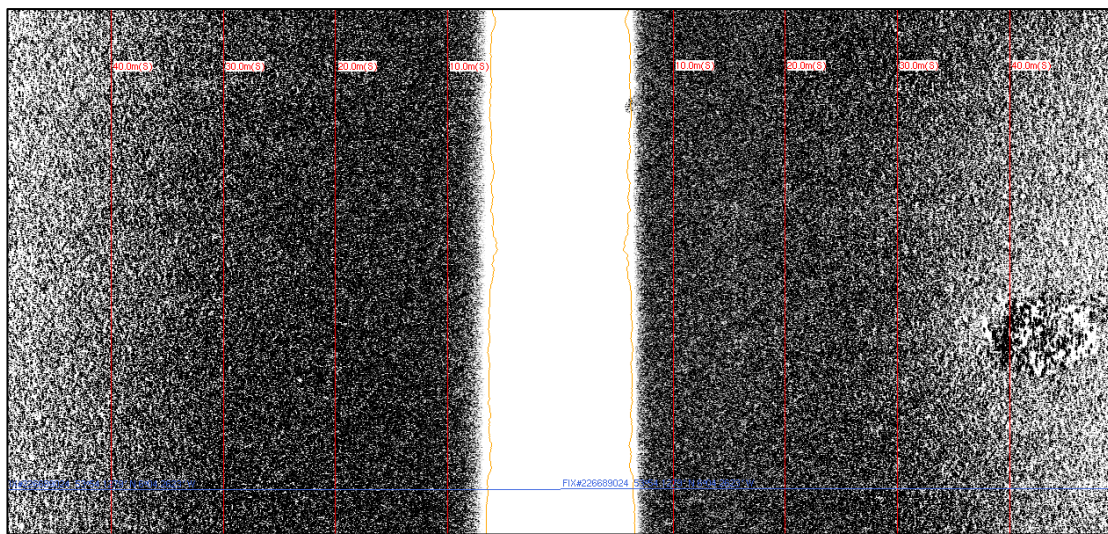


Plate 6: Side-scan sonar data trace from 2006 survey showing ss5 (cobble). The location was resurveyed in 2019 (survey line EW4.001) but did not record the feature.



## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

## A.3 Gazetteer of Desktop Data within the Marine Archaeology Study Area

ID	Name	Latitude	Longitude	Description
W00248, UKHO 5867, INFOMAR ID_295	SS <i>Topaz</i>	53.8702	-6.1764	The <i>Topaz</i> was a Glasgow registered iron steamship lost in 1891. The ship weighed 168/353 tons and measured 161 feet long and was <i>en route</i> from Workington to Dundalk, carrying a cargo of steel rails, with a crew of nine when it was lost in a west-southwest force 4 wind. The record reports that she struck a reef, drifted into deeper water and sank. The reef must have been Dunany reef. The crew took to their lifeboat and landed at Greenore, Co. Louth. The ship and cargo were insured, so Lloyds employed a diver called Rigden/Rizdon to salvage the steel rails during 1892–1893. The rails, engines and working gear were removed. The vessel's masts were also removed, and the area was buoyed. In 1977 the hull was still almost intact. The boiler and stern stand almost 3 m high off the seabed and the greatest depth recorded was 23 m.
W00276	Unknown	53.86722	-6.17444	Unidentified wreck located beside the wreck of the <i>Topaz</i> (W00248).
W00529	Unknown	53.88481	-6.03577	Possible wreck (INSS No. G 125) identified during the National Seabed Survey. Wreck measures L. 5 m, W. 2 m with a height of 3 m off the seabed. It lies in a general sea depth of 29 m.
W11435, UKHO 5787	Unknown	53.91814	-6.03577	UKHO 5787 corresponds with the recorded position of NMS record W11435 and is recorded as a wreck measuring 5 m in length and therefore suggests that material may be present at this location.
W11145	Geophysical anomaly	53.93526	-6.05036	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as a localized anomaly creating gravel ripples to one side in larger area of gravel/soft sediment. Feature lies 40 m from centreline but scour area crosses survey window.
W11146	Geophysical anomaly	53.92183	-6.10168	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as an oblong feature at centreline creating scour filled with ripples to one side.

## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

ID	Name	Latitude	Longitude	Description
W11147	Geophysical anomaly	53.93673	-6.10519	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as an anomaly.
W11148	Geophysical anomaly	53.9019	-6.07094	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as cobbles 30 m north of centreline
W11149	Geophysical anomaly	53.94543	-6.06564	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as outlying rocks adjacent to boulder field, either side of centreline.
W11150	Geophysical anomaly	53.94555	-6.07429	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as isolated rocks with acoustic shadows on rippled gravel bed.
W11151	Geophysical anomaly	53.92847	-6.0372	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as outlying rock adjacent to cobbled area, approximately 25 m south of centreline.
W11152	Geophysical anomaly	53.93704	-6.07773	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as irregularity, unclear image, but perhaps a boulder within a sand/silt hollow, 30-40 m south of centreline.
W11153	Geophysical anomaly	53.90179	-6.07125	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as a concentration of cobbles in gravel area, suggesting a localized area of entrapment, 40 m from centreline.
W11154	Geophysical anomaly	53.94766	-6.06988	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as a series of irregular features, probable rocks//boulders.

## ORIEL WIND FARM PROJECT – MARINE ARCHAEOLOGY TECHNICAL REPORT

ID	Name	Latitude	Longitude	Description
W11155	Geophysical anomaly	53.93673	-6.04953	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as a feature creating localized irregularity at break of slope.
W11156	Geophysical anomaly	53.9224	-6.1101	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as a single well defined isolated boulder 15 m north of centreline in sandy area.
W11157	Geophysical anomaly	53.92227	-6.10213	Geophysical anomaly identified during the 2006 survey and since entered into the NMS Wreck Inventory. Interpreted as a feature 40 m north of centreline, causing localized entrapment.

## A.4 Gazetteer of Geophysical Anomalies Identified in the 2019 Surveys

Reference	Name	Easting	Northing	Description
ADCO_sss0087	Unknown	693154	5974937	A single item of debris measuring 3.3 m in length and registered a slight magnetometry reading, suggesting a content of ferrous metal.

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