

# REPORT

## **Non-Statutory Environmental Report**

Kerry Foreshore Licence Application

Client: Kerry Offshore Wind Limited

Reference: PC1509-RHD-ZZ-XX-RP-Z-0024

Status: S3/P01

Date: 16 March 2022



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## Table of Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Proposed Surveys	1
1.2	Aim of this Report	1
<b>2</b>	<b>Consideration of Applicable Law</b>	<b>3</b>
2.1	EIA Directive 2011/92/EU as revised by Directive 2014/52/EU	3
2.2	Foreshore Act 1933, as amended	4
2.3	Planning Regulations, Schedule 5, Part 2	5
<b>3</b>	<b>Environmental Assessment</b>	<b>8</b>
3.1	Overview	8
3.2	Project Overview	8
3.3	Designated Sites	8
3.4	Marine Physical Processes	11
3.5	Benthic Ecology	11
3.6	Fish and Shellfish Ecology	15
3.7	Marine Mammals	19
3.8	Birds	21
3.9	Commercial Fisheries	23
3.10	Shipping and Navigation	25
3.11	Other Marine Users	25
3.12	Marine Archaeology	28
3.13	Water	30
3.14	Air	31
3.15	Climate	31
3.16	Landscape and Seascape	31
3.17	Major Accidents and disasters	31
3.18	Cumulative	31
<b>4</b>	<b>Assessment Conclusion</b>	<b>32</b>
<b>5</b>	<b>References</b>	<b>33</b>

## Table of Figures

Figure 1 Kerry Foreshore Licence Survey Area	2
Figure 2 European sites considered in the AA Screening Exercise	10
Figure 3 Benthic habitat	14
Figure 4 (a) Fish spawning grounds	16
Figure 5 Commercial fisheries densities and routes	24
Figure 6 Shipping Densities and Shipping Routes	26
Figure 7 Marine Assets and Other Marine Users	27
Figure 8 Marine Archaeology	29

## 1 Introduction

Kerry Offshore Wind Limited are applying for a foreshore licence under section 3 of the Foreshore Act 1933, as amended (“the **1933 Act**”), to undertake marine surveys as described in the Schedule of Works (Royal HaskoningDHV, 2022c – document reference PC1509-RHD-ZZ-XX-RP-Z-0023).

The marine surveys are to assess the suitability of the proposed foreshore licence area for the development of an offshore wind farm and associated infrastructure (“the **Kerry Project**”). The proposed foreshore licence survey area lies within the “foreshore” as defined in the 1933 Act, off the east coast of Ireland in the Irish Sea. **Figure 1** shows the location of the proposed foreshore licence survey area.

### 1.1 Proposed Surveys

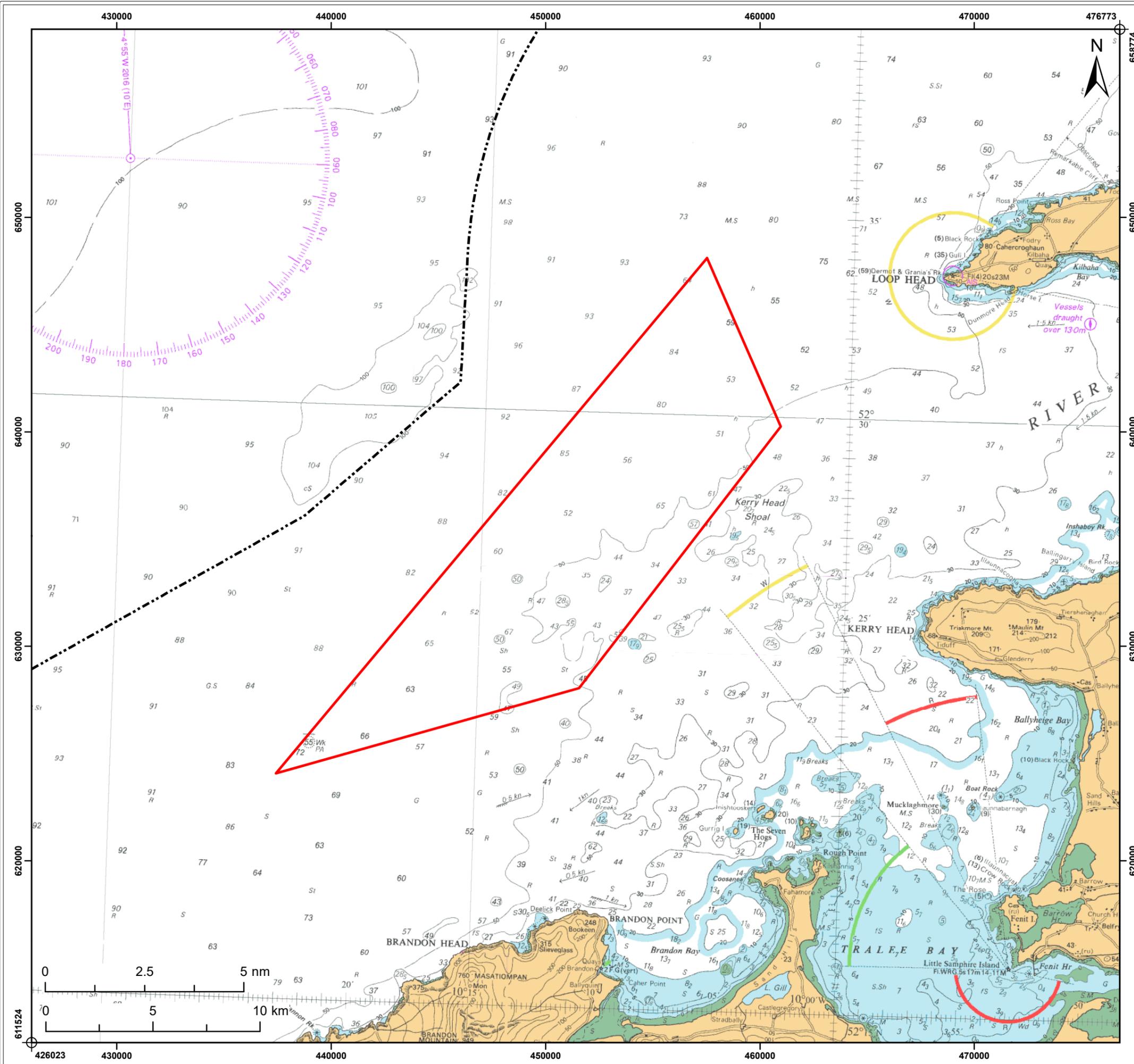
A full description of the proposed offshore surveys is provided in the Schedule of Works (Royal HaskoningDHV, 2022c – document reference: PC1509-RHD-ZZ-XX-RP-Z-0023). The proposed surveys will comprise:

- Geophysical Surveys:
  - Multibeam echosounder (MBES)
  - Magnetometer
  - Sub-bottom profiling (SBP)
  - Side scan sonar (SSS)
- Marine Benthic Ecology Surveys:
  - Day Grab and/or Hamon Grab
  - Drop-down video (DDV) and photographic stills
- Marine Mammal and Seabird Survey:
  - Aerial surveys (high- resolution digital photography and/or video)
  - Boat based surveys (if required)
- MetOcean survey (current and wave)
  - LiDAR units
  - Wavebuoys
  - Marker buoys
  - Acoustic Doppler Current Profilers (ADCP)
- Geotechnical Surveys
  - Cone Penetration Testing (CPT)
  - Vibrocores
  - Borehole sampling

### 1.2 Aim of this Report

This Non-Statutory Environmental Report assesses the potential environmental impacts of the proposed surveys. The Report, which will be submitted with the foreshore licence application for the Kerry Project, describes the current legislative framework and will provide information required by the Minister for Housing, Local Government and Heritage (“the **Minister**”) when determining the foreshore licence application.

This Report was prepared by [REDACTED] and [REDACTED] of Royal HaskoningDHV with specialist advice from experts at Royal HaskoningDHV.



**Legend:**  
 Kerry Foreshore Licence Survey Area  
 - - - - - Ireland 12nm Limit

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<b>Client:</b> Kerry Offshore Wind Limited	<b>Project:</b> Kerry Offshore Wind Farm
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**Title:**  
Proposed Kerry Foreshore Licence Survey Area

**Figure:** 1      **Drawing No:** PC1509-RHD-ZZ-XX-DR-Z-0223

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## 2 Consideration of Applicable Law

### 2.1 EIA Directive 2011/92/EU as revised by Directive 2014/52/EU

The EIA Directive provides in Article 2(1) that

*“Member States shall adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects (an environmental impact assessment). **Those projects are defined in Article 4**”*

The projects defined in Article 4 of the EIA Directive are those projects listed in Annex I and Annex II of the EIA Directive. Accordingly, the EIA Screening requirements under the EIA Directive are applicable *only* to the projects *defined in Article 4* of the Directive, and not to *any* project likely to have a significant effect on the environment<sup>1</sup>.

The Advocate General's Opinion in *Case C-275/09, Brussels Hoofdstedelijk Gewest*, states: ‘*In general, in order to determine whether a given activity should be made subject to an environmental impact assessment in accordance with the Directive, it is necessary to carry out a two-stage assessment. It must first be determined whether the activity concerned constitutes a ‘project’ within the meaning of Article 1(2) of the Directive. If it does, it is then necessary to ascertain whether that activity is one of those listed in Annexes I and II to the Directive. **An impact assessment must be carried out only in relation to the activities specifically indicated, which are listed exhaustively.***’ (C-156/07, Aiello & Others)

Article 4, paragraph 2, of the EIA Directive provides that projects listed in Annex I *shall* be subject to EIA.

Article 4, paragraph 2, of the EIA Directive provides that projects listed in Annex II *may* be subject to (a) a case-by-case examination (screening), or (b) national thresholds or criteria, or both (a) and (b). Article 4, paragraph 3, provides that thresholds or criteria may be set to determine (a) when the EIA screening or EIA is not required, and (b) when projects shall be subject to EIA without screening.

Annex IIA describes the information to be provided by the developer with an application subject to EIA Screening. Annex III describes the criteria to be taken into account by the competent authority in carrying out EIA Screening.

Having regard to the Schedule of Works (Royal HaskoningDHV, 2022c – document reference: PC1509-RHD-ZZ-XX-RP-Z-0023), only borehole drilling corresponds to a potentially relevant class of project in Annex II: Class 2(d), under the heading “Extractive Industry”:

- (d) **Deep drillings**, in particular:
- (i) geothermal drilling;
  - (ii) drilling for the storage of nuclear waste material;
  - (iii) drilling for water supplies;

<sup>1</sup> *Case C-156/07, Aiello & Others*, ‘Article 2(1) of Directive 85/337 must be interpreted as not requiring that any project likely to have a significant effect on the environment be made subject to the environmental impact assessment provided for in that directive, but **only** those referred to in Annexes I and II to that directive, under the conditions set out in Article 4 thereof and subject to Articles 1(4) and (5) and 2(3) thereof.’ See also *Case C-215/06, Commission v Ireland*, and *Kavanagh v An Bord Pleanála and Highfield Solar [2020] IEHC 259 (O’Moore J)*.

*with the exception of drillings for investigating the stability of the soil.*

For the reasons discussed more fully below, the proposed boreholes fall with the exception for *drillings for investigating the stability of the soil*.

**Based on the information presented above, it is considered due to the nature of the proposed surveys, they do not fall under the EIA Directive and no EIA screening is required.**

## 2.2 Foreshore Act 1933, as amended

Section 13A(1)(a) of the 1933 Act provides that the Minister shall ensure that, before a decision on a relevant application is given, projects likely to have a significant effect on the environment by virtue, *inter alia*, of their nature, size or location, are made subject to an EIA as defined in the 1933 Act. An application for a foreshore licence under section 3 of the 1933 Act is a “**relevant application**” as defined<sup>2</sup>.

Just as in Article 2(1) of the EIA Directive, section 13A(1) of the 1933 Act makes it clear that the only projects that are subject to EIA requirements are those projects listed either in Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended (“**Planning Regulations**”).

Section 13A(1)(b)(i) provides that an EIA shall be carried out in respect of a relevant application where the proposed development would be of a class specified in —

(I) **Part 1** of Schedule 5, and either —

- (A) such development would exceed any relevant quantity, area or other limit specified in that Part, or
- (B) no quantity, area or other limit is specified in that Part in respect of the development concerned,

Section 13A(1)(b)(i) provides that an EIA shall be carried out in respect of a relevant application where the proposed development would be of a class specified in —

(II) **Part 2** of Schedule 5 and either —

- (A) such development would exceed any relevant quantity, area or other limit specified in that Part, or
- (B) no quantity, area or other limit is specified in that Part in respect of the development concerned<sup>3</sup>.

Section 13A(1)(b)(ii) provides that an EIA shall be carried out in respect of a relevant application for proposed development where:

- (I) such development would be of a class specified in **Part 2** of Schedule 5, but does not exceed the relevant quantity, area or other limit specified in that Part, and

<sup>2</sup> See section 13A(5) of the 1933 Act.

<sup>3</sup> No quantity, area or other limit is specified for Part 2, class 2(e) “deep drillings”, with the exception of drilling for water supplies.

(II) the Minister determines that the proposed development would be likely to have significant effects on the environment.

Section 13A(2A) further provides that, where the proposed development would be of a class referred to in section 13A(1)(b)(ii) (**Part 2, sub-threshold**) and is located on a “European site” as defined, or land designated under the Wildlife Acts, the Minister shall decide whether the development would or would not be likely to have significant effects on the environment.

Section 13A(2AB) provides that an application for development within a class listed in section 13A(1)(b)(ii)(I), (**Part 2, sub-threshold**) shall be accompanied by the information specified in Schedule 7A of the Planning Regulations<sup>4</sup> and shall, *where relevant*, take account of the available results of other relevant assessments of the effects on the environment carried out pursuant to other Directives. Section 13A(2AB) transposes Article 4(4) of the EIA Directive.

Section 13A(2AC) provides that the application may include a description of the measures to avoid or prevent significant adverse effects on the environment. Section 13A(2AC) transposes Article 4(4) of the EIA Directive.

Section 13A(2B) provides that the Minister shall make a screening determination on the basis of the Schedule 7A information provided, taking into account the relevant selection criteria in Schedule 7 of the Planning Regulations<sup>5</sup>. Section 13A(2B) transposes Article 4, paragraph 5 of the EIA Directive.

**Based on the information presented above it is considered due to the nature of the proposed surveys, they do not fall under the 1933 Act as an EIA project and EIA screening is not required.**

## 2.3 Planning Regulations, Schedule 5, Part 2

Schedule 5 of the Planning Regulations, transposes Annex I and Annex II of the EIA Directive. Part 1 corresponds to Annex I, and Part 2 corresponds to Annex II.

Part 2, Class 2(e), corresponds to Annex II, class 2(d):

***(e) With the exception of drilling for investigating the stability of the soil, deep drilling, consisting of—***

*(i) geothermal drilling,*

*(ii) drilling for the storage of nuclear waste material,*

*(iii) drilling for water supplies, where the expected supply would exceed 2 million cubic metres per annum, or*

***(iv) any other deep drilling, except where, in considering whether or not an environmental impact assessment should be carried out—***

***(IV) it is decided, in accordance with section 13A of the Foreshore Act 1933 (No. 12 of 1933) (in this subparagraph referred to as the “Act of 1933”), by the appropriate Minister (within the meaning of the Act of 1933) that the drilling concerned would not have a significant effect on the environment***

Schedule 5, Part 2, also includes Class 15, which is only applicable to project types listed in Part 2, where the proposed project is below the specified threshold:

<sup>4</sup> Schedule 7A of the Planning Regulations transposes Annex IIA of the EIA Directive

<sup>5</sup> Schedule 7 of the Planning Regulations transposes Annex III of the EIA Directive

*Any project **listed in this Part** which does not exceed a quantity, area or other limit **specified in this Part** in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.*

**It is considered due to the nature of the proposed surveys, they do not fall under the Planning Regulations, Schedule 5, Part 2 as an EIA project and EIA screening is not required. Further information is provided below in relation to drilling.**

### **2.3.1 Drilling for investigating the stability of the soil**

The Schedule of Works (Royal HaskoningDHV, 2022c – document reference: PC1509-RHD-ZZ-XX-RP-Z-0023) outlines that the Geotechnical Site Investigations will include the drilling of **up to 10** boreholes, to a depth of **up to 80m** below the seafloor, each with a core diameter of between **300-400mm**, which will be removed for further laboratory analysis. The precise quantity, location and scheduled penetration depth within this range will be determined on the basis of the interpretation of the data from the proposed Geophysical Surveys.

The boreholes are drilled as part of the Geotechnical Site Investigations which investigate the engineering properties of the soils, sediments, clays, gravels, and other materials making up the ground conditions, including the stability of the soil under certain engineering conditions. These investigations produce data which informs the detailed design and certification of the:

- Potential offshore wind turbine foundations (Monopiles, Jacket/Tripods); and
- Development and calibration of existing ground models.

The boreholes are considered to be ***drilling(s) for investigating the stability of the soil***, and would not therefore be of a class of project specified in Annex II, class 2(d) of the EIA Directive, or Schedule 5 Part 2 class 2(e) of the Planning Regulations.

**Based on the information presented above it is considered that the proposed drilling of boreholes does not trigger any requirement for EIA Screening.**

### **2.3.2 Any other deep drilling**

As noted, there is no quantity, area or other limit specified for “any other deep drilling” in class 2(e)(iv), however paragraph (IV) provides that any such “deep drilling” will not be a project for the purposes of class 2(e) where the Minister, through the EIA Screening procedures set out in section 13A of the 1933 Act, determines that the drilling would not have a significant effect on the environment.

The EC Guidance from 2015 on the “*Interpretation of definitions of project categories of annex I and II of the EIA Directive*”<sup>6</sup> suggests:

*“The depth of the drilling should not be the sole screening criterion in assessing the likely significance of the environmental impact.<sup>7</sup> The screening should take into account all the relevant criteria listed in Annex III to the EIA Directive. The overall characteristics of the project should be taken into account. Even a small-scale project (e.g. exploration or drilling in the range of only several metres) can have significant effects on the environment if it is in a location where the environmental*

<sup>6</sup> [https://ec.europa.eu/environment/eia/pdf/cover\\_2015\\_en.pdf](https://ec.europa.eu/environment/eia/pdf/cover_2015_en.pdf)

<sup>7</sup> Case C-531/13, *Kornhuber and Others*, paragraph 41-47 is cited in the footnote but this does not seem to be the correct name of the plaintiff / applicant.

*factors, such as fauna and flora, soil, water, climate or cultural heritage, are sensitive to the slightest alteration.*

*Furthermore, the effectiveness of the EIA Directive would be seriously compromised if the competent authorities of a Member State could, when deciding whether a project must be subject to an environmental impact assessment, leave out of consideration the part of the project that is located in another Member State. Therefore, the assessment of the impact of other projects cannot be confined to particular borders (e.g. municipal).<sup>8</sup> Last but not least, taking into account the effectiveness of the EIA Directive and the precautionary principle, as explained by the Court<sup>9</sup>, it could be argued that in case of doubts as to the absence of significant effects, competent authorities of a Member State should subject a project to an environmental impact assessment.”*

In Case C-531/13, *Marktgemeinde Straßwalchen and Others* the CJEU considered that an exploratory drilling operation “*which is aimed at determining the commercial feasibility of a deposit of **up to 4 150 metres depth***” came within Annex II, 2(d), and that Annex II, 2(d), is not “*an exhaustive enumeration of the different types of drilling it covers; rather, it covers all types of deep drillings, with the exception of drillings for investigating the stability of the soil.*”

European Commission document “*Environmental Assessments Of Plans, Programmes And Projects - Rulings Of The Court Of Justice Of The European Union*” (2020) also discusses Case C-526/16 *Commission v Poland* on pages 133-134<sup>10</sup> The CJEU considered that Poland’s legislation, which excluded any requirement for EIA for drilling going to depths of less than 5,000m, was incompatible with the EIA Directive as it would exclude all borehole drilling projects at depths less than that, even where they would be likely to have a significant effect on the environment.

Whereas depth may not be the sole factor in determining whether EIA is required, and whereas the EIA Directive has a “*wide scope and a broad purpose*” and should be interpreted accordingly<sup>11</sup>, a “*purposive interpretation of the directive cannot, in any event, disregard the clearly expressed intention of the legislature of the European Union.*”<sup>12</sup> The project class is “*deep drilling*” and the clearly expressed intention of the legislature is that it should apply to drilling that is “*deep*” in the particular context of the project proposed and its receiving environment. At a maximum depth of 80 metres the proposed boreholes are not considered “*deep*”.

Without prejudice to the above, Part 2, Class 2(e) of Schedule 5 of the Regulations would not apply where the Minister reaches a determination that the drilling concerned would not have a significant effect on the environment.

**Based on the information presented above and in the remaining sections for this Report, it is considered that the proposed drilling of boreholes would not have a significant effect on the environment and does not trigger any requirement for EIA Screening.**

<sup>8</sup> *Idem.*

<sup>9</sup> Case C-127/02, *Case C-127/02, Waddenvereniging and Vogelbeschermingsvereniging*, para 44

<sup>10</sup> [https://ec.europa.eu/environment/eia/pdf/EIA\\_rulings\\_web.pdf](https://ec.europa.eu/environment/eia/pdf/EIA_rulings_web.pdf) *Commission v Poland Case C-526/16 is not considered in the 2015 Commission Guidance referred to by Arup.*

<sup>11</sup> Case C-72/95, *Kraaijeveld*

<sup>12</sup> Case C-275/09, *Brussels Hoofdstedelijk Gewest*,

## 3 Environmental Assessment

### 3.1 Overview

An assessment of the potential impacts of the proposed surveys has been undertaken to support the Foreshore Licence Application for the Kerry Project. The results of the following assessments have been taken into account, and the following reports submitted with the foreshore licence application should be read together with this report:

- Supporting Information for Screening for Appropriate Assessment (SISAA) (Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0021)
- Natura Impact Statement (NIS) Report (Royal HaskoningDHV, 2022b – document reference: PC1509-RHD-ZZ-XX-RP-Z-0022)
- Schedule of Works (Royal HaskoningDHV, 2022c – document reference: PC1509-RHD-ZZ-XX-RP-Z-0023)
- Annex IV Risk Assessment (Royal HaskoningDHV, 2022d – document reference: PC1509-RHD-ZZ-XX-RP-Z-0024)

The results of the Strategic Environmental Assessment (SEA) Environmental Report and NIS of the National Marine Planning Framework have also been taken into account<sup>13</sup> in the preparation of this report.

### 3.2 Project Overview

Kerry Offshore Wind Limited wish to undertake surveys to assess the suitability of the area of interest for development of an offshore wind farm (the Kerry Project). The foreshore licence survey area is defined in **Figure 1**. A summary of the proposed surveys is provided in **Section 1.1** and detailed more fully in the Schedule of Works (Royal HaskoningDHV, 2022c – document reference: PC1509-RHD-ZZ-XX-RP-Z-00023).

The exact timings and duration of surveys are yet to be determined but this foreshore licence application covers all seasons, regardless of the year. Estimated duration of surveys in total is expected to take approximately 48 months with each survey varying in timeframe from approximately 3 to 36-month campaigns. However, given the potential for delays due to poor weather conditions and potential timing restrictions this foreshore licence application relates to the possibility of site investigations taking place over a five-year period.

It is the intention for the geophysical surveys to be undertaken first, lasting approximately 3 months. It is key that the geophysical survey is completed first as it will inform the survey design for the ground intrusive surveys (benthic surveys and geotechnical surveys). Following the geophysical surveys, the benthic ecology survey and seabird and marine mammal surveys will commence lasting 3 months and 24 months respectively. The geotechnical survey will last approximately 3 months. The MetOcean equipment will remain in place for 12 – 36 months.

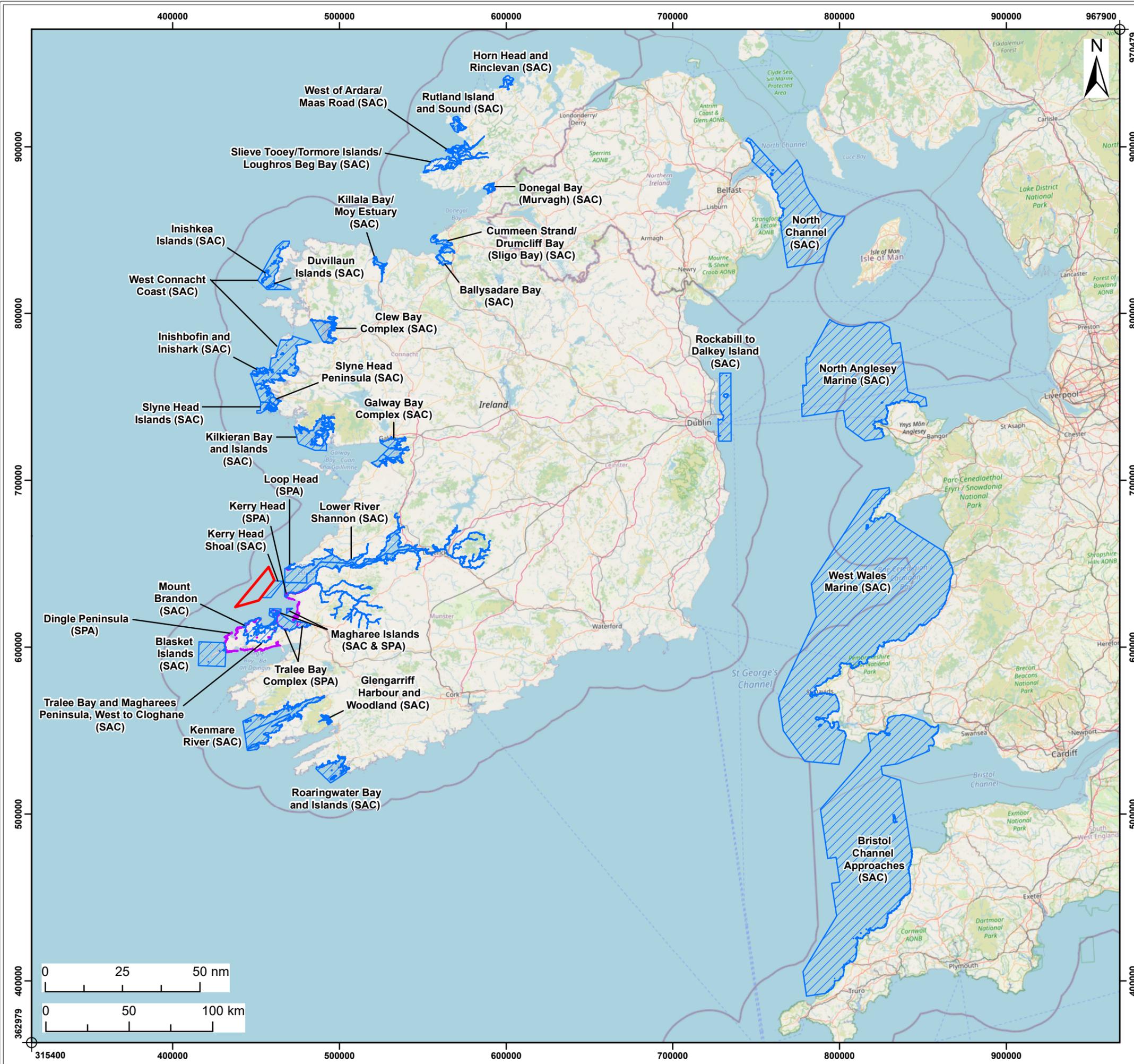
### 3.3 Designated Sites

There are a number of designated sites surrounding the foreshore licence survey area which have been identified in the SISAA (Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-RP-Z-

<sup>13</sup> <https://www.gov.ie/en/consultation/bd098b-public-consultation-on-the-draft-national-marine-planning-framework/#documents>

0021). Further information on the designated sites surrounding the foreshore licence survey area with the potential to be affected by the proposed surveys are included within the SISAA and shown in **Figure 2**.

The NIS concluded that the proposed surveys, with the inclusion of certain mitigation measures, either alone or in-combination with other plans or projects would not cause an adverse effect on integrity of any Natura 2000 site.



**Legend:**

- Kerry Foreshore Licence Survey Area
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

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**Basemap:** © OpenStreetMap (and) contributors, CC-BY-SA. Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors.

<b>Client:</b> Kerry Offshore Wind Limited	<b>Project:</b> Kerry Offshore Wind Farm
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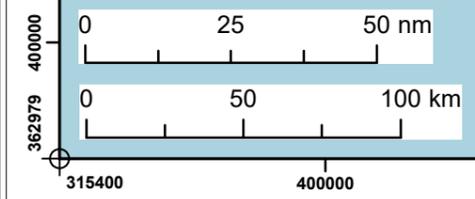
**Title:**  
European Sites Considered in the Screening Exercise for Kerry Foreshore Licence Survey Area

**Figure:** 2      **Drawing No:** PC1509-RHD-ZZ-XX-DR-Z-0224

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### 3.4 Marine Physical Processes

The proposed surveys will lead to a temporary increase in suspended sediment concentrations during the ground intrusive surveys (benthic ecology and geotechnical surveys). However, due to the short-term temporary nature of the surveys, and the small footprint of seabed where the disturbance will occur, suspended sediment concentrations is expected to return to background levels due to dispersal through tidal currents. Although there will be a temporary increase in suspended sediment concentrations, elevations are still expected to be lower than concentrations that would occur naturally in the water column during storm conditions. Therefore, no significant impacts are expected to the sedimentary regime due to the proposed surveys.

The proposed surveys will lead to small indents in the seabed where the boreholes and grab samples are collected, however they will be small scale and localised and will become infilled through natural sedimentary processes. Therefore, no impacts to bathymetry are expected.

In relation to the wave and tidal regime, there will be no permanent structures on the seabed and due to the small scale and temporary nature of monitoring and survey equipment that would have contact with seabed (for example seabed mounted frames for current profilers) no impacts are expected to the wave and tidal regime.

### 3.5 Benthic Ecology

The foreshore licence survey area has a water depth range of approximately 38m – 89m. Based on data obtained from the European Nature Information System (EUNIS) habitat classification system the sediment in the foreshore licence survey area is predominantly rock/hard substrate and coarse substrate with patches of muddy sand. **Figure 3** shows the predominant habitat types in the foreshore licence survey area.

Using European Marine Observation and Data Network (“EMODnet”) seabed habitat data it is noted that the proposed survey area is a mix of habitat types. The survey site is predominately high energy circalittoral rock and deep circalittoral mud. High energy circalittoral rock and deep circalittoral mud may have a variety of faunal communities, depending upon level of energy for the former and the level of silt/clay and organic matter in the sediment for the latter. The foreshore licence survey area also overlaps circalittoral coarse sediment with coarse sands and gravel or shell and faunal communities on deep moderate energy circalittoral rock (EMODnet, 2022).

The closest SAC designated for benthic habitat is the Kerry Head Shoal SAC located adjacent to the eastern boundary of the foreshore licence survey area. The Kerry Head Shoal is a deep (20 - 52m) limestone reef. The SAC is situated to the north of Tralee Bay and to the west of Kerry Head and is exposed to the full force of swells from the Atlantic. The infralittoral and circalittoral reef communities of the Kerry Head Shoal are extremely exposed to wave action and subject to weak tidal streams. The circalittoral reef topography ranges from large relatively flat terraces cut by gullies to ridged bedrock and angular boulders (DAHG, 2013)

The Kerry Head Shoal is of high importance as it is the best-known example of the Axinellid sponge community in Ireland (DAHG, 2013). Several species occur in associations that are unique in Ireland. The site contains a rich and diverse flora and fauna that is characterised by rare erect and encrusting sponges *Tetilla cranium*, *Quasillina brevis*, *Axinella flustra* and *Hexadella racovitzae*. These species are only known from one other locality in Ireland, while *Tetilla zetlandica* has only been found in two other localities on the west coast (DAHG, 2013).

In deeper water, at 33-46 m, the bedrock ranges from large and relatively flat terraces cut by gullies, to ridged bedrock and angular boulders. Here the reefs are colonised by excellent examples of the Axinellid cup sponge community with an extremely high number of sponge species (44 species) and a few algal species. The sponges *Axinella infundibuliformis*, *Phakellia ventilabrum* and *P. vermiculata* are frequent in this community, as are a number of rare species including two sponges *H. recovitzai* and *A. flustra*, the bryozoan rose 'coral' *Pentapora foliacea*, the sea-squirt *Diazona violacea* and the red soft coral *Alcyonium glomeratum*. In the deepest examples of this community the rare sponges *T. zetlandica*, *T. cranium*, and *Q. brevis* are also present. The rare species of sea-slug *Aldisa zetlandica* has also been recorded from the deep reefs (DAHG, 2013).

*P. ventilabrum* and axinellid sponges found in the SAC are sensitive to smothering and siltation changes and may be slow to recover from long-term disturbance (Readman, 2018).

The proposed surveys have the potential for effect on benthic habitats through the following:

- Physical damage, disturbance and sediment removal;
- Increased suspended sediments and sediment re-deposition leading to smothering;
- Accidental pollution event leading to toxic contamination; and
- Introduction of invasive species from the vessels hull leading to non-toxic contamination.

Direct impacts from disturbance are limited to the benthic grab samples and CPT, vibrocore and borehole sample locations therefore the spatial scale of direct disturbance is relatively small in the context of the wider offshore area where similar habitats are present. The proposed surveys are short term and temporary, meaning that any direct impacts will not occur over a long period of time and will cease once the surveys have stopped.

Indirect effects from suspended sediment increase and re-deposition are also spatially limited. Any smothering would be a very small thin layer within the vicinity of the sample locations due to the small volumes of sediment removed during sampling. Even for the construction of offshore wind farms the majority of disturbed sand will typically settle within short distances, for example 500m with very small levels of smothering (Ørsted, 2018). Therefore, no significant indirect impacts are expected in relation to benthic ecology due to physical disturbance and removal, increased suspended sediment and re-deposition caused by the proposed surveys.

During the proposed surveys, there is the potential for pollution from spills or leaks of fuel and oil. The risk of this arising can be minimised by following standard pollution prevention requirements, which is detailed further in **Section 3.13**. As such, it is considered there will be no impacts to benthic ecology in relation to accidental pollution events.

There is also the potential for the introduction of invasive non-native species (INNS) during the proposed surveys which could impact benthic ecology receptors. The risk of spreading INNS will be reduced by employing biosecurity measures in accordance with the following requirements:

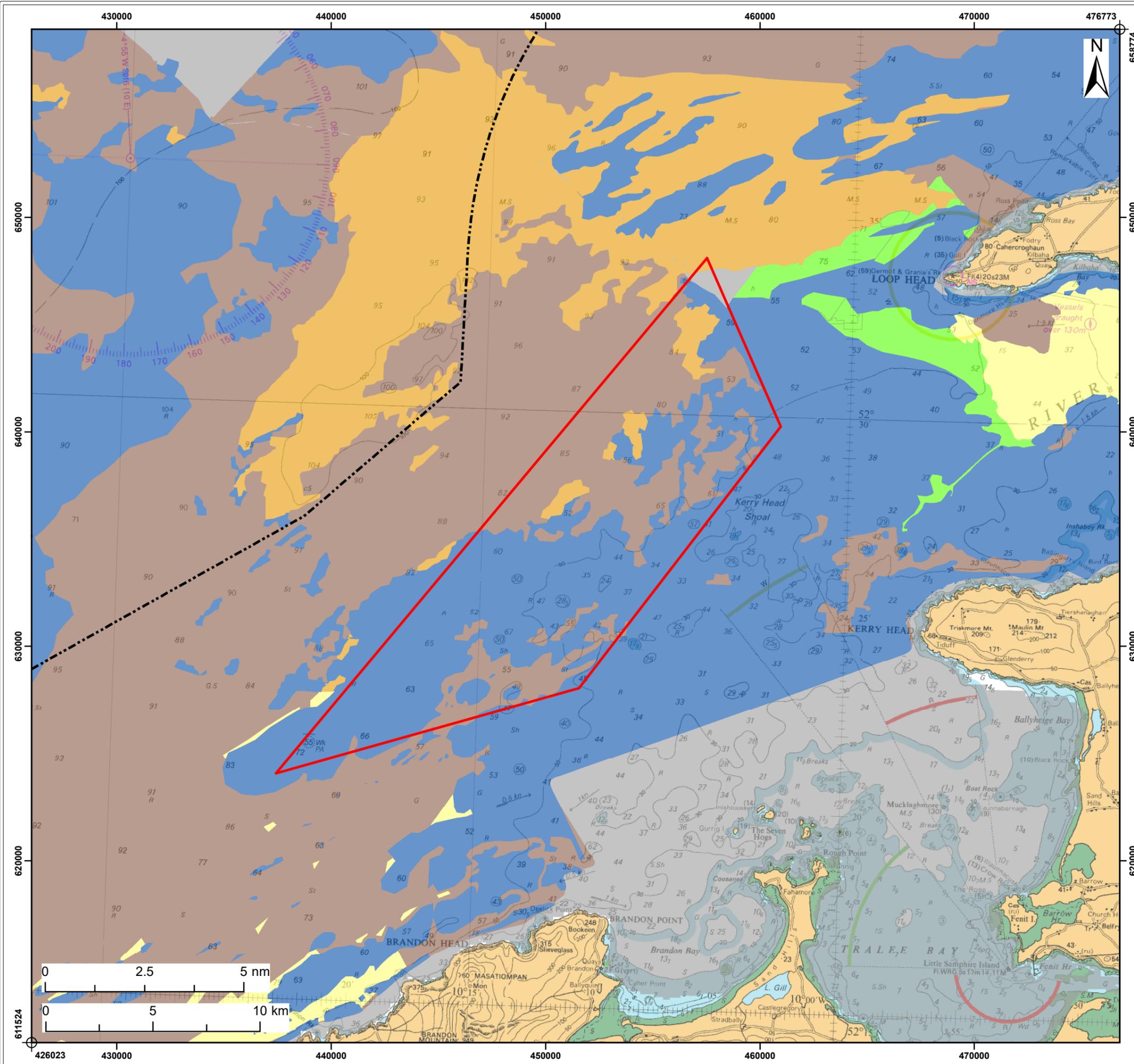
- International Convention for the Prevention of Pollution from Ships (MARPOL). The MARPOL sets out appropriate vessel maintenance; and
- The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), which provide global regulations to control the transfer of potentially invasive species.

In addition, the following will be adhered to:

- The European Communities (Environmental Liability) Regulations 2008, which set out a polluter pays principle whereby the operators who cause a risk of significant damage or cause significant damage to land, water or biodiversity will have the responsibility to prevent damage occurring, or if the damage does occur will have the duty to reinstate the environment to the original condition

With compliance with these requirements, it is not expected invasive species will be introduced, therefore there are no impacts expected to benthic ecology in relation to INNS.

Overall due to the scale and nature of the proposed surveys, it is not expected there will be an impact to benthic ecology receptors. Additionally, the SISAA (Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0021) considered impacts to sites designated for benthic ecology receptors, concluding there would be no likely significant effect on the designated benthic features of SACs.



**Legend:**

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

**EUNIS Substrate Type**

- Coarse Substrate
- Mixed Sediment
- Muddy Sand
- Rock or Other Hard Substrata
- Sand
- Seabed

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**Basemap:** © British Crown and OceanWise, 2021. All rights reserved. License No. EMS-EK001-664144. Not to be used for Navigation. Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors.

Client: <b>Kerry Offshore Wind Limited</b>	Project: <b>Kerry Offshore Wind Farm</b>
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Title:  
**Benthic Environment**

Figure: 3      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0225

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	31/01/2022			A3	1:175,000

Co-ordinate system: IREN95 Irish Transverse Mercator

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### 3.6 Fish and Shellfish Ecology

Data from Coull *et al.* (1998), the Marine Institute (2009) and Ellis *et al.* (2010) shows there are a number of species with spawning and nursery grounds overlapping the foreshore licence survey area, or in the surrounding area. The spawning grounds for Anglerfish *Lophius piscatorius* are high intensity, and the nursery grounds for Mackerel *Scomber scombrus* are high intensity. The spawning and nursery grounds overlapping or close to the foreshore licence survey area are listed below and shown on **Figure 4a-c**:

- Herring *Clupea harengus* spawning grounds
- Nephrops *Nephrops norvegicus* spawning grounds and nursery grounds
- Sprat *Sprattus sprattus* spawning grounds
- Anglerfish<sup>14</sup> spawning grounds and nursery grounds
- Mackerel nursery grounds
- Saithe *Pollachius virens* nursery grounds
- White bellied angler monk nursery grounds
- Black belly angler monk *Lophius budegassa* nursery grounds
- Cod *Gadus morhua* nursery grounds
- Horse Mackerel *Trachurus trachurus* nursery grounds

There are a number of rivers on the south and east coast of Ireland which have been designated as SACs for Annex II migratory fish. Although these SACs are not marine, the migratory fish for which they were designated have a marine phase of the lifecycle. These species rely on the sea to migrate to feeding grounds before returning to rivers to spawn.

The following are the species from the SACs in Ireland and the times of year of their migrations:

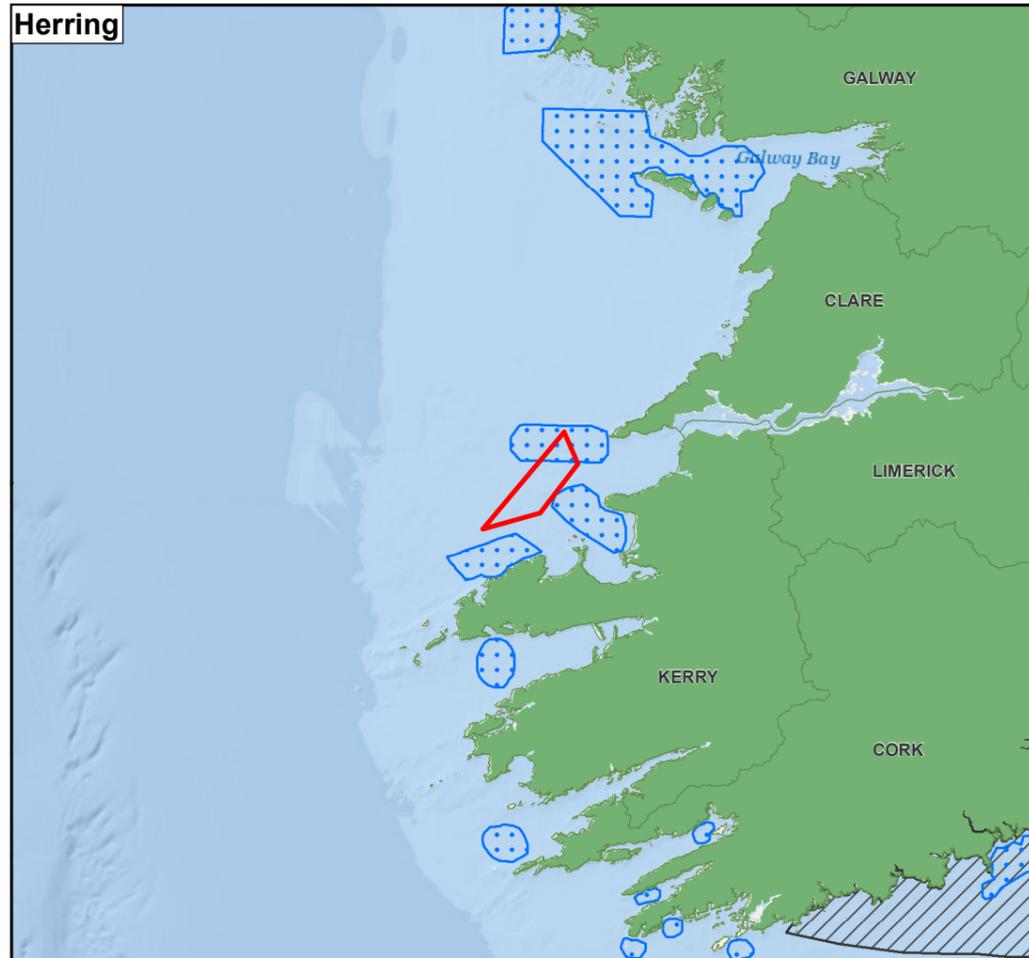
- Sea lamprey *Petromyzon marinus* – late April to early June;
- River lamprey *Lampetra fluviatilis* – September to June;
- Twait shad *Alosa fallax* – year-round and migrate into rivers from April-July; and
- Atlantic salmon *Salmo salar* – May to June and autumn months.

The closest SAC designated for Annex II migratory fish to the foreshore licence survey area is the Lower River Shannon SAC which is approximately 6km away and the qualifying interests of the SAC include the species above.

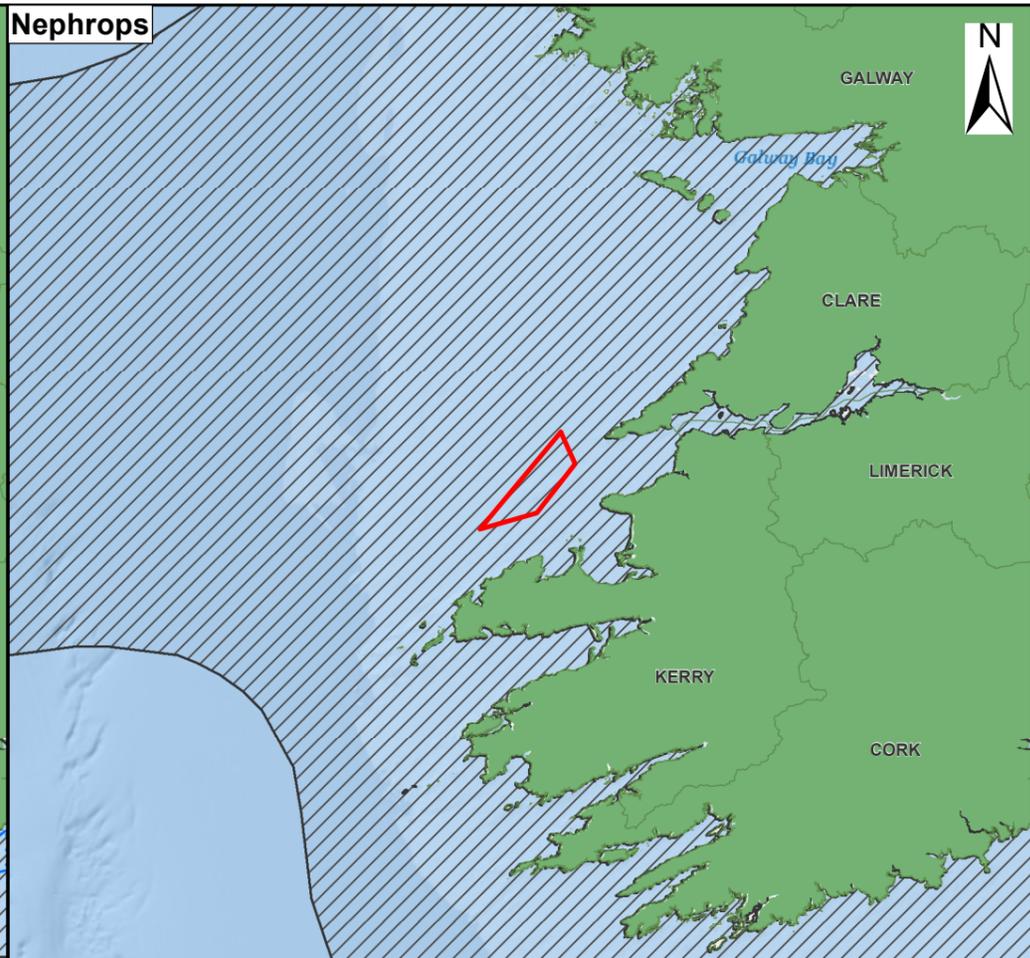
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<sup>14</sup> Referred to as white bellied angler monk by Marine Institute, 2009

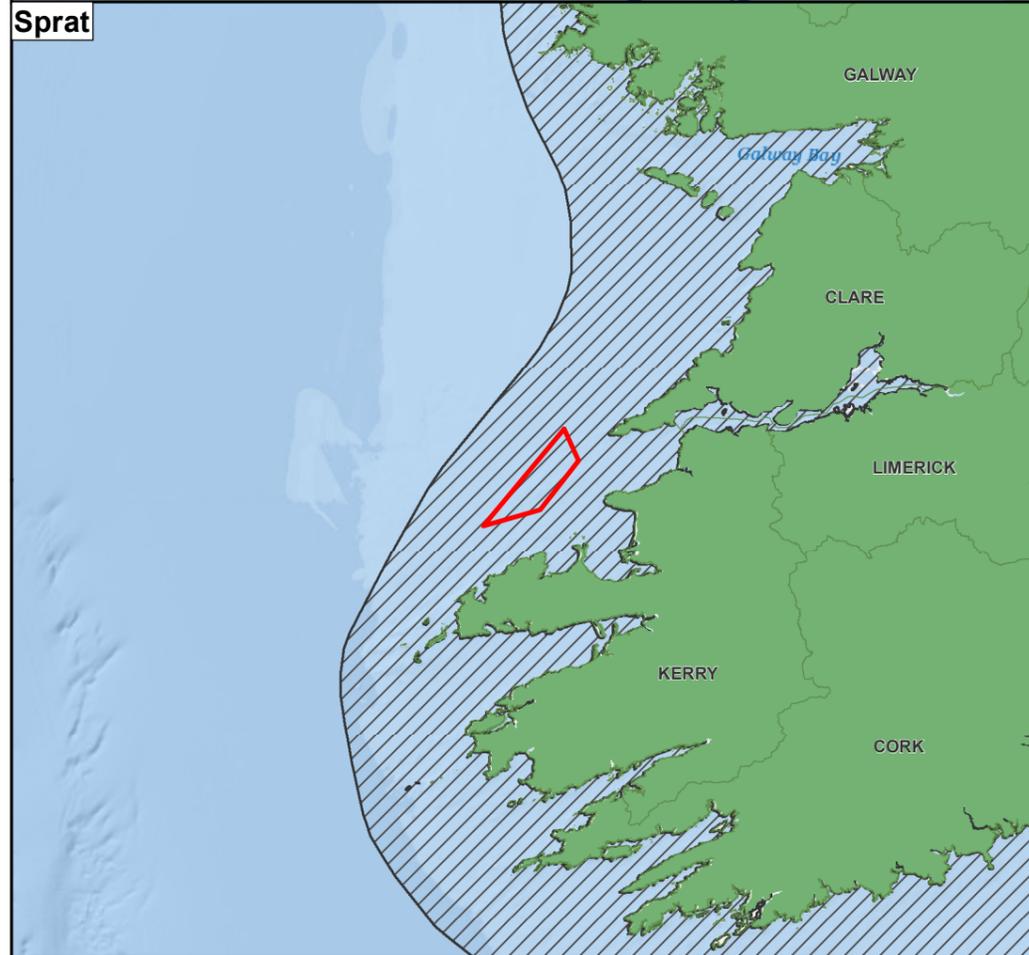
**Herring**



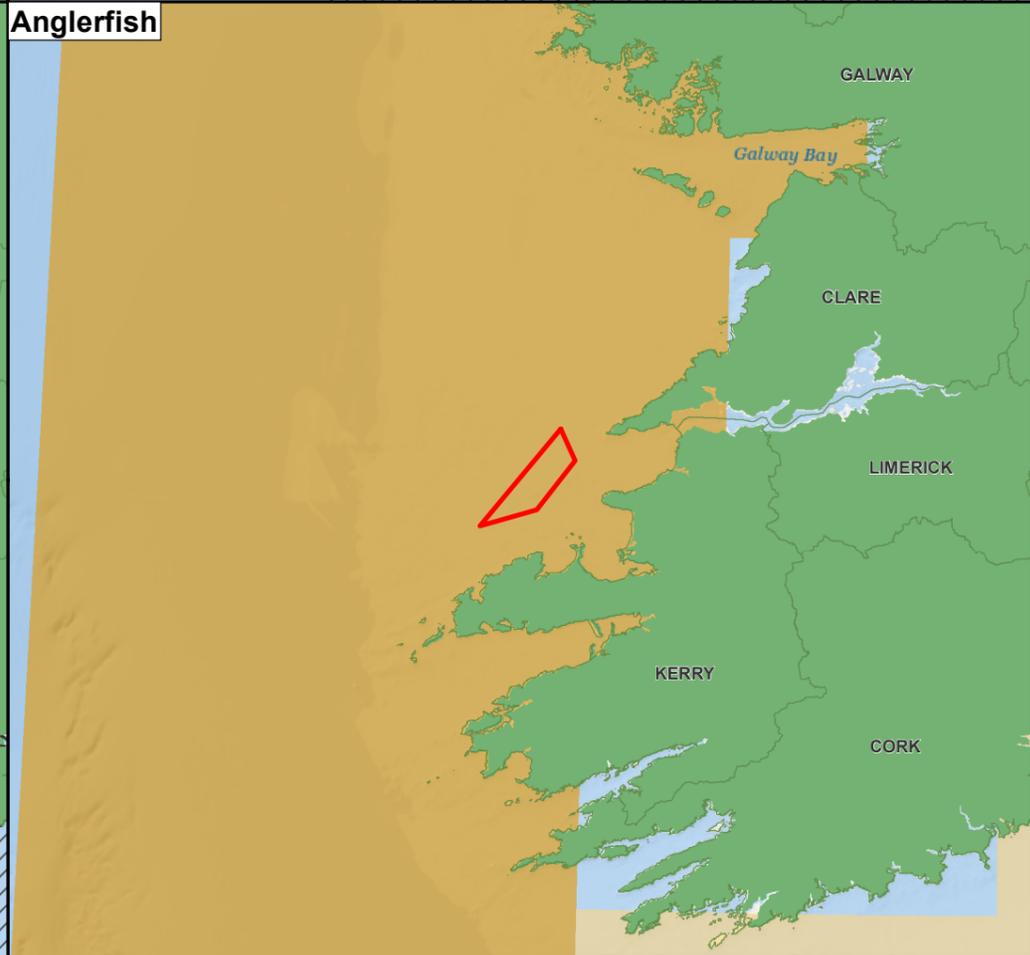
**Nephrops**



**Sprat**



**Anglerfish**



**Legend:**

Kerry Foreshore Licence Survey Area

**Spawning Grounds**

Marine Institute, 2009

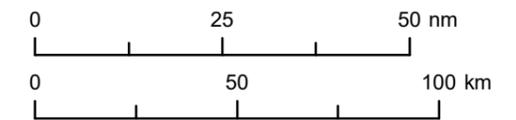
Coull *et al.*, 1998

**Nursery Grounds**

**Ellis *et al.*, 2010**

High Intensity

Low Intensity



**Data Sources:** © Marine Institute, 2009. © Coull *et al.*, 1998. © Ellis *et al.*, 2010. © OSI, 2020.

**Basemap:** Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors.

Client:

Kerry Offshore  
Wind Limited

Project:

Kerry Offshore  
Wind Farm

Title:

Herring, Nephrops and Sprat Spawning Grounds and  
Anglerfish Nursery Grounds

Figure: 4a

Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0226

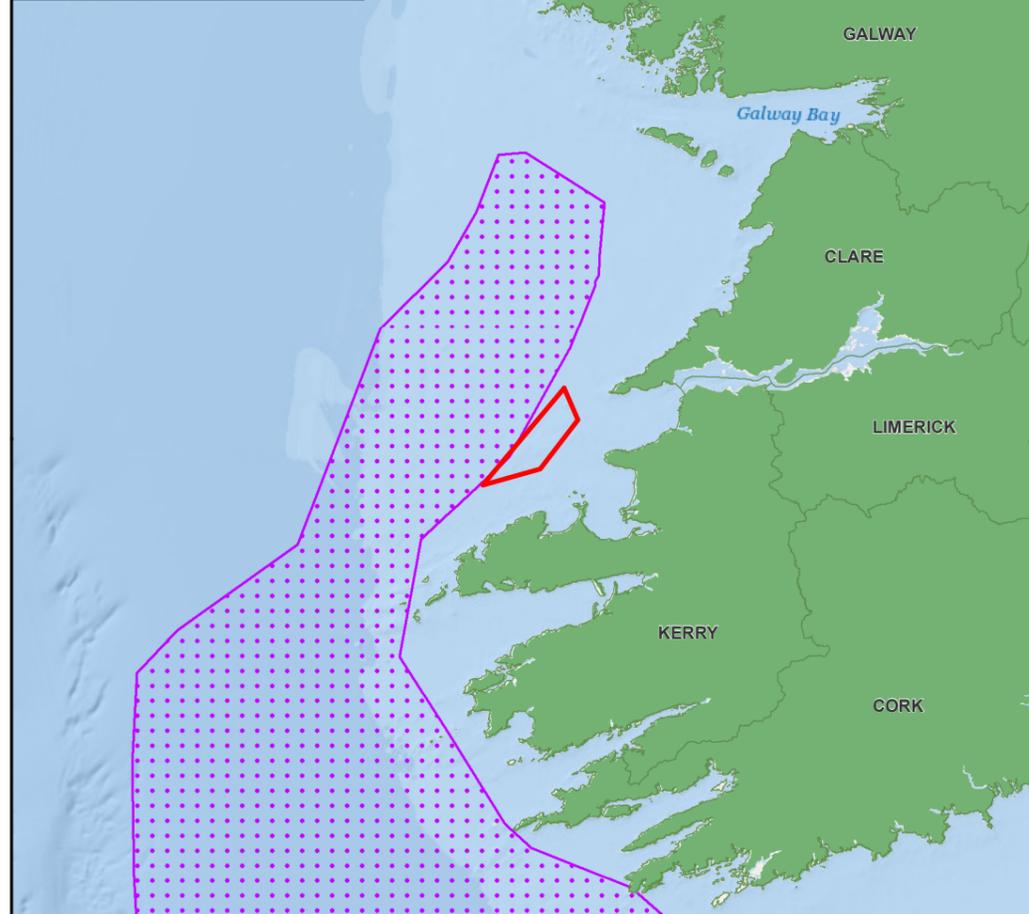
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	31/01/2022			A3	1:1,750,000

Co-ordinate system: IREN95 Irish Transverse Mercator

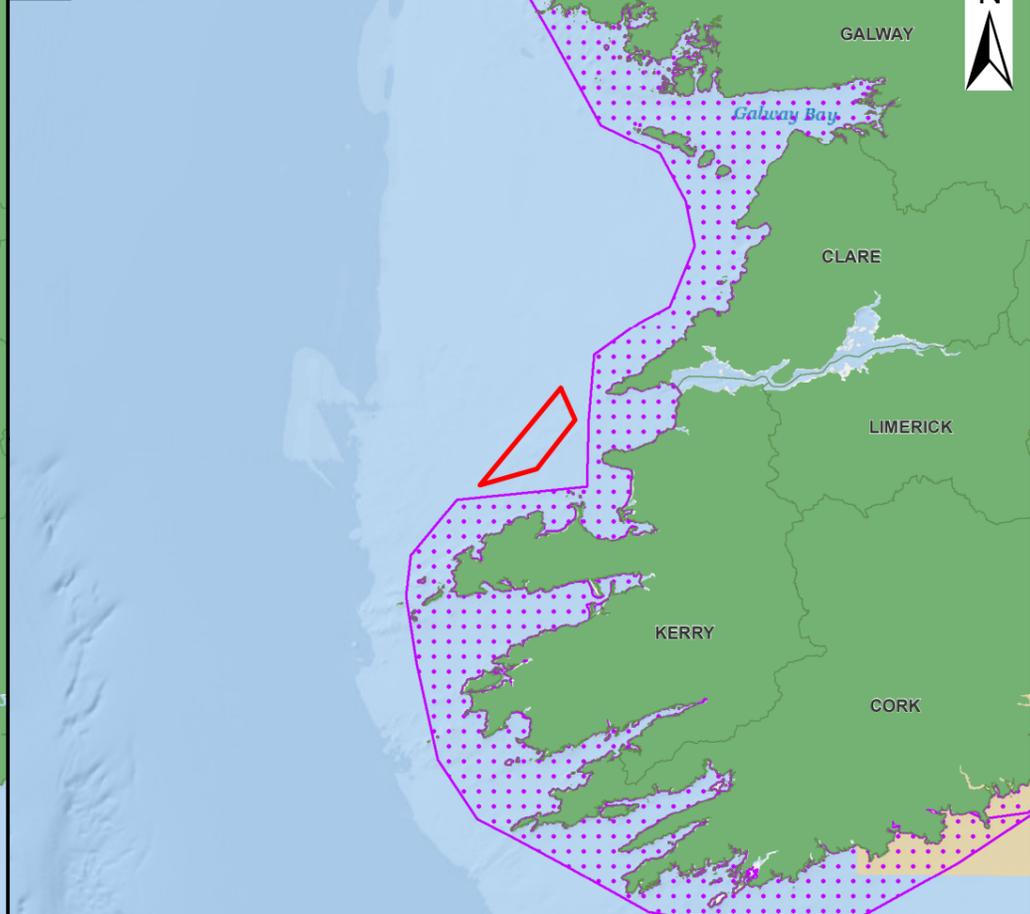


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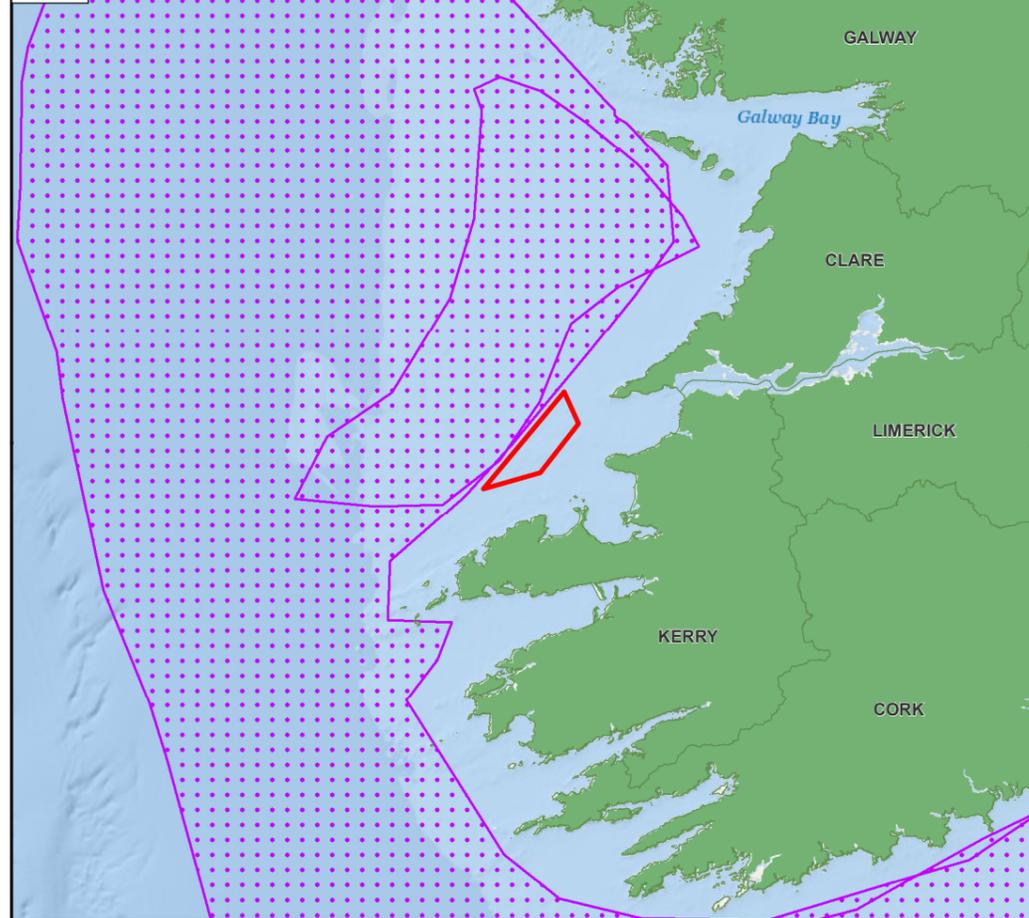
**Black Belly Angler Monk**



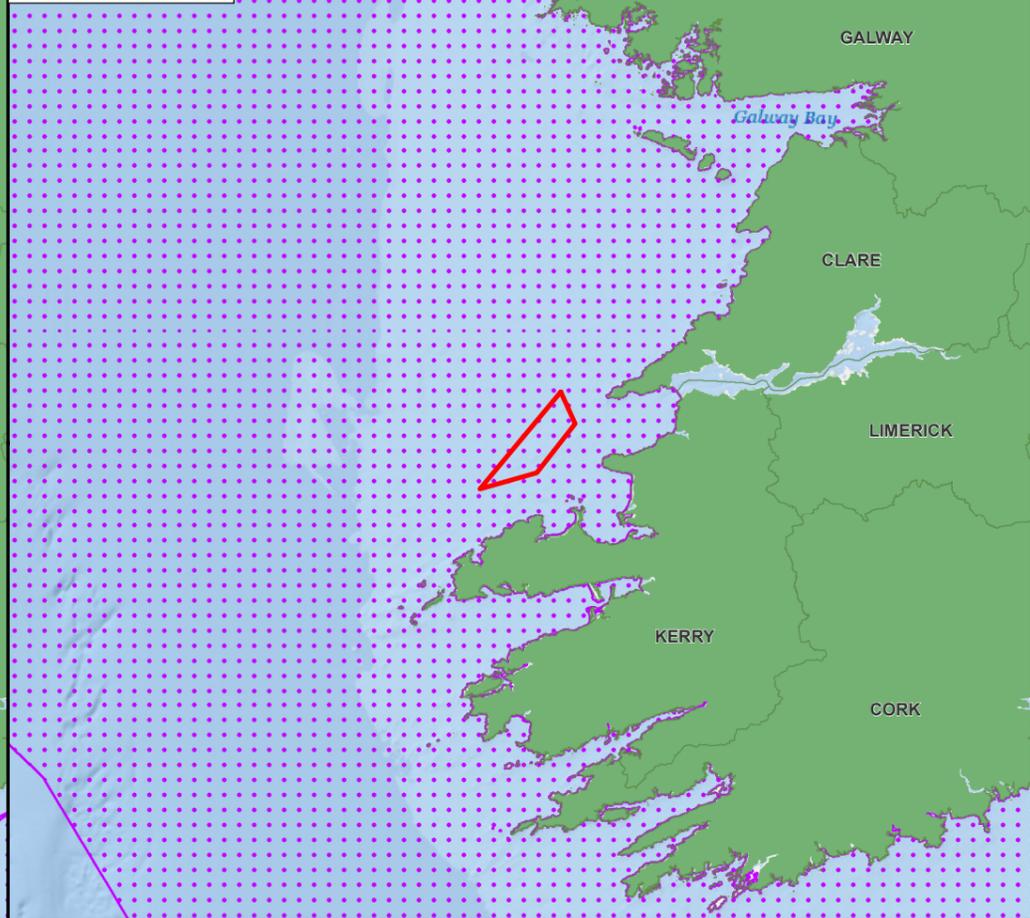
**Cod**



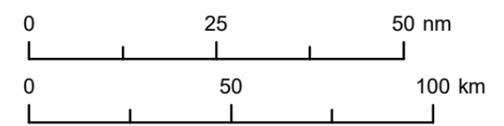
**Hake**



**Horse Mackerel**



- Legend:
- Kerry Foreshore Licence Survey Area
  - Nursery Grounds**
  - Marine Institute, 2009
  - Coull *et al.*, 1998
  - Ellis *et al.*, 2010**
  - Low Intensity



**Data Sources:** © Marine Institute, 2009. © Coull *et al.*, 1998. © Ellis *et al.*, 2010. © OSI, 2020.  
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Title:  
**Black Belly Angler Monk, Cod, Hake and Horse Mackerel Nursery Grounds**

Figure: 4b      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0227

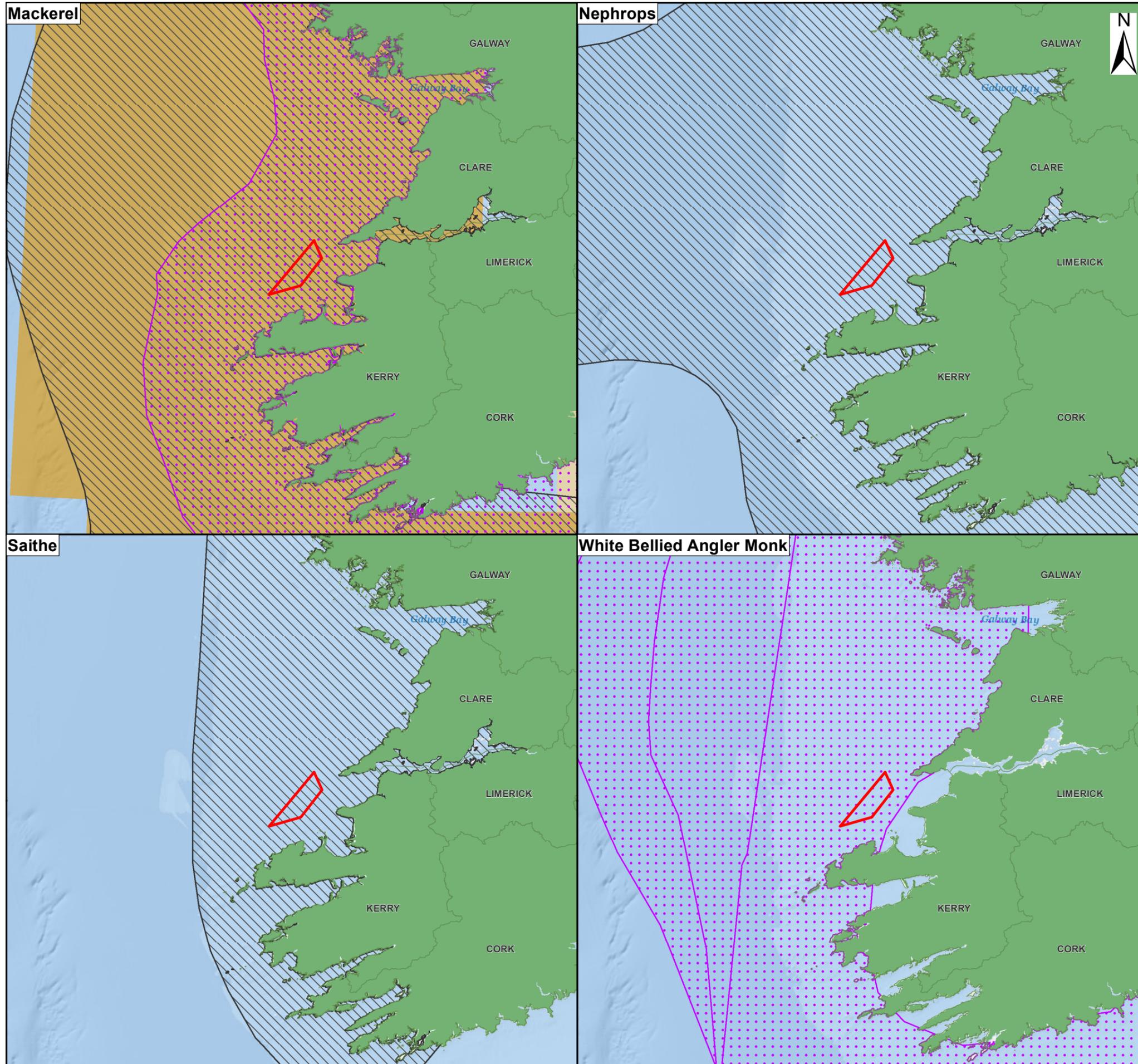
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Co-ordinate system: IREN95 Irish Transverse Mercator



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**Legend:**

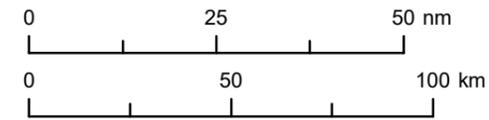
- Kerry Foreshore Licence Survey Area

**Nursery Grounds**

- Marine Institute, 2009
- Coull *et al.*, 1998

**Ellis *et al.*, 2010**

- High Intensity
- Low Intensity



**Data Sources:** © Marine Institute, 2009. © Coull *et al.*, 1998. © Ellis *et al.*, 2010. © OSI, 2020.  
**Basemap:** Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors.

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**Title:**  
Mackerel, Nephrops, Saithe and White Bellied Angler Monk Nursery Grounds

Figure: 4c      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0228

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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The proposed surveys have the potential for effects on fish and shellfish ecology through the following:

- Habitat loss/ disturbance from the benthic and geotechnical surveys;
- Increased suspended sediments and sediment re-deposition leading to gill damage or barrier effects;
- Impacts from underwater noise generated during the geophysical surveys; and
- Accidental pollution event leading to toxic contamination.

Disturbance to supporting habitats of fish and shellfish and removal of sediment from surveys will be localised to the immediate vicinity of the sediment sampling location. Suspended sediment plumes and changes to seabed characteristics are expected to be localised and negligible in comparison to natural sediment transport, rapidly returning to natural background levels.

The proposed site investigation survey and geophysical survey could cause underwater noise within the immediate vicinity of the survey vessel. Nedwell *et al.* (2012) estimated that seismic surveys could cause potential impacts to Atlantic Herring, which is a noise sensitive fish species, at a distance of up to 4km. The underwater noise generated by the works are given in (potential noise levels identified in Section 1.2 of Schedule of Works (Royal HaskoningDHV, 2022c – document reference PC1509-RHD-ZZ-XX-RP-Z-0023). This underwater noise could potentially effect fish sensitive to noise and act as a barrier that could impeding migration pathways. However, due to the fact sound sources from the survey will not consist of significant rapid pressure changes, the distance offshore and short-term temporary nature of the surveys, no significant impacts are expected in relation to fish and shellfish ecology due to the generation of underwater noise.

During the proposed surveys, there is the potential for pollution from spills or leaks of fuel and oil. The risk of this arising can be minimised by following standard good practice, and as required by law, with regard to pollution prevention guidance, which is detailed further in **Section 3.13**.

Overall due to the scale and nature of the proposed surveys, it is not expected there will be an impact to fish and shellfish ecology. Additionally, the SISAA report (Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0022) considered impacts to Annex II migratory fish species, concluding there would be no likely significant effect to any Annex II fish species.

### 3.7 Marine Mammals

Ireland has recorded 25 species of cetacean, all of which are recognised as protected species under Council Directive 92/43/EEC (“the Habitats Directive”) and the Irish Wildlife Act 1976, approximately five of which have been recorded off the east coast and may be present in the foreshore licence survey area at least on a seasonal basis (IWDG, 2020).

Over a two-year survey period from 2015 – 2016 the ObSERVE Programme recorded 19 cetacean species during aerial surveys of the Celtic and Irish Sea (Rogan *et al.*, 2018a). In both years more cetacean sightings occurred in the winter period than in the summer period and cetacean species richness was higher in the winter months than in the summer periods. Bottlenose dolphins *Tursiops truncatus*, harbour porpoise common dolphins *Delphinus delphis* and white-beaked dolphin *Lagenorhynchus albirostris* were the most frequency sighted odontocete (toothed whale/dolphin) species, whereas minke whale *Balaenoptera acutorostrata* was the most frequently sighted mysticete (baleen whale) species (Rogan *et al.*, 2018a).

In monitoring undertaken by Cork Ecology in 2014, the most common species recorded in the Celtic Sea area was the common dolphin, with fin whales *Balaenoptera physalus* and humpback whales *Megaptera novaeangliae* the most frequently encountered large whale species. There were sightings of minke whale, Risso’s dolphin *Grampus griseus*, bottlenose dolphin and harbour porpoise (Cetacean monitoring during the Celtic Sea Herring Acoustic Survey ((CSHAS), 2014).

Coastal otters mostly feed close to the shore in water less than 3m deep (Natural Resources Wales (NRW), 2017), therefore otter were not considered in this document.

The potential impacts of the proposed surveys to marine mammals include the following:

- Underwater noise disturbance;
- Potential collision risk with vessels;
- Potential for entanglement;
- Potential barrier effects;
- Potential disturbance at haul out sites (for grey seal and harbour seal only);
- Potential changes in water quality, including from accidental spills and leaks;
- Potential effects on in prey species; and
- In combination effects.

#### *Underwater noise disturbance*

Expert judgement of underwater noise impacts has been undertaken for the proposed surveys in relation to marine mammals in the NIS and SISAA (Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0021) which are being submitted alongside this environmental report. The assessment concluded that there would be no significant impacts to marine mammals due to the proposed surveys.

#### *Collision risk*

Studies have shown that larger vessels are more likely to cause the most severe or lethal injuries, with vessels over 80m in length causing the most damage to marine mammals (Laist *et al.*, 2001). Vessels travelling at high speeds are considered to be more likely to collide with marine mammals, and those travelling at speeds below 10 knots would rarely cause any serious injury (Laist *et al.*, 2001). Given that all vessels will be slow moving, and the majority would be less than 80m in length (with the geotechnical survey vessels having the potential to reach 90m in length), and the area is relatively busy with regards to vessels, it is considered there will be no significant impacts to marine mammal species as a result of collision risk.

#### *Entanglement*

To date, there have been no recorded instances of marine mammal entanglement with seismic or geophysical towed equipment, or with the mooring lines of LiDAR buoys. As such, the potential for entanglement is considered to be very low (and indirect only), and therefore no significant impacts are predicted to marine mammals in relation to entanglement due to the proposed surveys.

#### *Barrier effect*

There is no potential for barrier effects to marine mammals as a result of the proposed surveys, preventing movement of marine mammals between important feeding and / or breeding areas, or potentially increasing swimming distances if marine mammals avoid the foreshore licence survey area (approximately 227km<sup>2</sup>) and go around it. Therefore, there will be no impact to marine mammals from barrier effects due to the proposed offshore surveys.

#### *Disturbance at haul out sites*

The distance between the proposed survey area and both grey and harbour seal haul-out sites is considerably more than the reported disturbance distances for both species. In addition, any vessels travelling between the foreshore licence survey area and Dublin Port would use existing shipping channels and routes and considering the already busy nature of the area with regard to shipping, it is not considered that there would be any significant impacts to seals as a result of disturbance from the proposed offshore surveys.

#### *Changes in water quality*

During the proposed surveys, there is the potential for pollution from spills or leaks of fuel and oil. The risk of this arising can be minimised by following standard pollution prevention requirements, which is detailed further in **Section 3.13**. If the measures are adhered to it is considered there will be no impacts to marine mammals in relation to accidental pollution events.

#### *Effects on prey species*

Given there are no significant impacts expected to fish and shellfish ecology (**Section 3.6**) and the ability of marine mammals to feed on a wide range of prey, and to move to other locations for foraging in the event that there is a change in prey availability, it is not considered that there is the potential for any significant impacts any marine mammal species in relation to effects on prey species.

Overall due to the scale and nature of the proposed surveys is not expected there will be an impact to marine mammals. Additionally, the SISAA and NIS considered impacts to Annex II marine mammals, concluding there would be no adverse effect on the integrity of any site designated for marine mammals.

### **3.8 Birds**

The coastal sea cliffs, estuaries and offshore islands of Ireland are host to a number of nationally and internationally important bird species, with many areas designated as Special Protection Areas (“SPAs”). Coastal habitats provide important breeding sites for many species of seabirds, a number of which are protected under national and European legislation. The closest SPA to the foreshore licence survey area is the Loop Head SPA designated for kittiwake and guillemot. This site is approximately 14km away from the foreshore licence survey area. Loop Head is situated at the most westerly point in Co. Clare, approximately 20km south-west of Kilkee. The site includes the cliffs, shoreline and the adjacent marine area to a distance of 500m from the shore.

The cliffs support large numbers of breeding seabirds. A survey in 1987 recorded Fulmar (66 pairs), Kittiwake (690 pairs), Guillemot (2,687 pairs) and Razorbill (70 pairs). A survey in 2000 recorded Fulmar (45 pairs), Guillemot (3,350 pairs), Razorbill (13 pairs) and Kittiwake (260 pairs). The Kittiwake and Guillemot populations are of national importance. The site is also utilised by breeding Chough. A survey in 1992 recorded the presence of 3 breeding pairs, plus 7 flock birds; the birds nest on the cliffs and feed on the cliff top grassland and heath. Loop Head is also a traditional site for Peregrine (NWPS, 2009).

On the opposite side of the Shannon Estuary, approximately 10.5km from the foreshore licence survey area, lies Kerry Head SPA. Kerry Head SPA is characterised by sea cliff and adjacent grassland habitat and is designated for Fulmar (*Fulmarus glacialis*) and Chough (*Pyrrhocorax pyrrhocorax*).

This area of the west of Ireland has other important sites for sea birds and waterbirds. The Magheree Islands SPA which is approximately 9.5km away is designated for breeding seabirds and wintering geese. The Magheree Islands are also an important site for breeding terns, which have been known from here since the 1850s. In 1995 the following were recorded: Common Tern (58 pairs), Arctic Tern (232 pairs) and Little Tern (36 pairs). The Tralee Bay Complex SPA just over 12km away is of high ornithological importance as it

annually supports over 20,000 wintering waterbirds, including an international important population of Light-bellied Brent Goose and nationally important populations of 21 other species (NWPS, 2009).

The proposed surveys have the potential for effect on ornithological receptors through the following:

- potential disturbance due to the presence of vessels;
- displacement due to the presence of vessels;
- potential changes to prey availability; and
- potential changes in water quality.

The foreshore licence survey area does not overlap with a SPA, however, the foreshore licence survey area may be used by foraging and resting birds and by birds passing through (on transit/migration). The closest SPAs are the Howth Head SPA (14km) designated for kittiwake, and the Murrough SPA (14km) designated for red-throated diver, greylag goose, light-bellied brent goose, wigeon, teal, black-headed gull, herring gull, little tern and wetland and waterbirds. These are the only SPAs with a potential pathway for effect.

The proposed surveys that involve the presence of a vessel are: SBP, geotechnical site investigations, SSS and MBES. The potential impacts due to these activities would be disturbance to seabirds from the presence of the vessels and underwater noise disturbance caused by acoustic signals emitted during SBP, SSS and MBES.

There is a lack of studies on the effects of underwater noise on water column feeders, however one study by Mardik & Camphuysen (2009) concluded that seismic air gun emissions caused no fatalities or affected bird abundance. In addition, the presence of the vessels could potentially displace some birds from the survey site whilst the survey is underway, further reducing any noise disturbance to diving birds. It is considered that the effects of underwater noise would be *de minimis*.

It is possible that any fish near the survey will be temporarily displaced by the noise, thus also displacing the food resource for seabirds. This is an area already busy with regular vessel traffic and fish are likely to be habituated to noise. The survey noise impacts will be temporary and be highly localised and therefore, will be unlikely to affect prey availability, nor will the surveys create a barrier to connectivity. Given the potential for temporary and insignificant effects on fish as described in **Section 3.6**, and the ability of birds to feed on a wide range of prey and forage in large areas, it is considered that the effects on prey availability would be *de minimis*.

Analysis on seabird vulnerability by (Furness *et al.*, 2013) indicates that all diver species, velvet scoter and common scoter are most likely at risk of disturbance or displaced from habitats. The risks to divers and scoters from the proposed site investigation works would be survey vessel movement. Based on reported disturbance levels (Burger *et al.*, 2019; Mendel *et al.*, 2019; Fliessbach *et al.*, 2019) and using the precautionary principle, a 5km ZoI from the foreshore licence survey area for divers is used. The foreshore licence survey area is beyond the maximum displacement distance of red-throated diver and other divers as well as seaducks (the most sensitive to disturbance and displacement), meaning that there is no pathway for direct effects on any SPA. The survey vessels could however displace birds from the SPA that were within the foreshore licence survey area. The area already experiences relatively high-levels of vessel traffic and seabirds are likely to be habituated to this activity. The survey vessels will be slow moving during surveys and therefore less likely to cause disturbance than fast moving vessels. Therefore, any potential displacement effects will not give rise to a likely significant effect upon the SPAs. In addition, due to the temporary, short duration and small-scale and nature of the works there will be no direct or indirect likely significant effects on the conservation objectives of the European sites.

The potential for accidental discharge and spillage of oils, fuels and materials would be managed through compliance with MARPOL.

During the proposed surveys, there is the potential for pollution from spills or leaks of fuel and oil. The risk of this arising can be minimised by following standard good practice, and as required by law, with regard to pollution prevention guidance, which is detailed further in **Section 3.13**. It is considered there will be no impacts in relation to ornithological receptors due to pollution events.

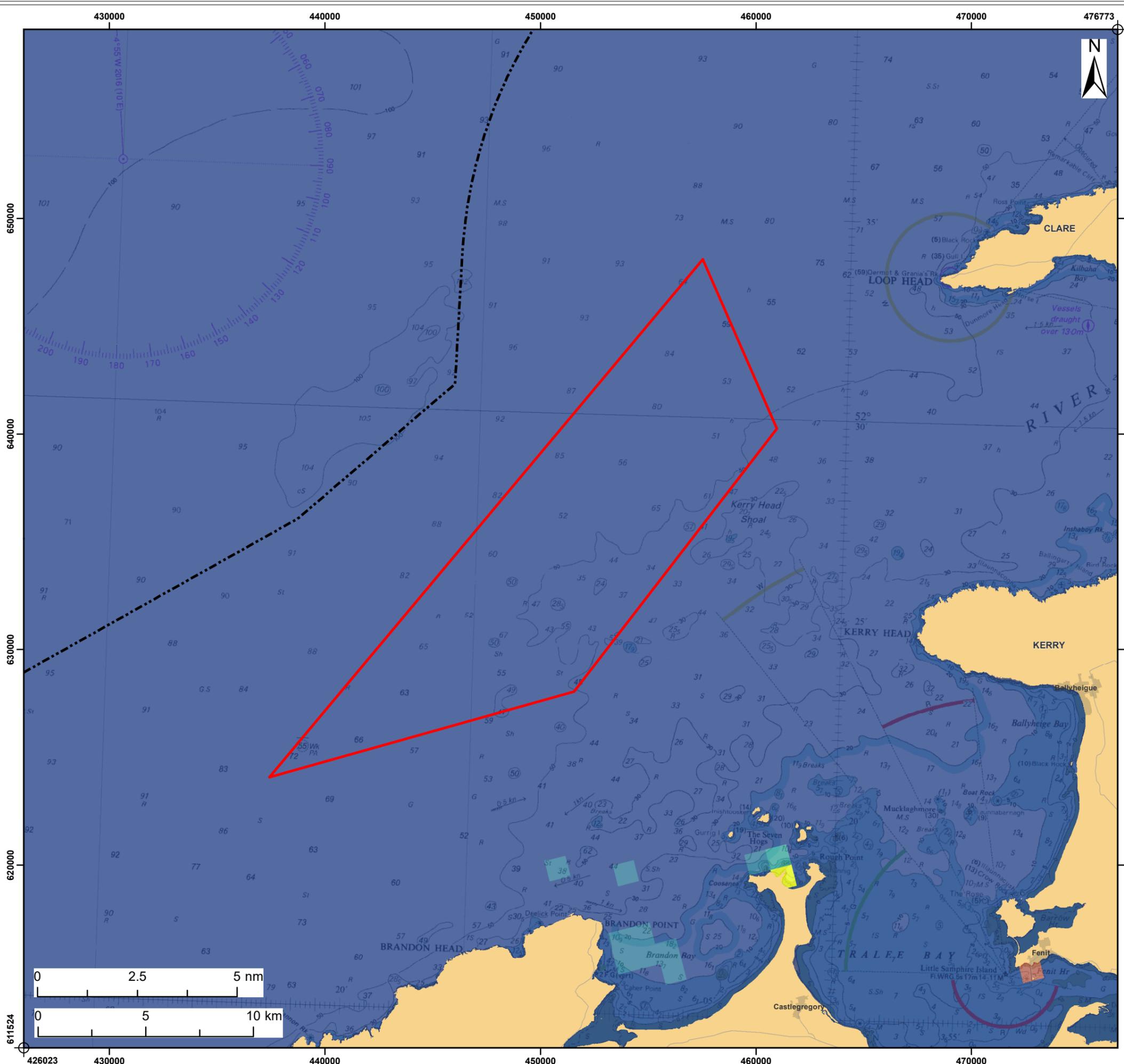
Overall due to the duration of the proposed surveys, the size of the foreshore licence survey area and its location in open offshore waters, significant impacts on seabirds, which may be disturbed or displaced from the survey site are not considered likely and below the threshold level of *de minimis*. Additionally, the SISAA determined there would be no likely significant effect on the conservation objectives on any SPA alone and in combination with other plans and projects.

### 3.9 Commercial Fisheries

The EMODnet shipping density data and European Maritime Safety Agency (EMSA) route density data show the density of fishing and fishing routes through the foreshore licence survey area, shown on **Figure 5a and b**. There are commercial fishing vessels that use a route passing through the foreshore licence survey however, the density of fishing vessels is low across the foreshore licence survey area. Ireland's Marine Atlas shows trawling, dredging, potting, netting and line fishing occur surrounding and within the boundary of the foreshore licence survey area.

A Fisheries Liaison Officer (FLO) is engaged in the project and will work with the industry to fully understand the fishing activity within the offshore survey area and the measures required during the survey works. The duration of the survey will be kept as short as possible. The FLO will also assess Vessel Monitoring System (VMS) data.

Due to the proposed surveys being short term and temporary, and due to the presence of alternative fishing grounds surrounding the foreshore licence survey area there are no significant impacts expected to commercial fisheries.



**Legend:**

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

**Time Spent by Fishing Vessels in 1km<sup>2</sup> - Monthly Average 2019 (hours/km<sup>2</sup>/month)**

- 0 - 0.25
- 0.26 - 0.5
- 0.51 - 0.75
- 2.01 - 4
- 5.01 - 321

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Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

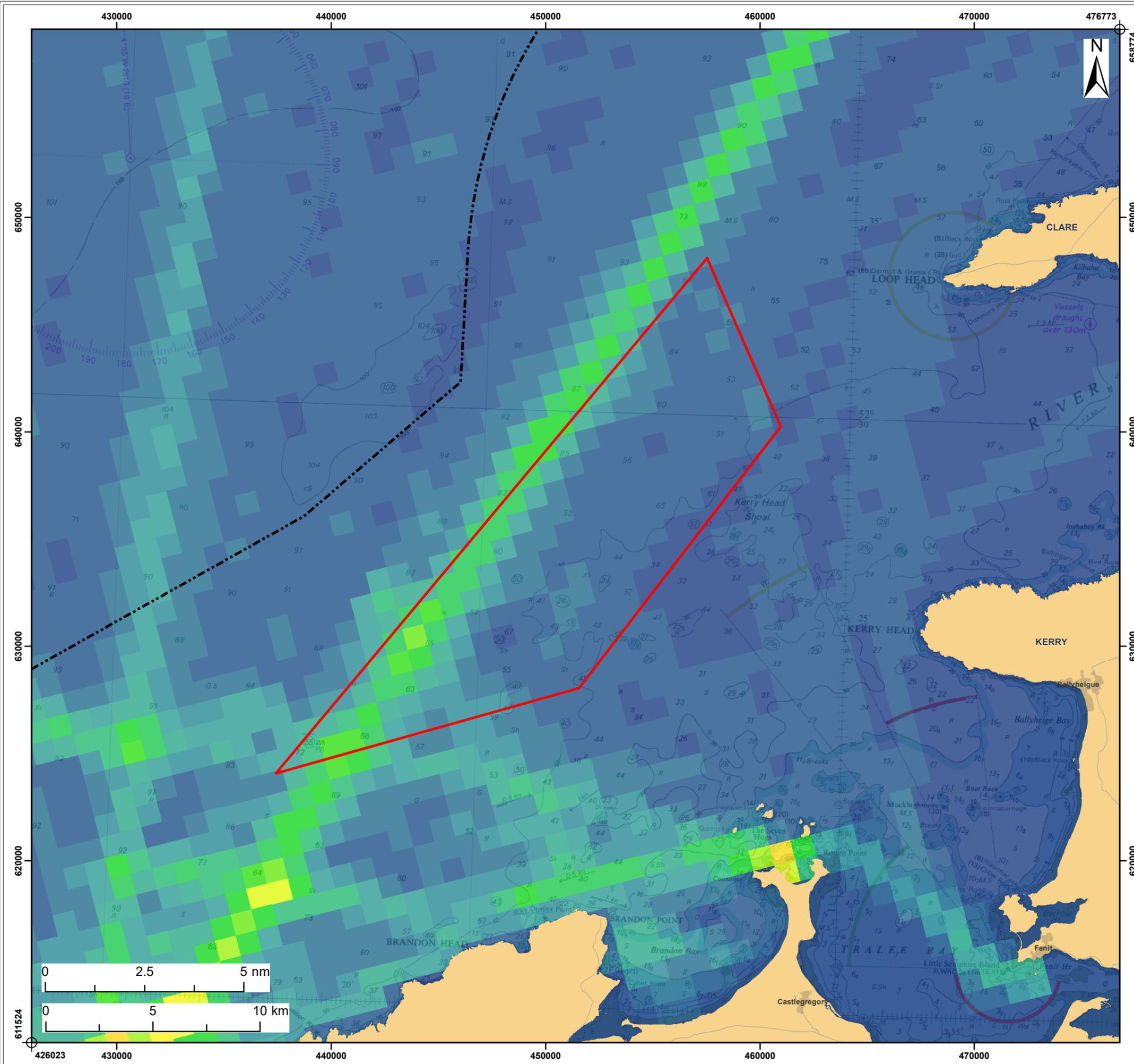
Title:  
Commercial Fisheries Shipping Densities

Figure: 5a      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0229

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**Legend:**

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

**Route Density for Fishing - Yearly Average 2019 (routes/km<sup>2</sup>/year)**

	0 - 0.09		30.1 - 35
	0.1 - 5		35.1 - 40
	5.1 - 10		40.1 - 45
	10.1 - 15		45.1 - 50
	15.1 - 20		50.1 - 55
	20.1 - 25		55.1 - 60
	25.1 - 30		60.1 - 65
			65.1 - 70

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Title:  
**Commercial Fisheries Route Densities**

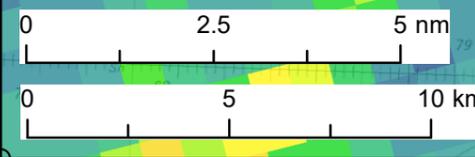
Figure: 5b      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0230

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### 3.10 Shipping and Navigation

EMODnet's shipping density and EMSA's route density show there are low numbers of vessels which pass through the foreshore licence survey area. There are areas of high density shipping inshore and offshore, directly adjacent to the boundaries of the foreshore licence survey area, with high density shipping entering into Shannon Estuary, shown in **Figure 6** below. The route density data from EMSA shows that there are a number of routes entering Dublin Port. The route density across the foreshore licence survey area is relatively low, however it is higher inshore and offshore of the site, where vessels are entering into Shannon estuary or continuing along the coastline past the foreshore licence survey area. There are a number of vessels including cargo vessels, tankers and passenger vessels entering Shannon estuary. There are low numbers of vessels which pass through the foreshore licence survey area and therefore there is a risk of collision due to the presence of the survey vessels.

Surveys will be undertaken in compliance with the International Regulations for Preventing Collisions at Sea. Other measures which will be implemented to prevent risks to existing shipping and navigation include submission of Notice to Mariners covering each survey period and appropriate vessel lighting for navigational safety

The surveys will be short term and temporary, and there are no impacts expected to shipping and navigation.

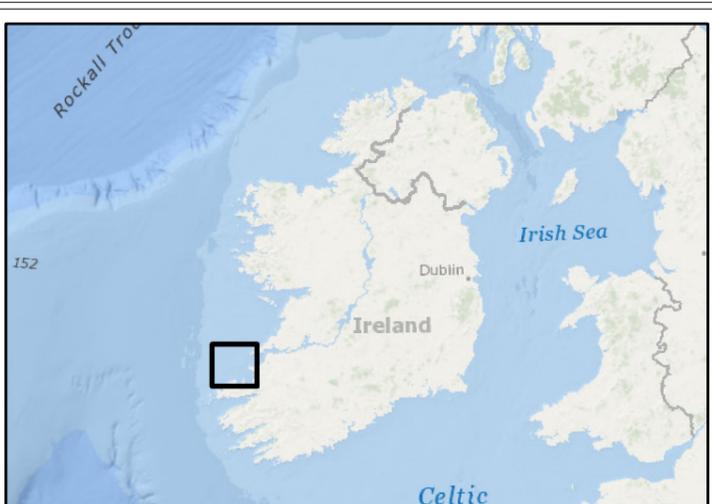
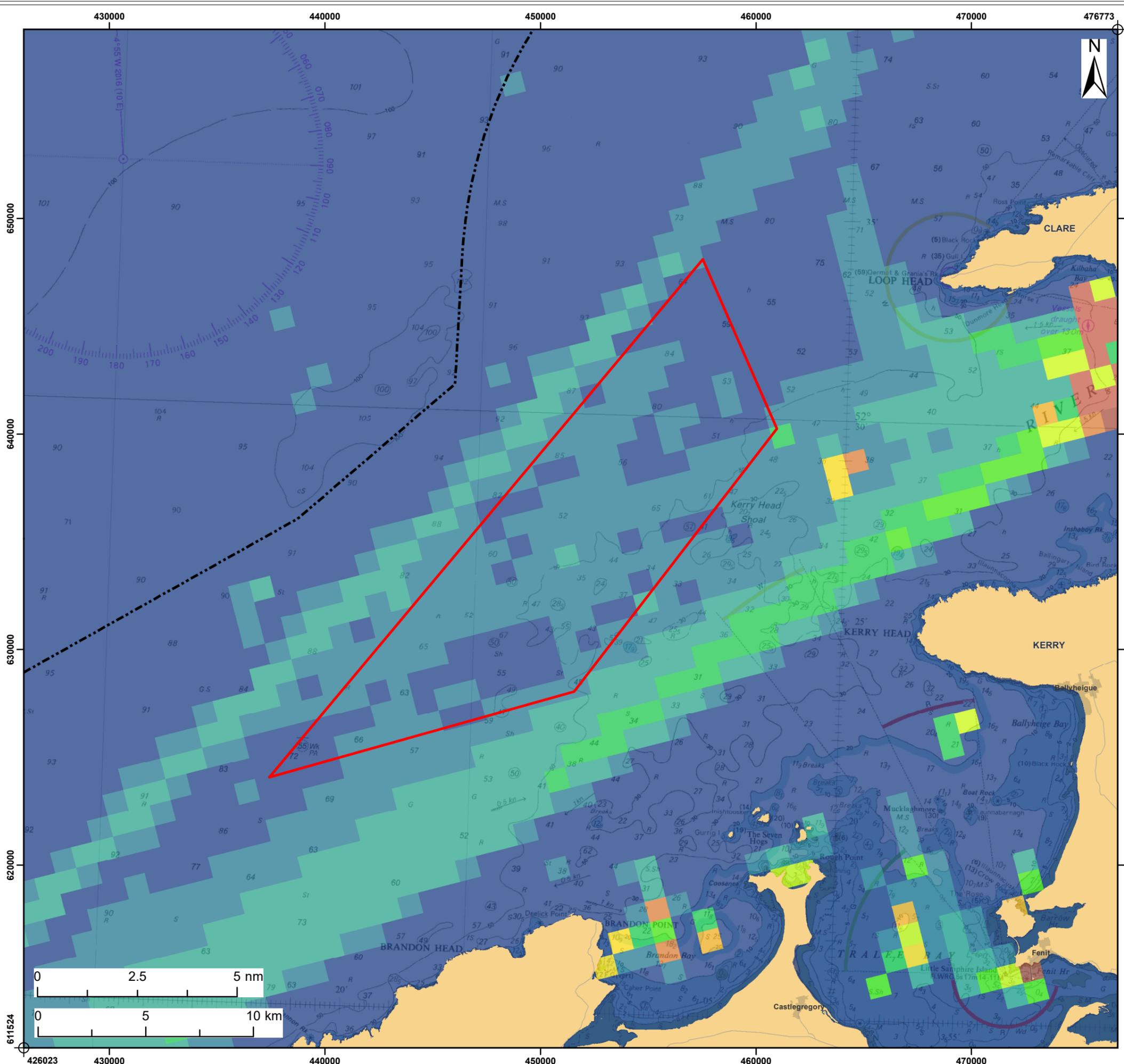
### 3.11 Other Marine Users

The KIS-ORCA offshore renewables and cable awareness data shows are no cables running through the foreshore licence survey area. **Figure 7** shows there are no other marine users or assets within the foreshore licence survey area or surrounding, therefore no impacts to other marine users or assets are expected due to the proposed survey.

Despite there being no other marine users within the foreshore licence application survey area the following measures will be implemented as best practice:

- Geophysical surveys will be undertaken first to identify the locations of the assets and determine if there are any others not currently identified from pre-existing data
- Geotechnical and benthic ecology surveys will be undertaken after the geophysical surveys, and the design of the surveys will be based on the results of the geophysical surveys
- A safety zone of 250m buffer around any identified assets will be imposed and no seabed samples will be collected from within the safety zone during the geotechnical and benthic surveys
- Third party asset owners will be consulted prior to the intrusive survey works being undertaken.

It is considered there will be no impacts to existing offshore assets due to the proposed surveys.



**Legend:**

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

**Time Spent by All Vessels in 1km<sup>2</sup> - Monthly Average 2019 (hours/km<sup>2</sup>/month)**

- 0 - 0.25
- 0.26 - 0.5
- 0.51 - 1
- 1.01 - 1.5
- 1.51 - 2
- 2.01 - 4
- 4.01 - 6
- 6.01 - 8
- 8.01 - 10
- 10.01 - 30
- 30.01 - 60

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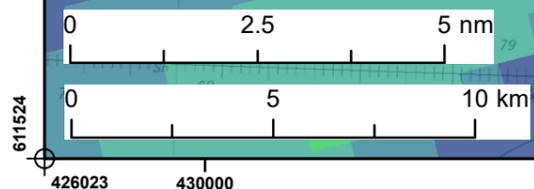
Title:  
**Shipping Densities**

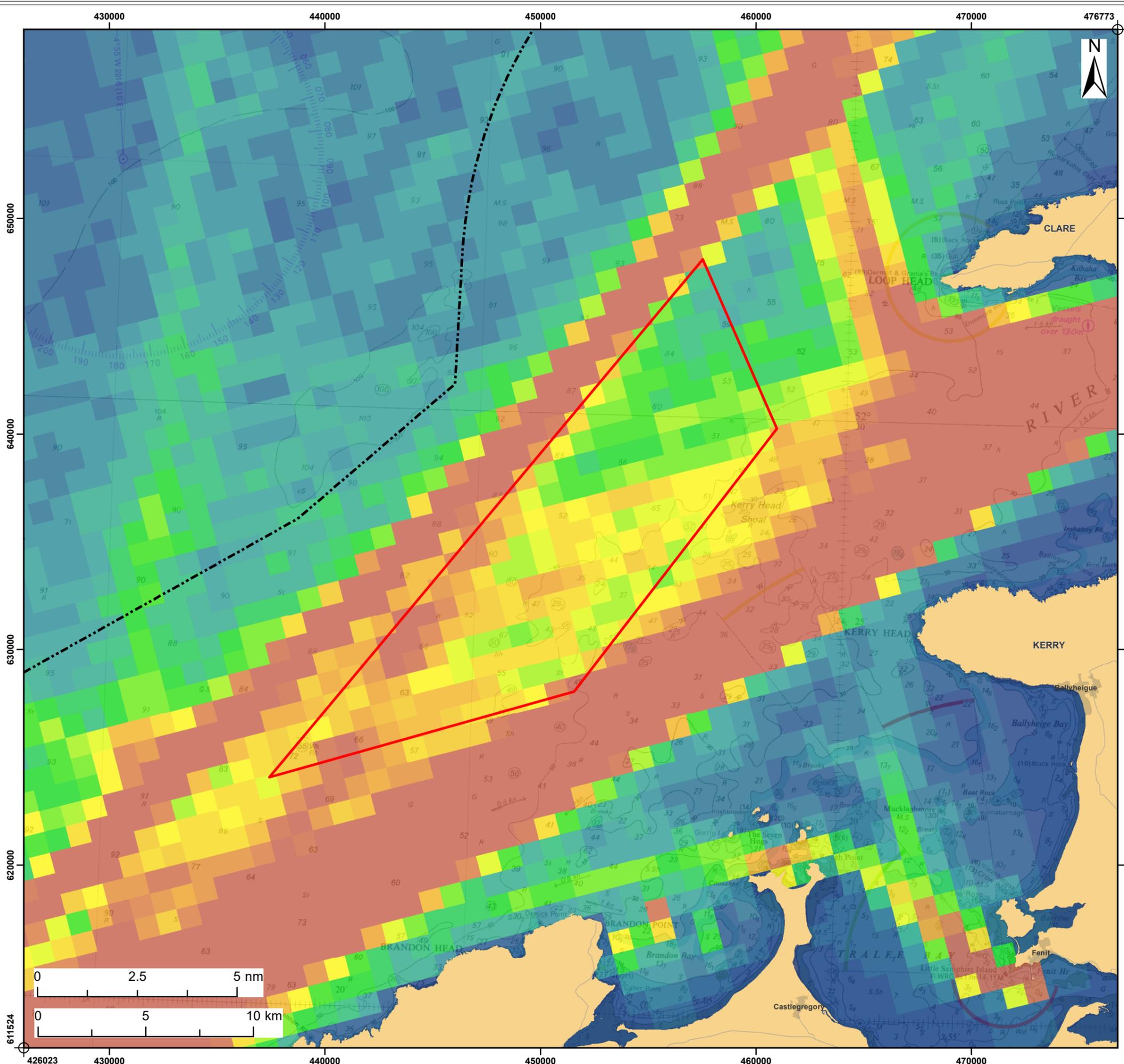
Figure: 6a      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0231

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**Legend:**

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

**Route Density for All Traffic - Yearly Average 2019 (routes/km<sup>2</sup>/year)**

<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 0 - 0.09</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 0.1 - 5</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 5.1 - 10</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 10.1 - 15</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 15.1 - 20</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 20.1 - 25</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 25.1 - 30</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 30.1 - 35</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #000080; margin-right: 5px;"></span> 35.1 - 40</li> </ul>	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 40.1 - 45</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 45.1 - 50</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 50.1 - 55</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 55.1 - 60</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 60.1 - 65</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 65.1 - 70</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 70.1 - 75</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 75.1 - 80</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 80.1 - 85</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 85.1 - 90</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 90.1 - 95</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 95.1 - 100</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> 100.1 - 500</li> </ul>
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Title:  
**Route Densities**

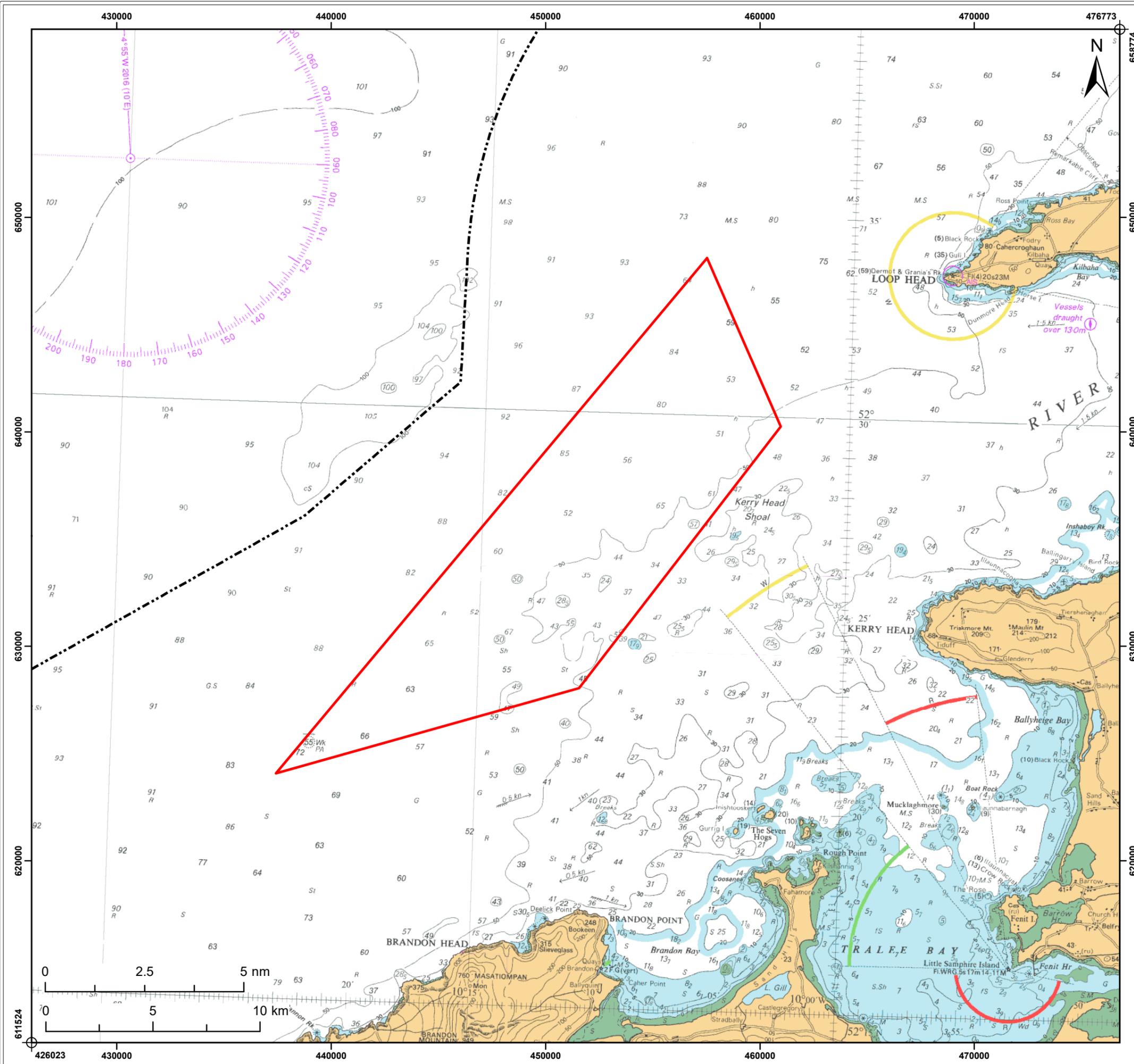
Figure: **6b**      Drawing No: **PC1509-RHD-ZZ-XX-DR-Z-0232**

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**Legend:**  
 Kerry Foreshore Licence Survey Area  
 - - - - - Ireland 12nm Limit

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**Title:**  
Marine Assets and Other Marine Users

**Figure:** 7      **Drawing No:** PC1509-RHD-ZZ-XX-DR-Z-0233

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### 3.12 Marine Archaeology

The National Monuments Service's (NMS) Wreck Inventory of Ireland Database (WIID) holds records of over 18,000 known and potential wreck sites in Irish waters. These records indicate the presence of two wrecks overlapping the foreshore licence survey area. The two wrecks from the WIID are shown on **Figure 8** with details provided below:

- Wreck number: W05663; name: Eupion; classification: Tanker; place of loss: Kerry / Loop Head, other details unknown.
- Wreck number: W10031; name: Shalimar; other details unknown

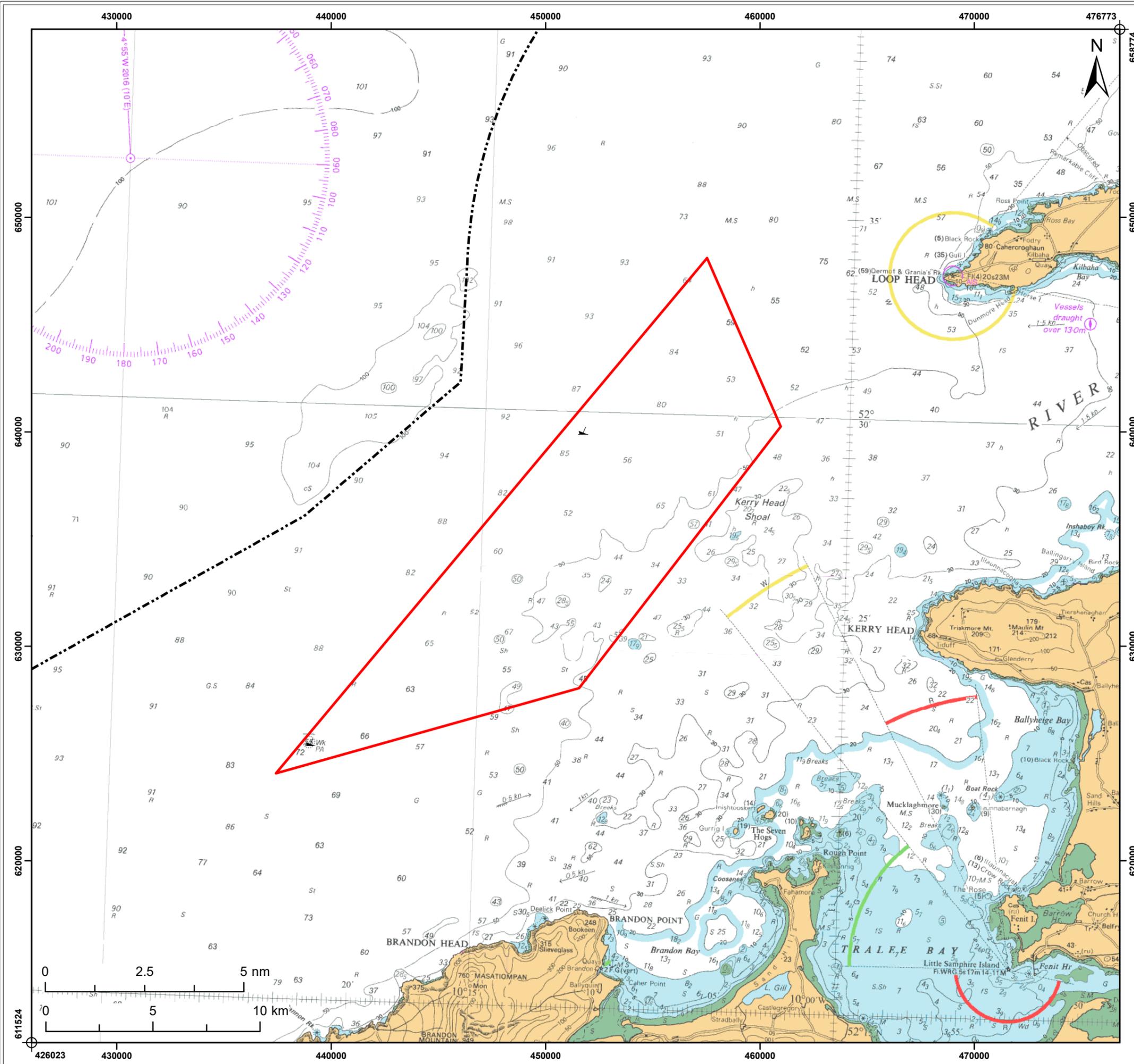
Wrecks over 100 years old and archaeological objects underwater, irrespective of their age or location, are protected under section 3 of the National Monuments (Amendment) Act 1987 (the "**1987 Act**"). It should also be noted that some wrecks that are less than 100 years old, or the potential location of wrecks or archaeological objects, may also be protected under section 3 (subject to the placement of an underwater heritage order) if considered to be of sufficient historical, archaeological or artistic importance to merit such protection. Of the two wrecks listed above, only the W05663 wreck is over 100 years old. Should further information on the identity of the other wreck become available, there is potential that this may also be afforded protection under the 1987 Act.

Further marine archaeological receptors comprise potential wrecks or aircraft crash sites, or associated debris, which may be present within the foreshore licence survey boundary but not yet discovered, and palaeolandscapes and deposits of palaeoenvironmental interest associated with the potential for submerged prehistoric sites.

There is potential for the proposed survey to impact these protected marine archaeology receptors. However, a number of measures will be in place in order to prevent impacts to these marine archaeology receptors, detailed below.

The proposed surveys will be licenced under the National Monuments Acts 1930 – 2014 and National Cultural Institutions Act 1991. With regards to the magnetometer survey in-particular a detection device consent application will be made to the Department of Housing, Local Government and Heritage ("**DHLGH**") in advance of the magnetometer survey being undertaken.

The proposed geophysical surveys will be carried out prior to the geotechnical surveys. The data from the geophysical surveys will be analysed by a licensed marine archaeologist in order to determine the scope of the intrusive works (geotechnical and benthic ecology surveys), to ensure the sample locations avoid wrecks and aircraft crash sites and identified seabed features of potential archaeological interest. The scope of the geotechnical and benthic surveys will be planned to take account of geoarchaeological objectives as advised by a licenced marine geoarchaeology specialist.



- Legend:**
- Kerry Foreshore Licence Survey Area
  - Ireland 12nm Limit
  - ⚓ Wreck

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Title:  
**Marine Archaeology**

Figure: 8      Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0234

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A written scheme of investigation (WSI) and protocol for archaeological discoveries (PAD) will be prepared and implemented during the proposed surveys. Additionally, a Retained Archaeologist, and Archaeological Contractor(s) will be engaged as required, ensuring the WSI and PAD are implemented and to provide consistency throughout the project.

If the measures listed above are implemented, it is considered there will be no impacts to marine archaeology due to the proposed surveys. During the geophysical surveys, if further significant archaeological finds are discovered beyond those identified from the WIID there may need to be further measures implemented, however they would be agreed with the DHLGH if required, prior to the geotechnical and benthic ecology surveys being undertaken.

### **3.13 Water**

The benthic ecology and geotechnical surveys will result in disturbance to the seabed, which will cause an increase in suspended sediment concentrations resulting in an increase in turbidity in the water column. The amount of seabed disturbance will be localised, short term and temporary with turbidity expected to return to background levels rapidly, therefore no significant impacts to water quality are expected.

During the proposed surveys there is potential for pollution from spills or leaks of fuel and oil. However, the risk of accidental spills / leaks will be managed through implementation of a Project Environmental Management Plan (PEMP), developed prior to any survey being undertaken. The PEMP will include, but is not limited to:

- Oils and lubricants used in the survey equipment would be biodegradable where possible, and all chemicals would be certified to the relevant standard.
- Good practice procedures would be put in place when transferring oil or fuel between service vessels.
- Vessels must be free of invasive alien species on their hulls and in their ballast water.
- Vessels must comply with the International Maritime Organization (IMO) ballast water management guidelines.
- Appropriate vessel maintenance following guidance from the MARPOL.
- Appropriate spill plan procedures would also be implemented in order to appropriately manage any unexpected discharge into the marine environment.
- Inclusion of control measures such as the requirement to carry spill kits, and bunding to contain any spill, and the requirement for vessel personnel to undergo training to ensure requirements of the PEMP are understood and communicated.
- All work practices and vessels will adhere to the requirements of the MARPOL 73/78; specifically Annex 1 Regulations for the prevention of pollution by oil concerning machine waters, bilge waters and deck drainage and Annex IV Regulations for the prevention of pollution by sewage from ships concerning black and grey waters.
- All vessels will be certified by the Marine Survey Office.

Due to the short-term temporary nature of the surveys, and following standard good practice, and as required by law, there are no significant impacts expected to water quality due to the proposed surveys.

### 3.14 Air

Due to the nature of the proposed surveys, there will be no releases to air other than from vessel exhausts, which will not exceed Air Quality standards. Therefore, there will be no impact to air quality due to the proposed surveys.

### 3.15 Climate

Given there are no impacts to air quality or water quality, and following standard good practice, and as required by law, to prevent accidental oil spillages, the proposed surveys are not expected to contribute to climate change in a significant way.

### 3.16 Landscape and Seascape

The foreshore licence survey area is approximately 9km offshore. Due to the distance from the coastline the survey vessels will not cause as much of a visual disturbance as their visibility will be reduced due to the perspective. Additionally, there is a high intensity shipping route inshore of the site passing into the Shannon Estuary, therefore there is already the presence of vessels in the area. The Burren and Cliffs of Moher United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites is approximately 50km north of the site, along the coastline. The sea inshore of the foreshore licence survey area and to the North towards The Burren and Cliffs of Moher UNESCO site are characterised by a number of shipping routes and areas with high vessel density, therefore there is already a visual disturbance caused by vessels.

Due to the distance from the coast, the short-term temporary nature of the proposed surveys, and due to the existing vessels already present in the area, no impacts to landscape and visual receptors are expected.

### 3.17 Major Accidents and disasters

The proposed surveys are not expected to add to or cause any natural disasters such as flooding or storms, collision events or major spills. If the navigational good practice measures listed in **Section 3.10** are adhered to, including compliance with the International Regulations for Preventing Collisions at Sea, Notice to Mariners covering each survey period and appropriate vessel lighting for navigational safety, then the risk of accidents would be reduced to as low as reasonably practicable. Additionally, if the water quality good practice measures listed in **Section 3.13** are implemented, no spills are expected.

The proposed surveys are not expected to be carried out in adverse weather conditions, however if a survey vessel is unexpectedly caught in such weather, vessels will take appropriate actions, in line for example with the '*Revised guidance to the master for avoiding dangerous situations in adverse weather and sea conditions*' (IMO Circular MSC.1/Circ. 1228, 11 January 2007).

### 3.18 Cumulative

Existing activities overlapping with the foreshore licence survey area have already been considered in relation to commercial fisheries (**Section 3.9**), shipping and navigation (**Section 3.10**), and Other Marine Users (**Section 3.11**). No impacts were determined in relation to existing activities overlapping with the foreshore licence survey area. As described In Section 7 of the SISAA, other plans and projects have been identified. Due to the short term, localised and temporary nature of the proposed surveys no cumulative impacts are predicted.

## 4 Assessment Conclusion

The environmental assessment has been undertaken considering the characteristics and location of the proposed surveys. The aim of the assessment was to determine any potential impacts that could arise due to the proposed surveys.

The environmental assessment is supported by and takes into consideration the outcome of the SISAA and NIS that are submitted alongside this Non-Statutory Environmental report in support of the Foreshore Licence application for the proposed surveys.

Due to the nature and scale of the proposed surveys the environmental assessment has concluded there will be no significant environmental impacts due to the proposed surveys.

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