codling wind park

Environmental Impact Assessment Report

Volume 4

Appendix 12.3 Commercial Fisheries Technical Report


codling
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Table of contents

List of tables

List of figures

List of plates

Abbreviations

Abbreviation	Term in Full
AIS	Automatic Identification System
BIM	Bord Iascaigh Mhara
CWP	Codling Wind Park
DCF	Data Collection Framework
DOECC	Department of the Environment, Climate and Communications
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMSA	European Maritime Safety Agency
EU	European Union
FLO	Fisheries Liaison Officer
GIS	Geographic Information System
ICES	International Council for the Exploration of the Sea
MCRS	Minimum Conservation Reference Size
MMO	Marine Management Organisation
RIFF	Regional Inshore Fisheries Forum
SFPA	Sea Fisheries Protection Agency
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
UK	United Kingdom
UKFEN	UK Fisheries Economic Network
VMS	Vessel Monitoring System

Units

Term	Definition
€	Euros
°C	Degrees Celsius
cm	Centimeters
hp	Horsepower
kg	Kilograms
km	Kilometers
knots	Nautical mile per hour
kW	Kilowatts
m	Metres
mm	Millimetres
NM	Nautical Mile
t	Tonne

Definitions

Glossary	Meaning
The Applicant	The developer, Codling Wind Park Limited (CWPL).
Codling Wind Park (CWP) Project	The proposed development as a whole is referred to as the Codling Wind Park (CWP) Project, comprising of the offshore infrastructure, the onshore infrastructure and any associated temporary works.
Codling Wind Park Limited (CWPL)	A joint venture between Fred. Olsen Seawind (FOS) and Électricité de France (EDF) Renewables, established to develop the CWP Project.

APPENDIX 12.3 COMMERCIAL FISHERIES TECHNICAL REPORT

1 Introduction

1.1 Overview

1. Codling Wind Park Limited (hereafter 'the Applicant') is proposing to develop the Codling Wind Park (CWP) Project, which is located in the Irish Sea approximately 13 - 22 km off the east coast of Ireland, at County Wicklow.

2. This appendix has been prepared by NiMa Consultants Ltd (NiMa) to support the Applicant's Environmental Impact Assessment Report (EIAR) of the CWP Project, and in particular to provide evidence to support the baseline characterisation and impact assessment presented in **Chapter 12 Commercial Fisheries**.

1.2 Purpose of this report

3. The purpose of this document is to provide a characterisation of the existing environment to understand the commercial fisheries and fishing fleets that operate within and adjacent to the CWP Project.

4. The objective of this commercial fisheries technical report is to analyse, present and report a wide range of data sources to describe as accurately as possible the existing commercial fisheries operations and activities within the CWP Project and surrounding area.

5. The Department of the Environment, Climate and Communications (DECC) Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects (DECC, 2018) recognises the potential impacts on commercial fisheries, specifically loss of access and effects on fishery resources. For commercial fisheries, the DECC guidance states that:

> *"The baseline should identify the commercially important fish assemblages for the area of potential impact so that any changes in the community composition or biomass/yield can be tracked. Fisheries data may be used if available. Otherwise, it may be necessary to conduct acoustic/trawl surveys to collect the required data. Some level of direct baseline investigation is likely to be appropriate, due to concerns that not all resources may be identified and documented through the analysis of fishery dependent data alone."*

1.3 Report structure

6. This report is structured as follows:

- Section 1 introduces the report and outlines its aims;
- Section 2 presents the methodology and data sources applied to characterise the existing environment;
- Section 3 presents the characterisation of the existing environment for the commercial fisheries assessment;
- Section 4 presents the characterisation of the future existing environment;
- Section 5 presents any uncertainties or data gaps which were identified during the existing environment characterisation;
- Section 6 provides a high level summary of the findings of this report; and

- Section 7 provides a full catalogue of references and data sources.

1.4 Experience

1.4.1 Consultancy

7. The commercial fisheries consultancy has been provided by Fiona Nimmo and Sarah MacNab, both founding Directors at NiMa Consultants Limited.

8. NiMa Consultants Ltd are marine environmental consultants with global experience in providing advice in support of sustainable fisheries and aquaculture, marine planning and offshore renewable energy. NiMa provides high quality outputs and solutions across a range of fisheries and marine environmental projects, delivered by a core team of two experts: Fiona Nimmo and Sarah MacNab, who together combine expert knowledge in commercial fisheries, environmental impact assessments (EIAs) and the energy consenting process.

9. The NiMa team bring a full understanding of the methodology and best practice for undertaking commercial fisheries impact assessments globally. This includes a keen knowledge of guidance related to undertaking impact assessment for commercial fisheries.

10. The NiMa team have extensive experience in leading every stage for the commercial fisheries elements of consent applications for nationally significant offshore wind farm projects in the UK. This includes projects in the North Sea (Neart na Gaoithe, Hornsea One, Two, Three and Four; Dudgeon and Sheringham Shoal Extension Projects), the English Channel (Rampion 2) and the Irish Sea (Awel y Môr Offshore Wind Farm). Since 2010, NiMa staff member Fiona has been engaged on Hornsea projects on the east coast of England, where our expertise was brought to every stage of the consenting process involving scoping, fisheries liaison plan production, UK and European wide fishing industry consultation, Environmental Statement chapter and technical appendix preparation, development of Statements of Common Ground and acting as expert witness during examination process. NiMa are also engaged in providing equivalent services to a number of other newly identified and extension offshore wind farm projects in UK and Irish waters.

11. In Irish waters, the NiMa team are currently providing commercial fisheries expertise to Arklow Bank Wind Park 2 (SSE Renewables), North Irish Sea Array (NISA Ltd) and Dublin Array (RWE Renewables), as well as the CWP Project.

12. NiMa also supports developers in meeting post-consent compliance requirements; for example, for the Neart na Gaoithe Offshore Wind Farm in Scottish territorial waters we prepared a fisheries mitigation and management plan, inputted to commercial negotiations with fishermen, and are undertaking an ongoing programme of commercial fisheries monitoring. Our work requires sound understanding of fish and shellfish ecology, the status of commercial stocks and patterns of fishing activity.

1.4.2 Lead Author(s)

13. Fiona Nimmo, based in Edinburgh, co-founded NiMa in 2023 and has over 16 years of marine and fisheries consultancy experience. With a BSc (Hons) in Marine Biology (First Class Honours) from Newcastle University and a BEng (Hons) in Chemical Engineering (2:1 Hons) from Edinburgh University, she has a broad and strong scientific background. Her passion lies with commercial fisheries, in particular their strategic planning, industry management, and their interaction with the marine environment both from a biological perspective and in relation to other marine sectors, such as renewable energy.

14. Fiona has coordinated renewable energy development EIAs for wind and tidal developments and has completed numerous technical commercial fisheries and natural fish resource assessments for offshore wind EIAs in waters off Scotland, England, Wales and Ireland. Fiona has also developed post-consent fisheries liaison and mitigation plans, and commercial fisheries monitoring strategies as required by condition of consent.

15. Fiona is currently providing consultant support to Project UK Fisheries Improvement Projects (FIP) for UK wide nephrops and scallop fisheries, including in the Irish Sea. This work involves a collaborative approach working with industry associations and organisations, including regular quarterly meetings with the Steering Groups of industry, NGOs and fisheries administrators. Throughout her career consultation with stakeholders has been an integral feature of many of her projects, and she has regularly engaged with statutory consultees, fishermen and other fisheries sector stakeholders. She has also organised and facilitated fisheries sector public exhibitions.

2 Methodology

2.1 Approach

16. This technical report has been developed through a detailed desk based assessment of data and literature. Both publicly available data sets and data resultant from specific requests have been analysed. Landings statistics have been analysed using excel and Vessel Monitoring System (VMS) and Automatic Identification System (AIS) datasets have been evaluated using ArcMap Geographic Information System (GIS) software.

17. The analysis and presentation of landing statistics, VMS and AIS datasets has been standardised across both the CWP Project and Dublin Array projects, because both projects have the same local and regional study areas as described in **Section 2.2**.

18. In addition to fisheries dependant data, a targeted scouting survey has been undertaken to understand the location and intensity of gear across the CWP Project.

19. Consultation has been ongoing with the fishing industry vis the CWP Project commercial fisheries manager and company Fisheries Liaison Officer (FLO).

2.2 Study areas

20. The commercial fisheries study areas were initially identified at the project scoping stage. The extent of the study areas for the purposes of this assessment has been reviewed and updated in consideration of the CWP Project and the fisheries active in the surrounding area.

21. The offshore elements of the CWP Project consist of the array site and the Offshore Export Cable Corridor (OECC). The CWP Project is located within the central portion of the International Council for the Exploration of the Sea (ICES) Division 7a (Irish Sea) statistical area; within Ireland Exclusive Economic Zone (EEZ) waters. The proposed development is fully located inside of 12 nautical mile (NM) territorial seas limit.

22. ICES rectangles are the smallest spatial unit used to collate commercial fisheries data; and it is considered appropriate to define the study areas using these. ICES rectangles are consistent across all Member States operating in the Irish Sea.

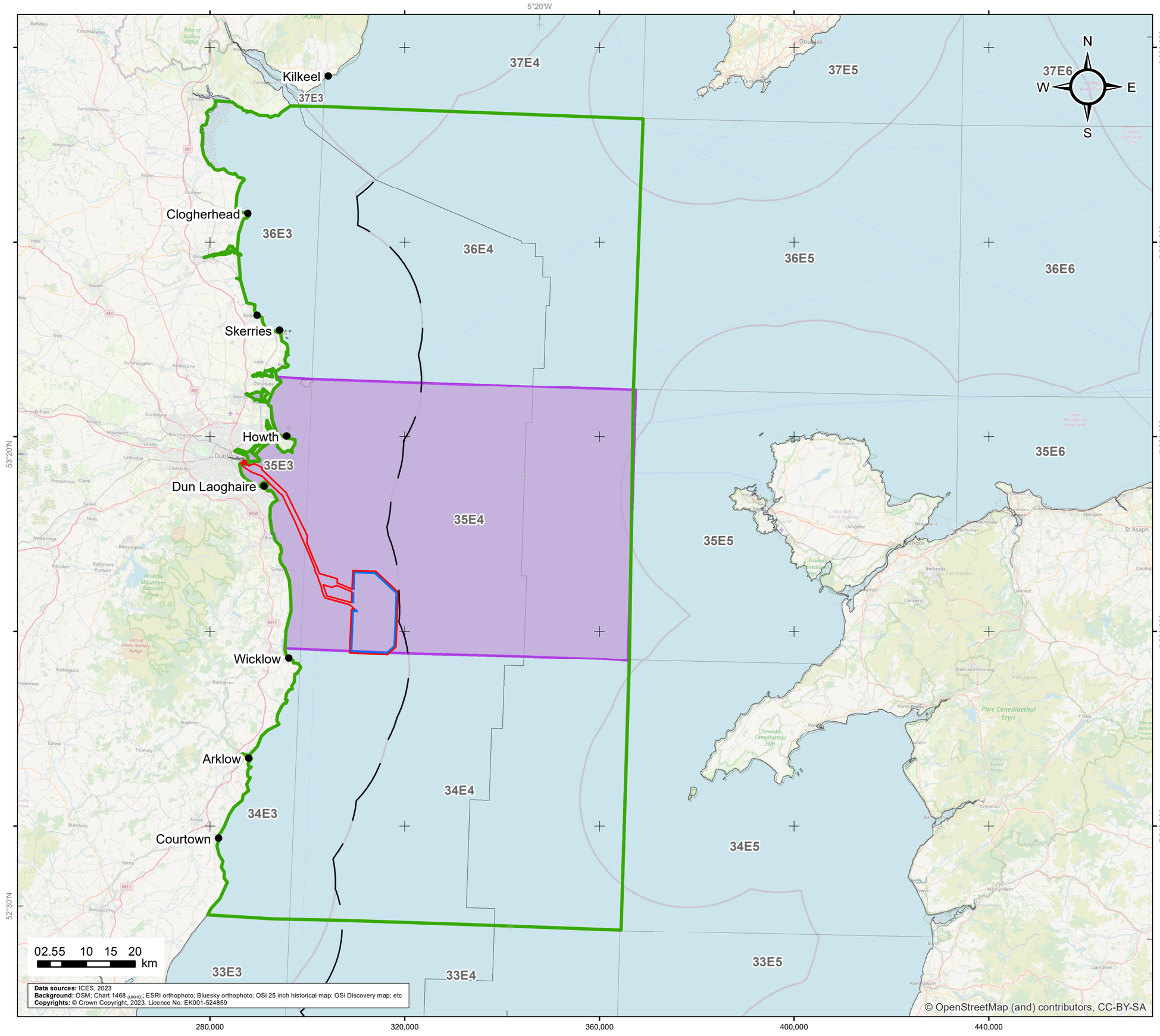
23. The array site is located within ICES rectangle 35E4 and the OECC is located within ICES rectangles 35E3 and 35E4, which together represent the commercial fisheries local study

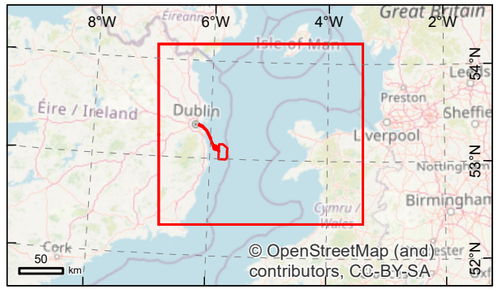
area, as shown in **Figure 1**. Note that the array site and the OECC occupy only a portion of these ICES rectangles.

24. In order to understand fishing activity in waters adjacent to the CWP Project, a commercial fisheries regional study area has been defined to include 35E3 and 35E4, together with ICES rectangles 34E3, 34E4, 36E3 and 36E4. Baseline data has been gathered and analysed for the regional study area. In summary, the study areas for commercial fisheries are:

- Local study area: 35E3 and 35E4; and
- Regional study area: 34E3, 34E4, 35E3, 35E4, 36E3 and 36E4.

25. The cumulative effects assessment considers a wider study area, at the scale of the Irish Sea (ICES Division 7a), to ensure appropriate consideration of the range of fishing grounds targeted by the fishing fleets under assessment. The commercial fisheries local and regional study areas in the context of the Irish Sea (7a) are shown in **Figure 1**.





Legend

- Planning application boundary
- Marine safety demarcation area
- Commercial fisheries regional study area
- Commercial fisheries local study area
- Irish key fishing ports
- ICES statistical rectangles
- EEZ boundary
- 12 NM territorial sea limit

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Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 1
Commercial fisheries local and regional study areas

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1765

Internal descriptive code: IS - PAB..WF.RLB.MSDA - CFSAs..ICES.SRs..SEA.LIMs..IKFPs - (OSM..750k..EIAR.Vol.04.Ch.12.Ap.03.FIG.01)

Size: A3

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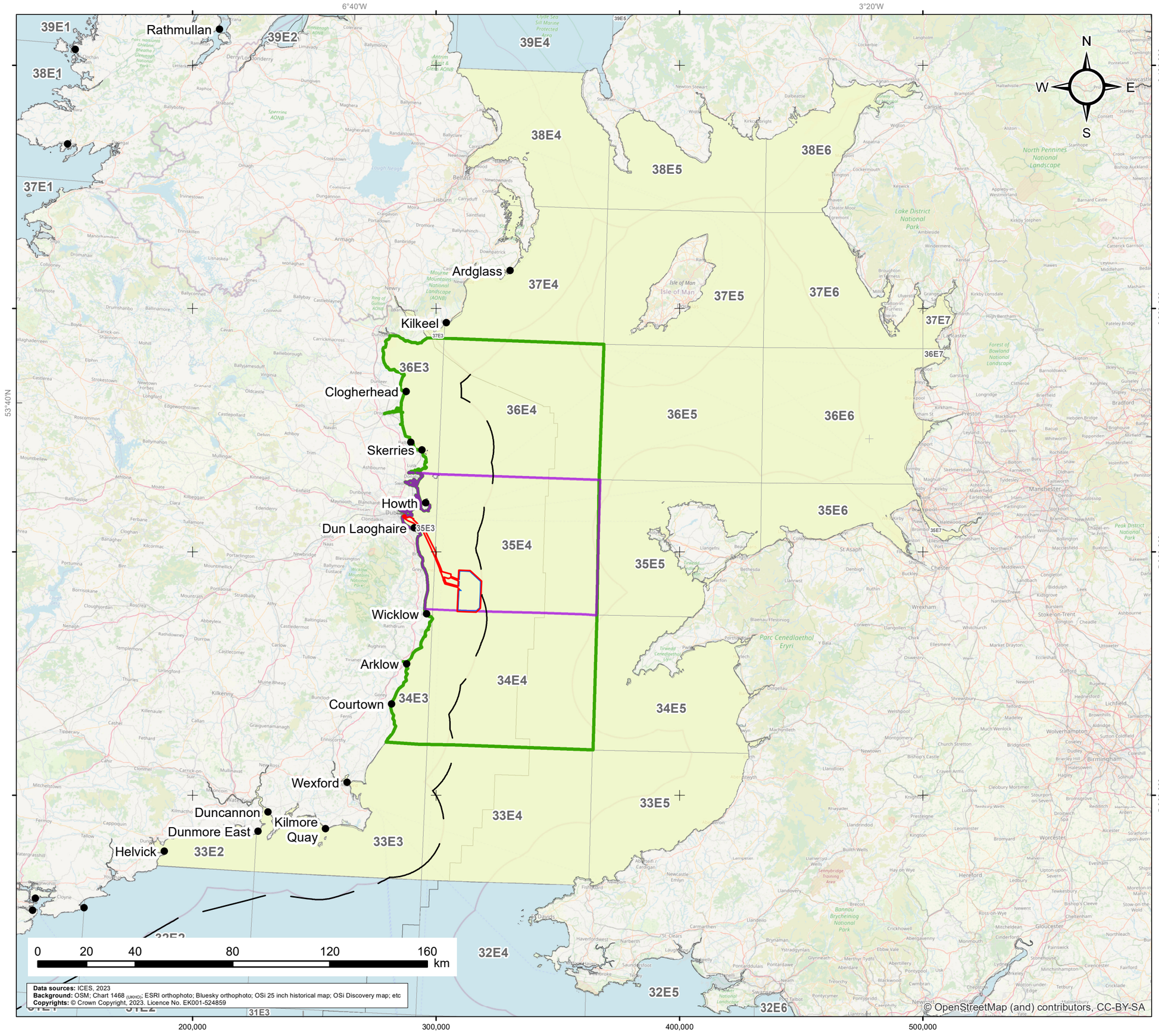

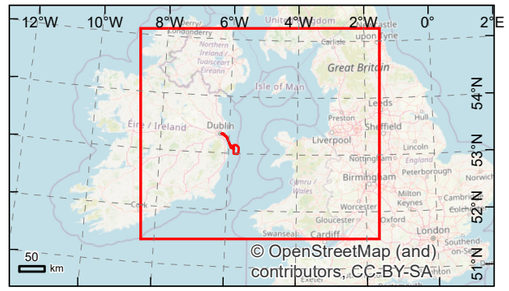

Legend

- Planning application boundary
- Marine safey demarcation area
- Commercial fisheries local study area
- Commercial fisheries regional study area
- Commercial fisheries cumulative study area
- ICES statistical rectangles
- EEZ boundary
- 12 NM territorial sea limit
- Irish key fishing ports

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Website: www.nima.blue

Figure 2
Commercial fisheries cumulative study area

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1766

Internal descriptive code: IS - PAB..WF.RLB.MSDA - CFSAs..ICES.SRs..SEA.LIMs..IKFPs - (OSM..1M5..EIAR.Vol.04.Ch.12.Ap.03.FIG.02)

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CRS: EPSG 25830

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C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC

2.3 Data sources

26. A range of data sources have been analysed and presented within this Technical Report. Each data source provides information for a specific set of parameters dependant on the geographic scope, target species and method of recording the data (e.g., logbook records, landing declarations, sales notes, questionnaire etc.). Due to this range and variation in the scope of data sets, each has been presented in a separate sub-Section, thereby avoiding inappropriate comparisons across data.

27. Data sources used to inform this Technical Report are provided in **Table 1**. Data have been sourced from the Scientific, Technical and Economic Committee for Fisheries (STECF), ICES, the Irish Sea Fisheries Protection Agency (SFPA), Bord Iascaigh Mhara (BIM; Ireland's Seafood Development Agency), the Irish Marine Institute, EU Data Collection Framework (DCF), UK Marine Management Organisation (MMO) and directly from individual fishers, their representative organisations and the South East and North East Regional Inshore Fisheries Forums (RIFFs).

28. Where data sources allow, a five-year trend analysis has been undertaken, using the most recent annual datasets available at the time of writing. The temporal extent of this five-year period is dependent on each data source analysed, e.g. 2012 to 2016 or 2015 to 2019 or 2016 to 2020 or 2018 to 2022, as annotated in **Table 1**.

29. Relevant literature from a number of sources has also been reviewed in the preparation of this technical report. A full list of references is provided at the end of this document and are cited within the text where appropriate. Of particular note is the Marine Institute (2021) Shellfish Atlas, the Marine Institute and BIM (2022) Shellfish Stocks and Fisheries Review and the Marine Institute (2022) Stock Book.

30. A full description of the associated data limitations is provided within **Section 5**.

31. The data sources have been standardised across both the CWP Project and Dublin Array projects, because both projects have the same local and regional study areas as described in **Section 2.2**. This standardisation has occurred through communication between the respective Developers, data sharing principles and the delivery of the Technical Reports by the same consultants (NiMa Consultants).

Table 1 Data sources considered in the development of commercial fisheries existing environment

Data source	Type of data	Temporal and spatial coverage
Landing statistics		
Sea Fisheries Protection Agency (SFPA)	Landings statistics data for Irish-registered vessels, with data query attributes for: year, species, ICES division and weight of landing (kg).	2015-2022 Irish vessels All sea areas
SFPA	Landings statistics data for Irish-registered vessels landings from the Irish Sea, with data query attributes for: year, species, port of landing, landed weight (kg) and first sales value (€).	2015-2022 Irish vessels Irish Sea
SFPA	Landings statistics data for Irish-registered vessels landings from the Irish	2015-2019 Irish vessels

Data source	Type of data	Temporal and spatial coverage
	Sea, with data query attributes for: year, species, ICES rectangle, landed weight (kg) and number of vessels.	Irish Sea and ICES rectangles 35E3 and 35E4
Bord Iascaigh Mhara (BIM)	Business of Seafood reports including import and export data for whelk.	2015-2022 Irish vessels Irish imports and exports
Marine Institute and BIM	Estimates of annual landings (tonnes) and value (€) of crustacean and bivalve shellfish (excl. prawns and mussels) into Ireland 2004-2019 (source: Logbook declarations and sales notes for vessels under 10 m, gatherer dockets, co-op data).	2004-2022 Irish vessels All sea areas
Scientific, Technical and Economic Committee for Fisheries (STECF)	Landings statistics data for Irish-registered vessels landing whelk, with data query attributes for: year, vessel length category, landed weight (kg), first sales value (€), ICES division, gear type and species (whelk only).	2008-2019 Irish vessels All sea areas
European Union (EU) Data Collection Framework (DCF) database	Landings statistics for Irish, Belgian, Danish, Dutch, French, German and UK registered vessels with data query attributes for: landing year; landing quarter; ICES rectangle; vessel length; gear type; species; and, landed weight (tonnes).	2012-2016 All EU vessels (including UK) Irish Sea and ICES rectangles 35E3 and 35E4
Marine Management Organisation (MMO)	Landings statistics data for UK-registered vessels, with data query attributes for: landing year; landing month; vessel length category; ICES rectangle; vessel/gear type; port of landing; species; live weight (tonnes); and value.	2016-2022 UK vessels Irish Sea and ICES rectangles 35E3 and 35E4
Spatial data and Vessel Monitoring System (VMS) data		
Marine Institute	Polygon data showing the outer extent of fishing activity for inshore grounds targeted by Irish vessels <15 m in length for a range of gear types and target species.	Irish vessels Irish Sea and wider Irish coast
Marine Institute	VMS data indicating effort by gear type by vessels 12 m and over in length.	2014-2018 Irish and EU vessels inside Irish territorial waters and Irish vessels outside Irish territorial waters. Irish Sea and wider areas.
International Council for the Exploration of the Sea (ICES)	VMS data for EU including Irish and UK registered vessels with data query attributes for surface swept area ratio (a	2016-2020 All EU vessels (including UK)

Data source	Type of data	Temporal and spatial coverage
	proxy for fishing intensity) at a resolution of 1/200th of an ICES rectangle amalgamated for all mobile vessels for specific mobile gear.	Irish Sea and ICES rectangles 35E3 and 35E4
ICES	VMS polygon data showing the outer extent of historical king scallop fishing activity in the Irish Sea with individual jurisdiction for British, Northern Irish and Irish vessels.	UK and Isle of Man: 2009-2017; Northern Ireland: 2012-2016; and Ireland: 2012-2019 UK and Irish vessels Irish Sea
Marine Management Organisation (MMO)	UK VMS data indicating first sales value by gear type for vessels 15 m and over in length	2019-2020 UK and Isle of Man vessels Irish Sea and wider areas.
European Maritime Safety Agency (EMSA)	EU AIS data for fishing vessels indicating route density for vessels actively fishing and in transit.	2021-2022 EU vessels Irish Sea and wider areas.

2.4 Site specific surveys

32. In addition to fisheries dependant data, targeted fisheries scouting surveys were undertaken, with results provided in **Section 3.1.1**.

33. Other surveys carried out across the CWP Project that are relevant to commercial fisheries include (in particular see **Chapter 8 Subtidal and Intertidal Ecology** and, **Chapter 16 Shipping and Navigation** for details):

- Benthic ecology surveys;
- Geophysical surveys; and
- Automatic Identification System (AIS) and radar surveys.

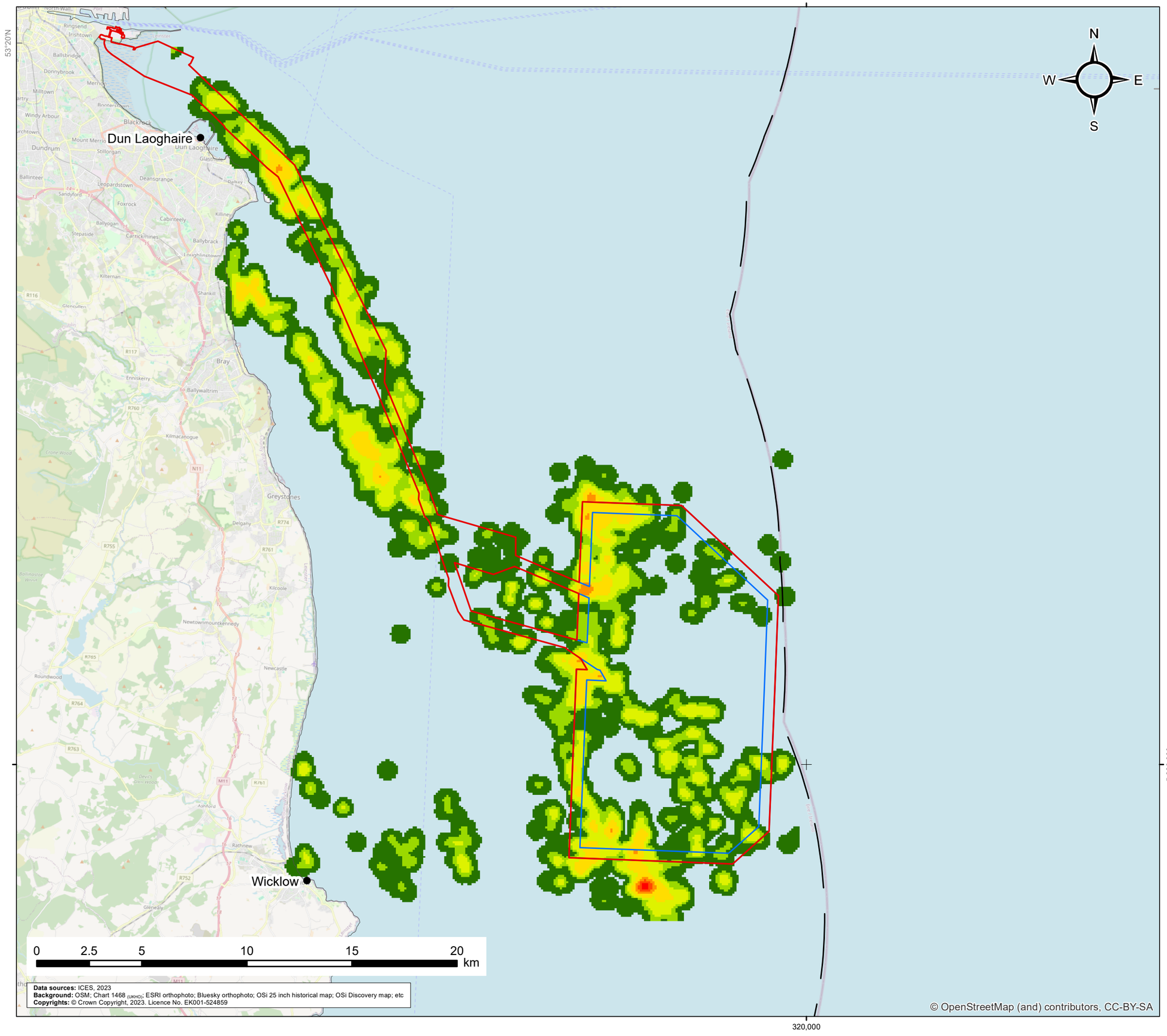
2.5 Consultation

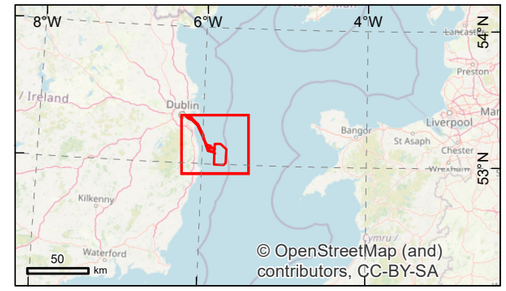
34. Consultation with commercial fisheries stakeholders undertaken to inform the CWP Project EIA is detailed in **Chapter 12 Commercial Fisheries**.

3 Existing Environment

3.1.1 Fisheries scouting surveys

35. Scouting surveys have been undertaken from October 2021 to September 2023 to map the density of potting gear in the water at the time of the survey. A density map is generated and presented in **Figure 3**.





Legend

- Planning application boundary
- Marine safey demarcation area
- 12 NM territorial sea limit
- Irish key fishing ports

Fishing gear denisty

- Points/ km2
- 0.01 - 5
- 5.1 - 10
- 11 - 25
- 26 - 50
- 51 - 75
- 76 - 100
- 110 - 120

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Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 3
Fishing gear survey and derived potting gear denisty (assumed gear length = 500m) (27/10/21 to 11/09/23)

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1767

Internal descriptive code: WE - PAB..WF.RLB.MSDA - SEA.LIMs..FISH.GEAR.DENSITY. R500..IKFPs - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.03)

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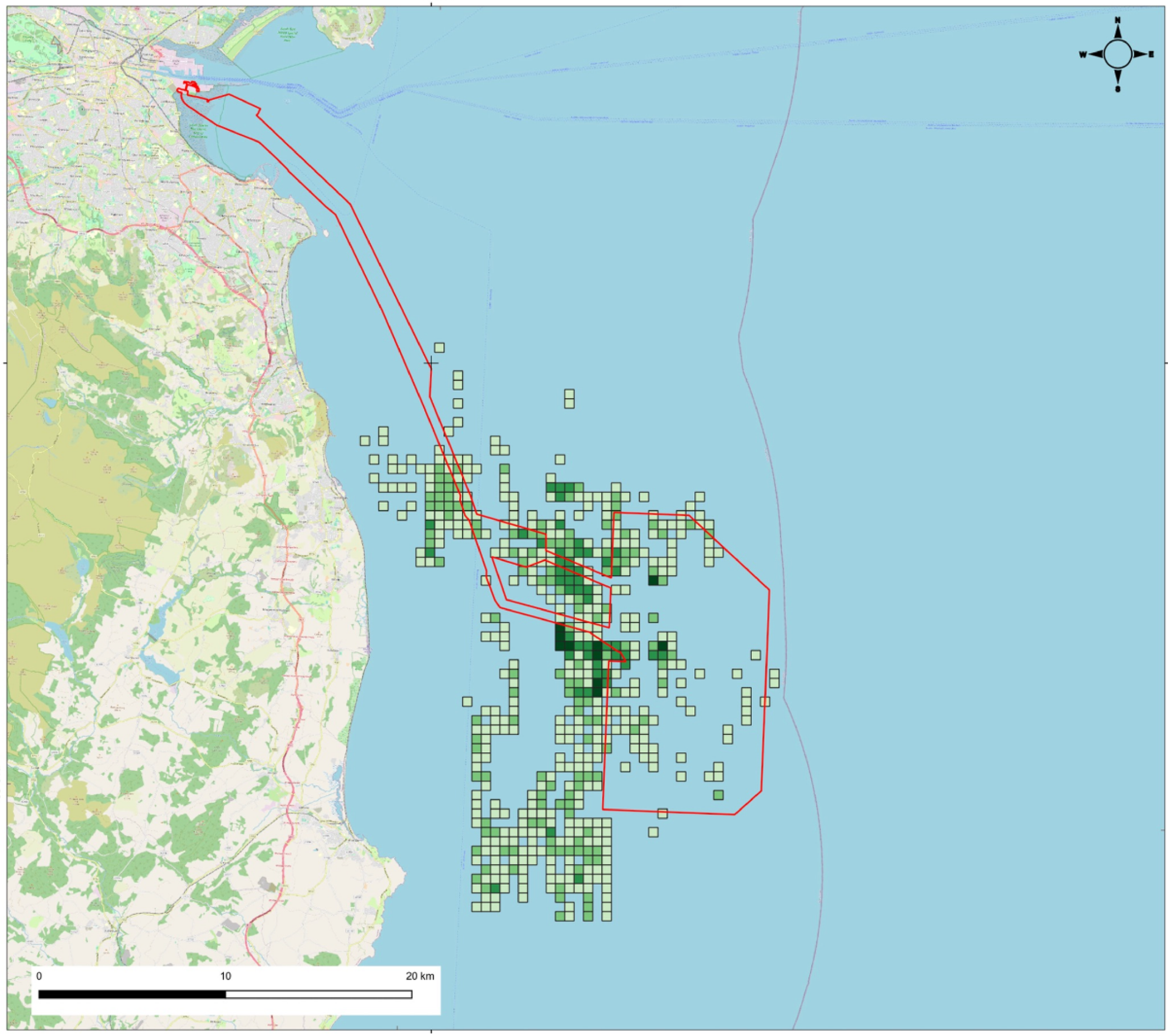
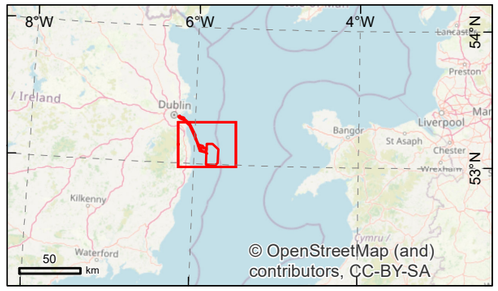
D	Final version	2021/09/30	SP	PC/EA	CC

6°0'W

53°0'N





Legend

- Planning application boundary
- 12 NM territorial sea limit

Number of whelk pots

- 1 - 3
- 3 - 6
- 6 - 15
- 15 - 25

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Figure 4
Whelk Fishing Activity Based on Fishing Vessel Plotters

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0641

Internal descriptive code: IS - PAB - CFSAs..ICES.SRs..SEA.LIMs..IKFPs - EIAR.FIG.12.03

Size: A3
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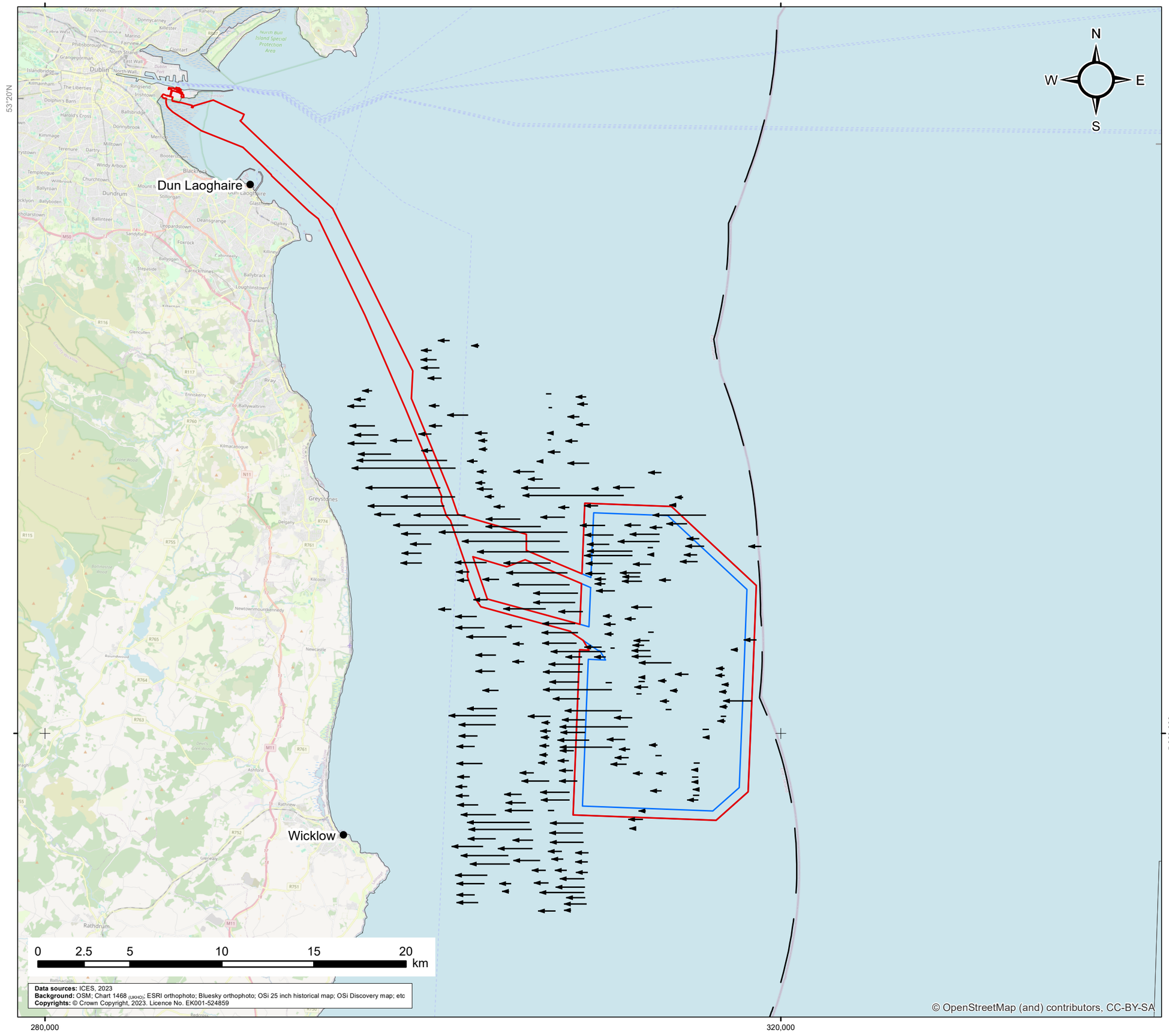
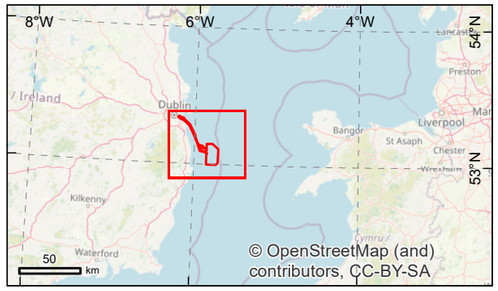
D	Final version	2021/09/30	SP	PC/EA	CC





Legend

- Planning application boundary
- Marine safety demarcation area
- 12 NM territorial sea limit
- Irish key fishing ports
- Whelk pot gear string lines

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Website: www.nima.blue

Figure 5
Direction of Set Whelk Pot Strings

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1770

Internal descriptive code:
WE - PAB..WF.RLB.MSDA - SEA.LIMs..IKFPs..WHELK.POTS. STRINGS - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.05)

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Scale: 1:200,000

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C	Third revision	2021/09/22	LH	PC/EA	CC
D	Final version	2021/09/30	SP	PC/EA	CC

3.2 Fishing area activity assessment

36. A range of spatial data is available to allow mapping of fishing grounds targeted by different fishing fleets identified by gear type, vessels nationality and target species, including:

- Mapping of inshore fishing grounds targeted by Irish vessels less than 15 m in length, which has been developed by the Marine Institute (2021) based on expert knowledge and questionnaire data;
- VMS data for Irish and other EU vessels 12 m and over indicating fishing effort on a scale of high to low based on an annual average from 2014-2018 (Marine Institute, 2023);
- Mapping of fishing grounds targeted for king scallop within the Irish Sea by Irish, Northern Irish, other UK and Isle of Man vessels based on expert knowledge of the ICES Scallop Working Group (ICES, 2020);
- VMS data indicating surface swept area ratio as a proxy for fishing intensity for EU including Irish vessels 12 m and over based on a five-year average from 2016-2020 (ICES, 2022);
- VMS data for UK vessels 15 m and over indicating first sales value in 2019 and 2020 (MMO, 2021; MMO, 2022); and
- AIS data for EU fishing vessels indicating the route density per km^2 over the annual periods of 2021 and 2022, including both actively fishing and transiting fishing vessels (EMSA, 2023).

37. The available spatial data has been mapped and described in this section on a fleet-by-fleet basis, grouped by gear type.

3.2.1 Potting

38. VMS data for Irish and EU vessels 12 m and over actively fishing using pots is presented **Figure 6**, based on data from 2014-2018. This indicates activity within ICES rectangle 35E4, primarily to the south and west of the CWP Project. However, this data does not represent activity by vessels under 12 m in length, which make up the majority of the potting fleet, and is therefore not accurate or representative of the potting effort.

39. Mapping of inshore fishing grounds targeted by Irish vessels <15 m in length deploying potting gear is shown by target species in **Figure 7**, for defined whelk, crab and lobster and shrimp grounds. This inshore mapping is considered to be representative of fishing grounds, as corroborated through consultation with the industry. Wider spatial mapping of the entire Irish coastline indicates that crab and lobster grounds are primarily located along the west and south coast of Ireland, and whelk grounds are highly specific to the east coast (as shown in **Figure 7**), with additional grounds located in the very north.

40. Overall, the available spatial data for potting grounds indicates that the CWP Project, including array site and OECC, is located across grounds targeted by potting vessels for whelk. In addition, the very close inshore waters that overlap with the OECC are targeted by potters for crab and lobster.

3.2.2 Dredge

41. All Irish hydraulic dredge vessels targeting razor clam are required to be fitted with iVMS and therefore accurate data is available on the location and intensity of fishing, as indicated in **Figure 9**. Grounds targeted for razor clam do not overlap with the CWP Project and are located approximately 8 km north.

42. Mapping of inshore fishing grounds targeted by Irish vessels <15 m in length deploying dredge gear is shown by target species in **Figure 8**. This includes razor clam dredge and corroborates the iVMS data in **Figure 9**. Other dredge targeted species indicated in **Figure 8** include scallop and mussel seed dredge locations. Mussel seed areas do not overlap with the CWP Project and are located to the west and southwest of the project.

43. **Figure 10** presents polygon information which has been developed based on VMS data to show the outer extent of historical king scallop fishing activity in the Irish Sea. This map also indicates the vessel nationalities including vessels registered to Ireland, UK and Isle of Man, and Northern Ireland. Scallop dredge grounds are located immediately north of the CWP Project, targeted by Irish, Northern Irish and UK and Isle of Man vessels.

44. VMS data for Irish and EU vessels (12 m and over) is presented in **Figure 11** for average effort across the period 2014-2018 and in **Figure 12** for average surface swept area ratio (which indicates the number of times the seabed has been passed by the fishing gear in an annual period and is a proxy for fishing intensity) for the period 2016-2020. Both of these data sources corroborate the dredge activity north of the CWP Project.

45. Data specific to UK vessels (15 m and over) are presented in **Figure 13** and **Figure 14** for 2019 and 2020 respectively, indicating first sales value. Landings are consistently taken north of the CWP Project in both these years.

3.2.3 Static netting

46. Mapping of inshore fishing grounds targeted by Irish vessels <15 m in length deploying static netting gear is shown by target species in **Figure 15**. A small area identified as static netting for mixed demersal species is adjacent to the OECC at the very inshore area near Dún Laoghaire. The majority of the grounds targeted by static netters are located approximately 8 km to the north of the OECC.

3.2.4 Beam trawl

47. VMS data for Irish and EU vessels (12 m and over) is presented in **Figure 16** for average effort across the period 2014-2018. Activity is noted outside the 12 NM boundary and approximately 19 km north-east of the CWP Project. The average surface swept area ratio for EU beam trawl across the period 2016-2020 is shown in **Figure 17**, indicating a similar ground being targeted, outside and to the north-east of the CWP Project, albeit with less intensity as seen for the earlier period of 2014-2018.

3.2.5 Demersal otter trawl and seine

48. VMS data for Irish and EU vessels (12 m and over) is presented in **Figure 18** for average effort across the period 2014-2018 and in **Figure 19** for average surface swept area ratio for the period 2016-2020.

49. These VMS data sources clearly indicate a highly significant fishing ground located in the west Irish Sea and targeted for nephrops. These grounds are part of the West Irish Sea nephrops Functional Unit and are routinely targeted by UK and Irish vessels. The grounds do not overlap with the CWP Project and are located approximately 37 km to the north of the array site.

50. The average surface swept area ratio for EU beam trawl across the period 2016-2020 is shown in **Figure 20**, indicating grounds targeted approximately 30-50 km to the north of and outside the CWP Project.

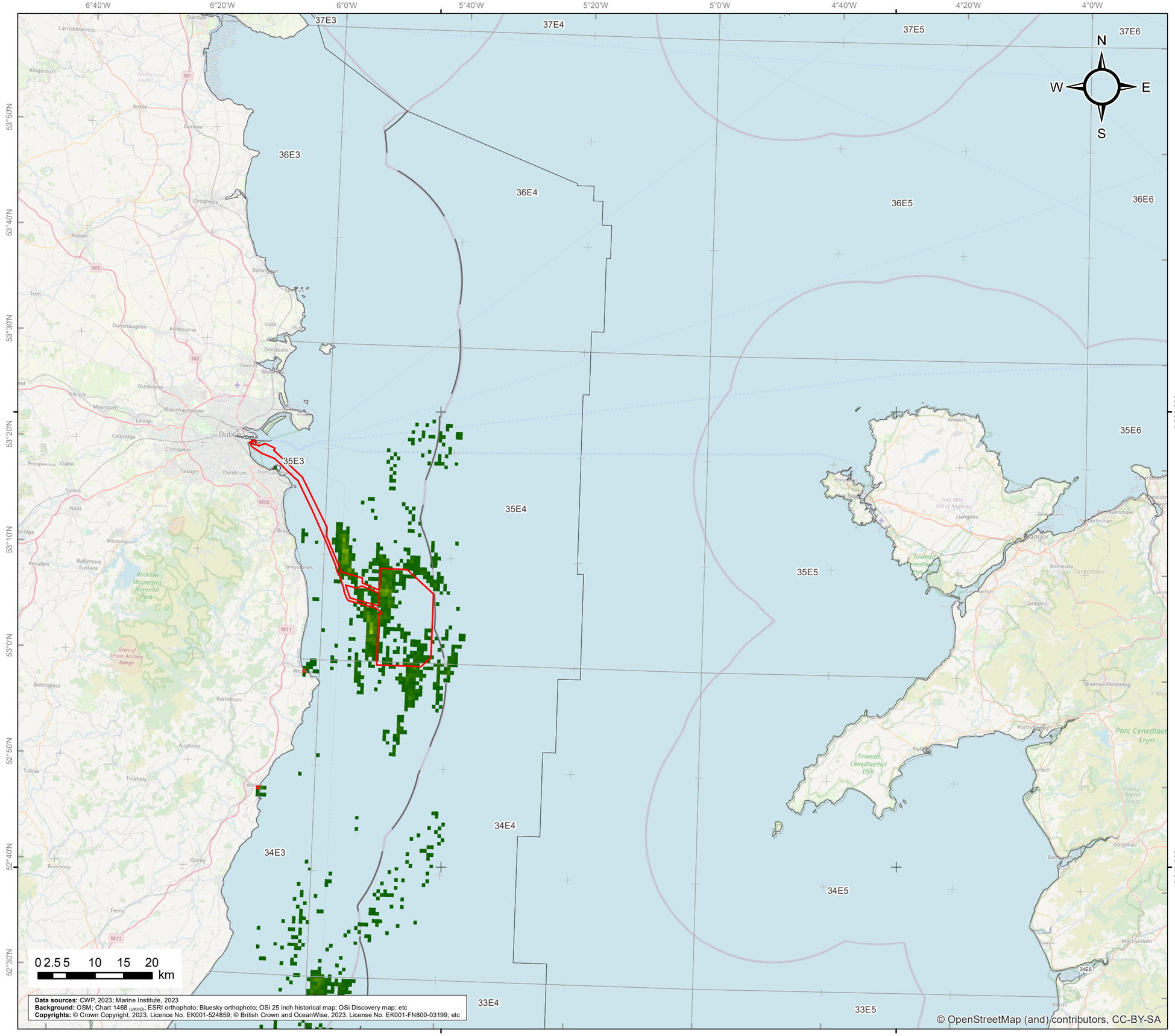
3.2.6 Pelagic otter trawl

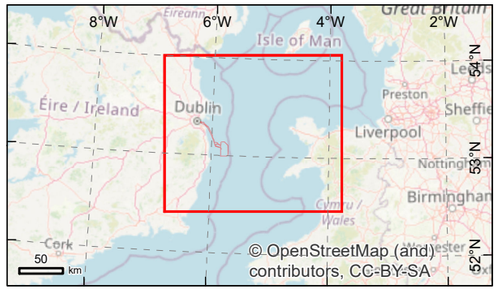
51. VMS data for Irish and EU vessels (12 m and over) is presented in **Figure 21** for average effort across the period 2014-2018. The data indicates a highly seasonally sprat fishery located in the very near inshore waters. In addition, VMS data specific to UK vessels (15 m and over) deploying pelagic otter trawl gear is presented in **Figure 22** and **Figure 23** for 2019 and 2020 respectively, indicating first sales value.

3.2.7 Fishing vessel route density

52. Fishing vessel route density data is presented in **Figure 25** and **Figure 26** for 2021 and 2022 respectively. This data appears to corroborate the fishing activity described above and understood to be nephrops demersal otter trawl activity to the north; beam trawl activity to the east and scallop dredge activity to the north of the CWP Project.

53. In addition, a transiting route is identifiable inshore from the CWP Project. It is noted that potting vessels are not represented in this data set as they do not routinely operate with AIS.





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

EU Potting Effort 2014-2018

Value

High : 1403.58

Low : 0.0033332

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Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 6
Potting VMS effort data for EU vessels ≥ 12 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1771

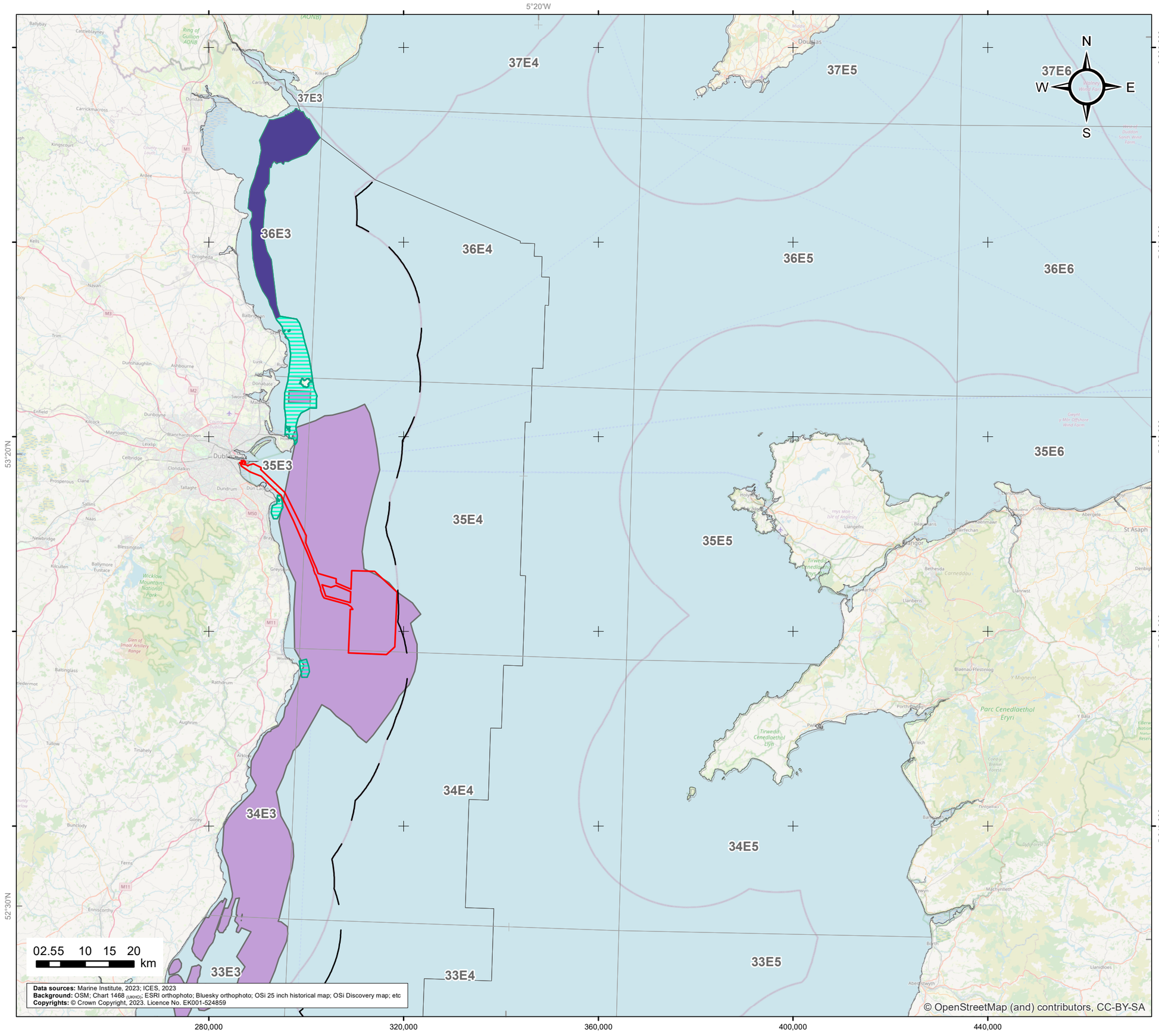
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.EFFORT.POTS.EU>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.06)

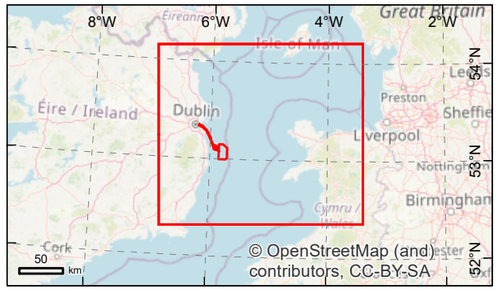
Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- 12 NM territorial sea limit
- Planning application boundary
- ICES statistical rectangles

Irish potting grounds

Target species

- Whelk
- Lobster & crab
- Shrimp
- EEZ boundary

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Project: Codling Wind Park

Contractor: nimA CONSULTANTS

Website: www.nima.blue

Figure 7
Potting grounds targeted by Irish vessels under 15m in length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1772

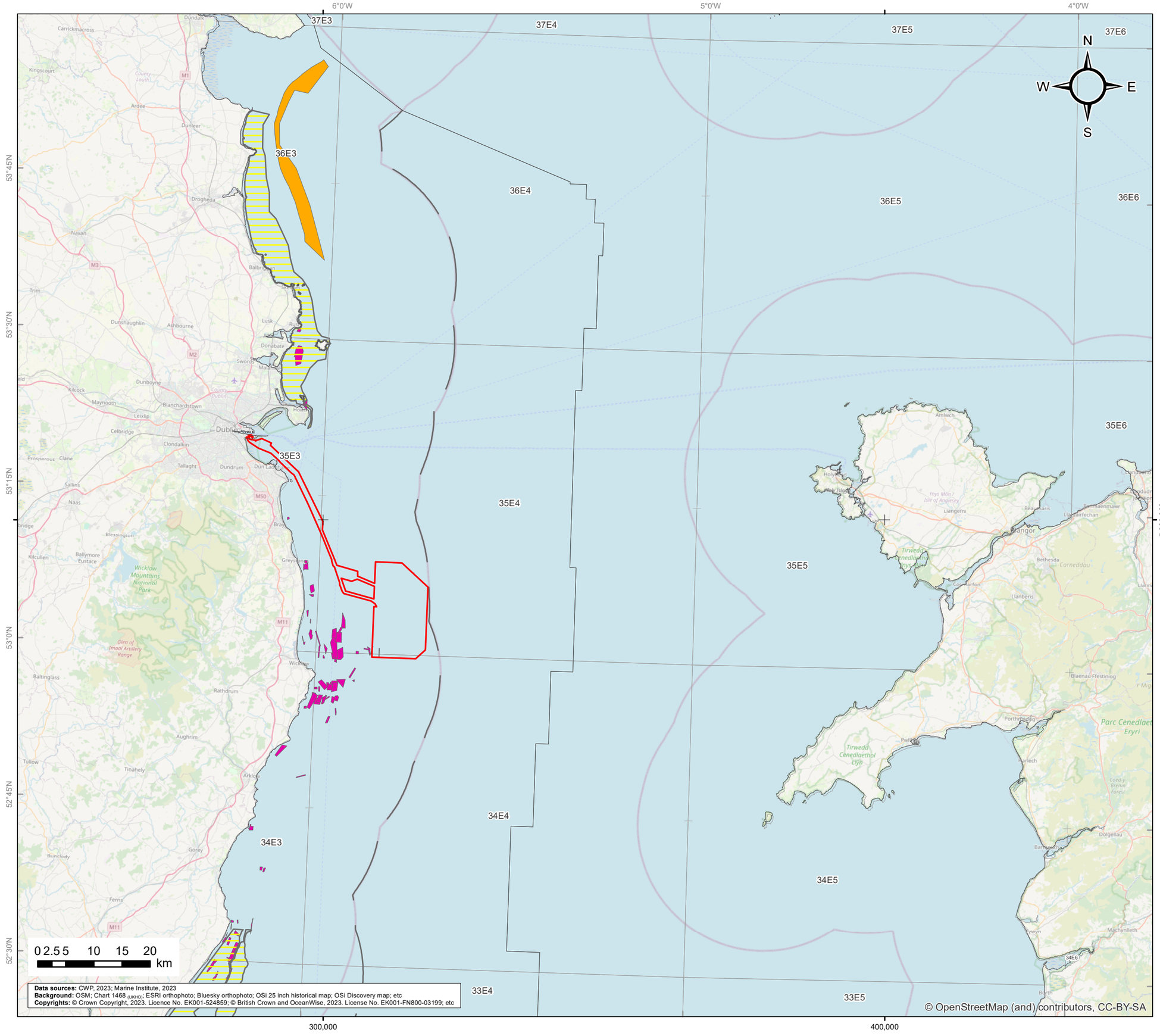
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.ACTIVITY.INSHORE.POTS.IRE<15M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.07)

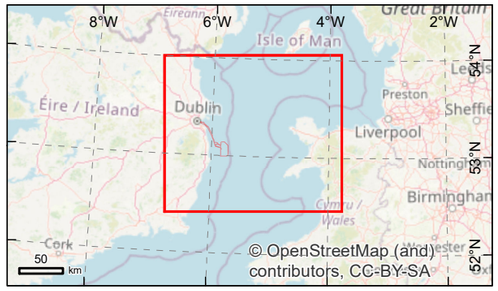
Size: A3

Scale: 1:750,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary

Irish dredge fishing species

- Clam
- Cockle
- Mussels
- Native Oyster
- Seed Mussel
- Razor Clam
- Scallop
- Surf Clam
- ICES statistical rectangles

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Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 8
Dredge grounds targeted by Irish vessels under 15m in length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1773

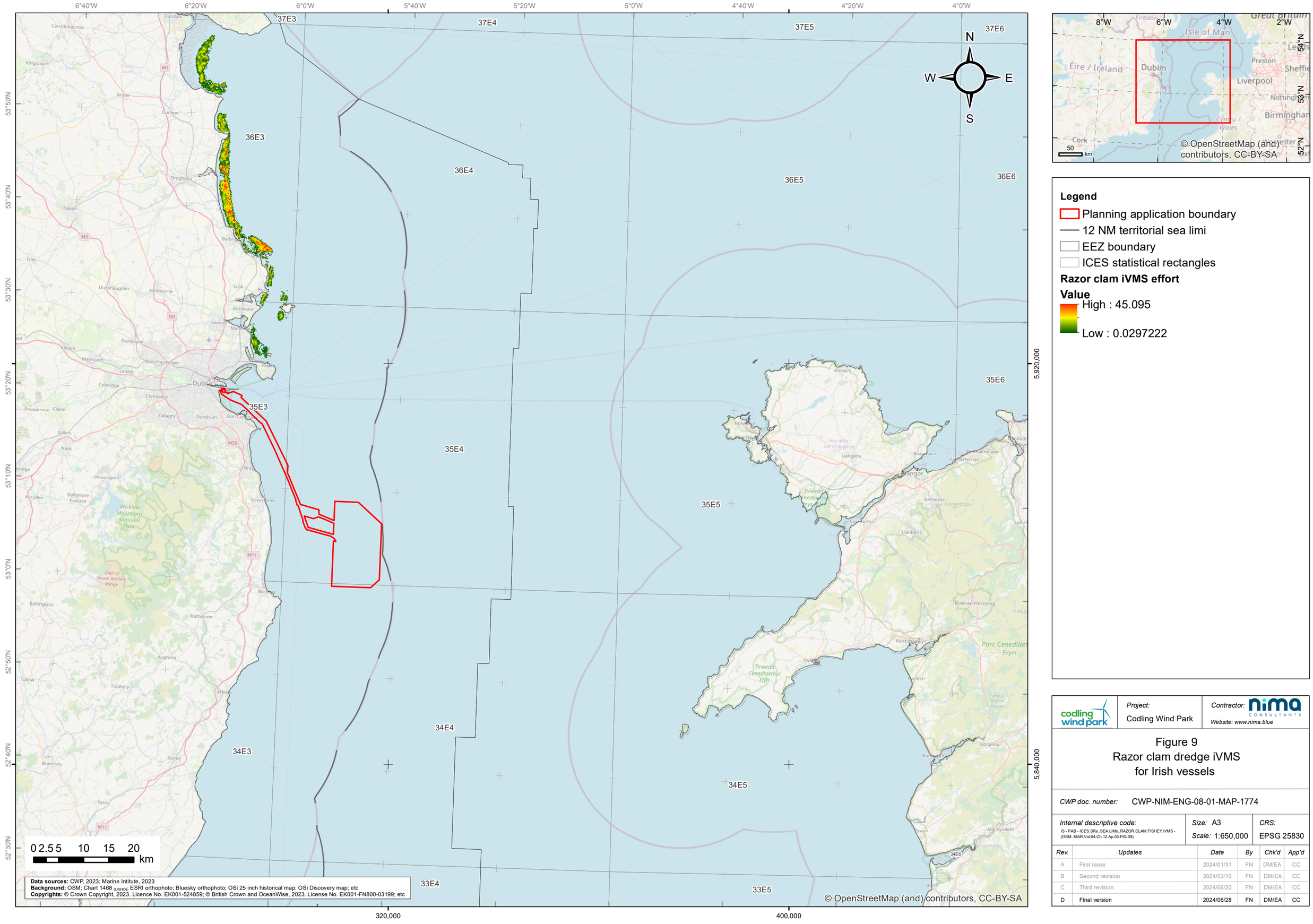
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.ACTIVITY.INSHORE.DREDGES.IRE<15M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.08)

Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Razor clam iVMS effort

Value

- High : 45.095
- Low : 0.0297222

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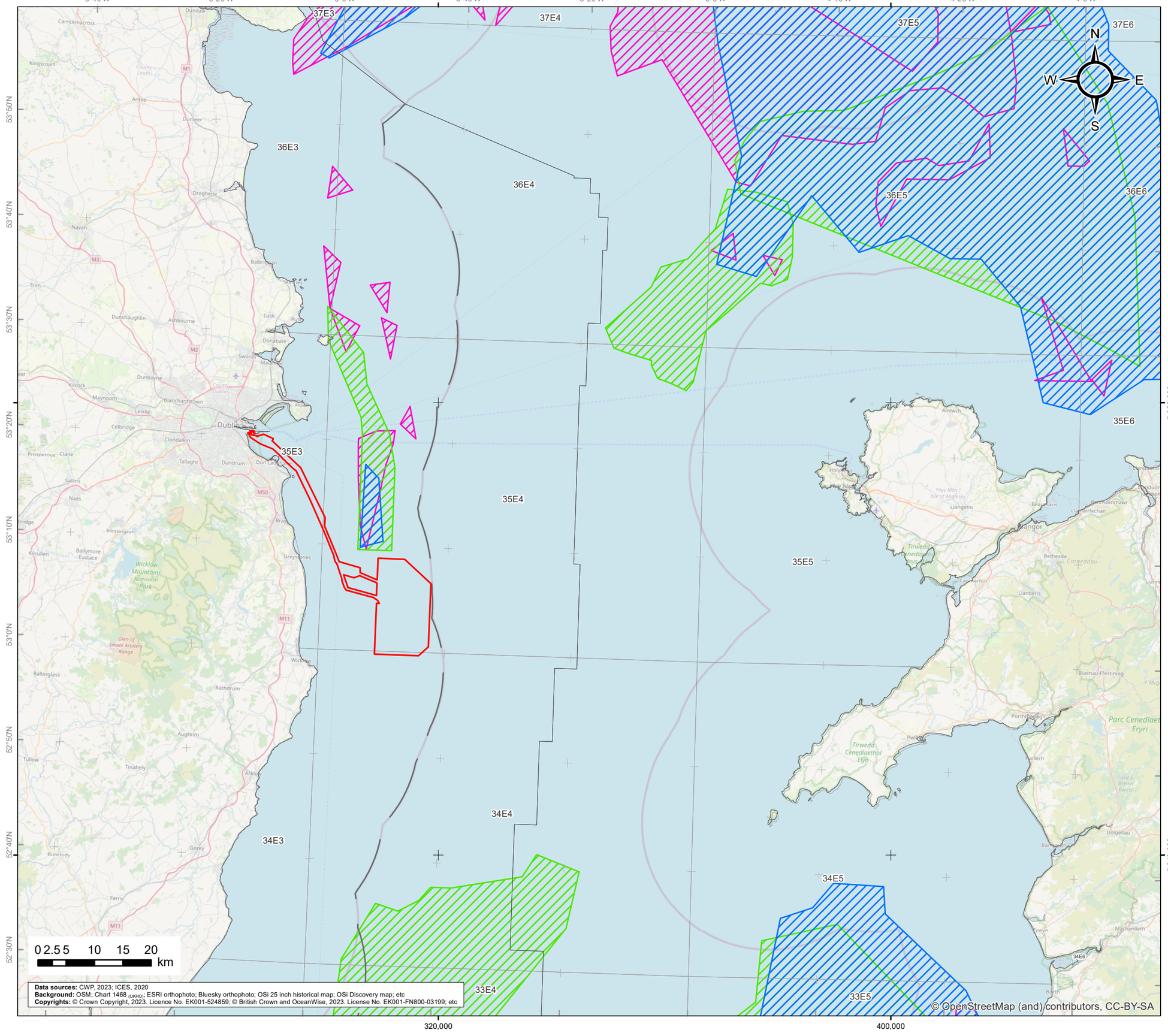
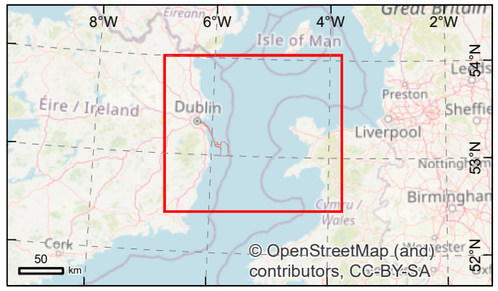
Figure 9
Razor clam dredge iVMS for Irish vessels

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1774

Internal descriptive code:	*Size:*	*CRS:*
IS - PAB - ICES.SRs..SEA.LIMs..RAZOR.CLAM.FISHEY.IVMS - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.09)	A3	EPSG 25830
	Scale: 1:650,000	

Rev.	*Updates*	*Date*	*By*	*Chk'd*	*App'd*
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles
- UK and Isle of Man vessels
- Irish vessels
- Northern Irish vessels

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Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 10
Irish sea king scallop fishing grounds targeted by Irish, Northern Irish and other UK and Isle of Man vessels

CWP doc. number: CWP-NIM-ENG-08-01-MAP-1775

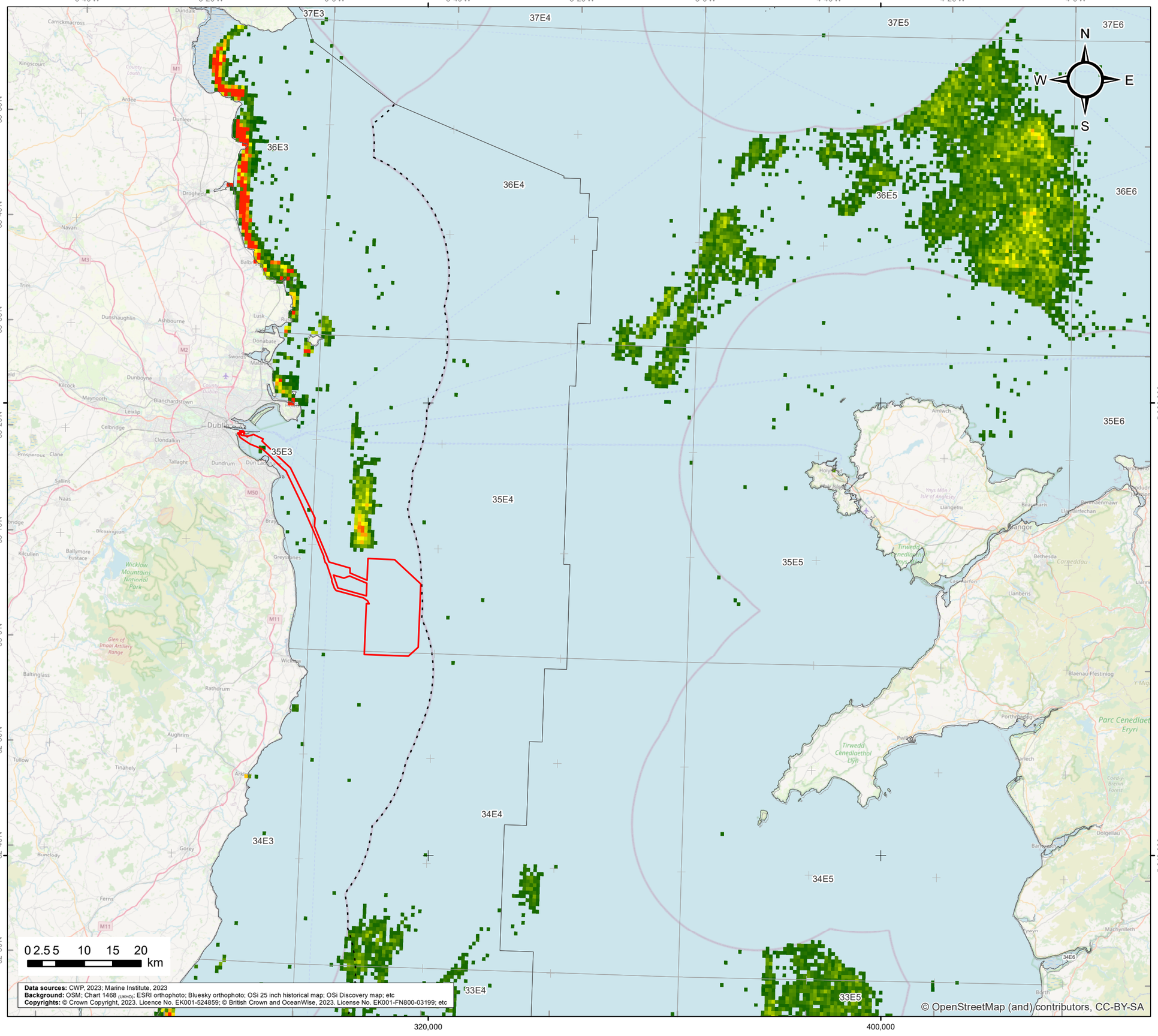
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.GROUNDS.KING.SCALLOP - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.10)

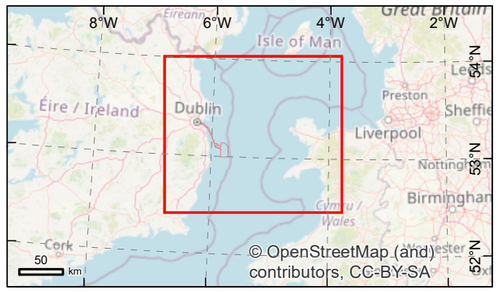
Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

EU Dredge Effort 2014-2018

Value

High : 262.76

Low : 0.0033332

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Figure 11
Dredge VMS effort data for EU vessels ≥ 12 m length

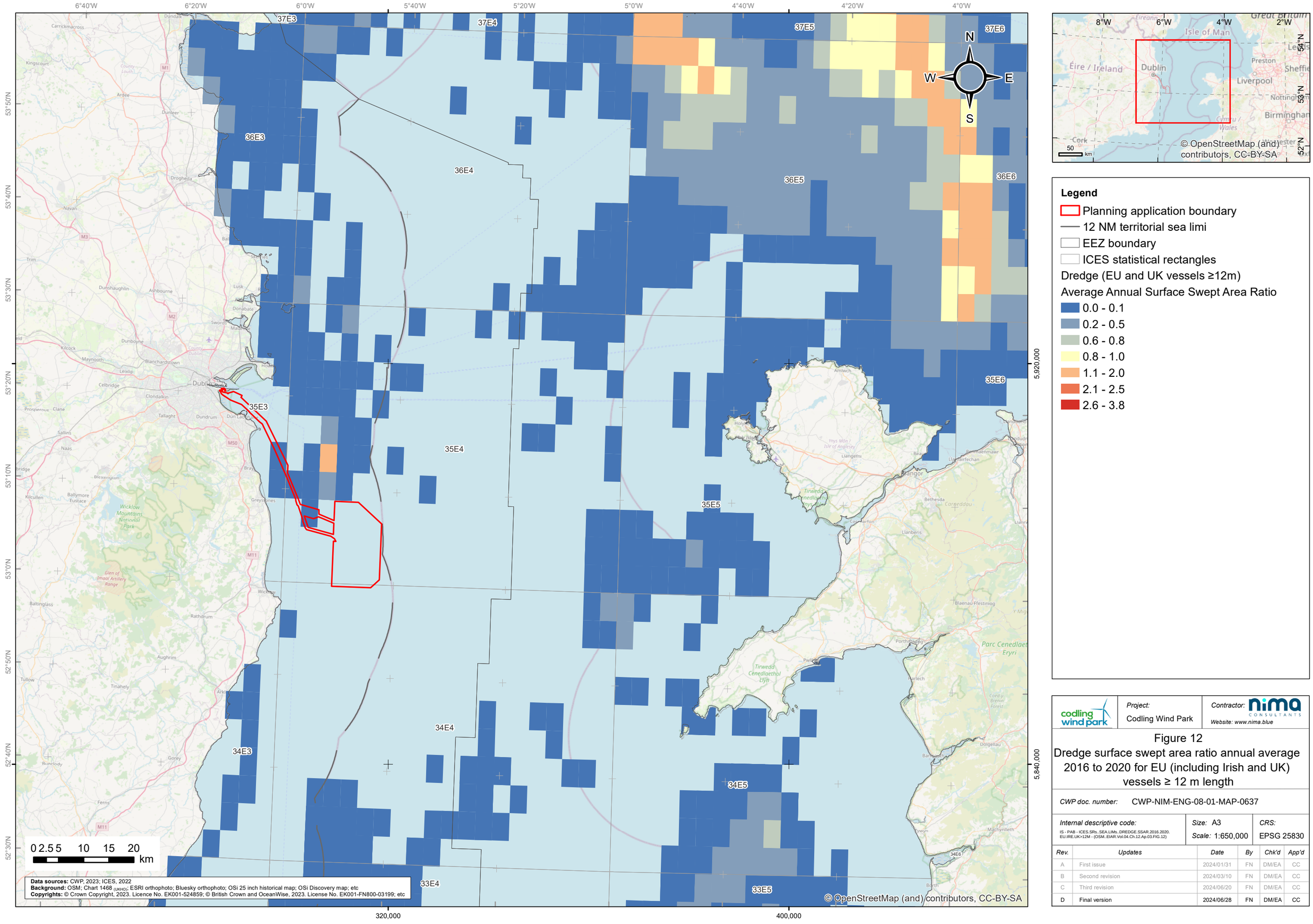
CWP doc. number: CWP-NIM-ENG-08-01-MAP-1776

Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.EFFORT. DREDGES.EU>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.11)

Size: A3 *Scale:* 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Dredge (EU and UK vessels ≥12m)

Average Annual Surface Swept Area Ratio

- 0.0 - 0.1
- 0.2 - 0.5
- 0.6 - 0.8
- 0.8 - 1.0
- 1.1 - 2.0
- 2.1 - 2.5
- 2.6 - 3.8

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Figure 12
Dredge surface swept area ratio annual average 2016 to 2020 for EU (including Irish and UK) vessels ≥ 12 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0637

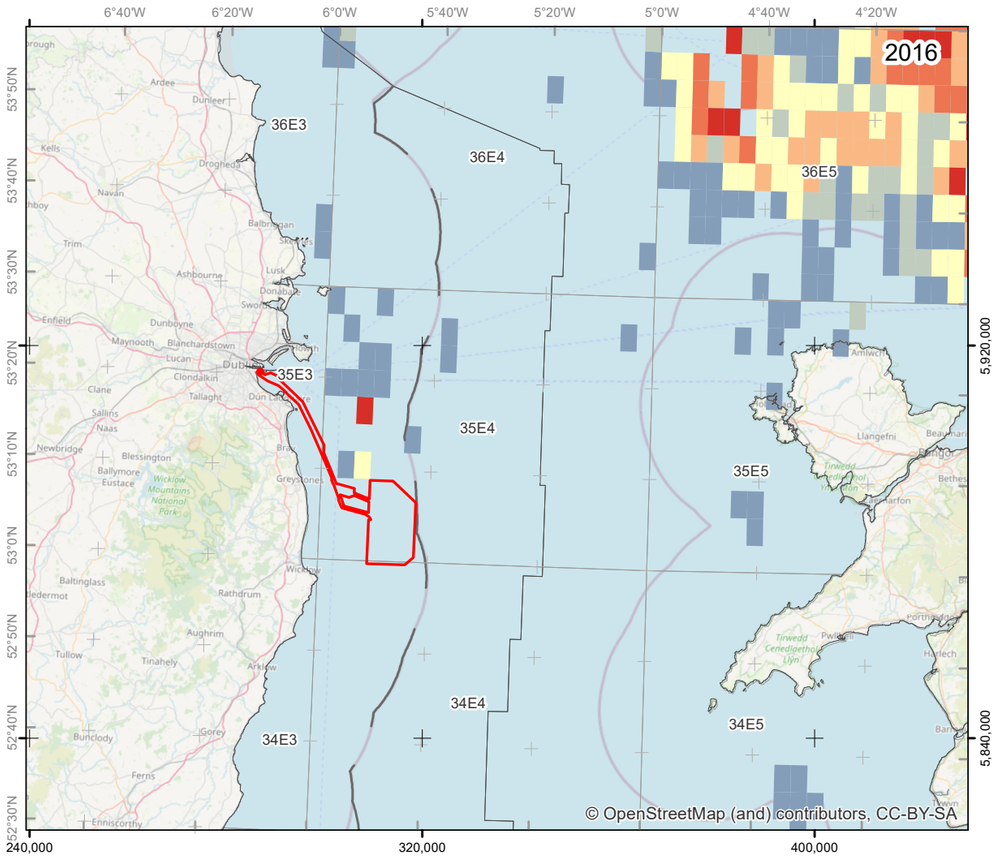
Internal descriptive code: IS - PAB - ICES.SRs. SEA.LIMs. DREDGE.SSAR.2016.2020. EU.IRE.UK>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.12)

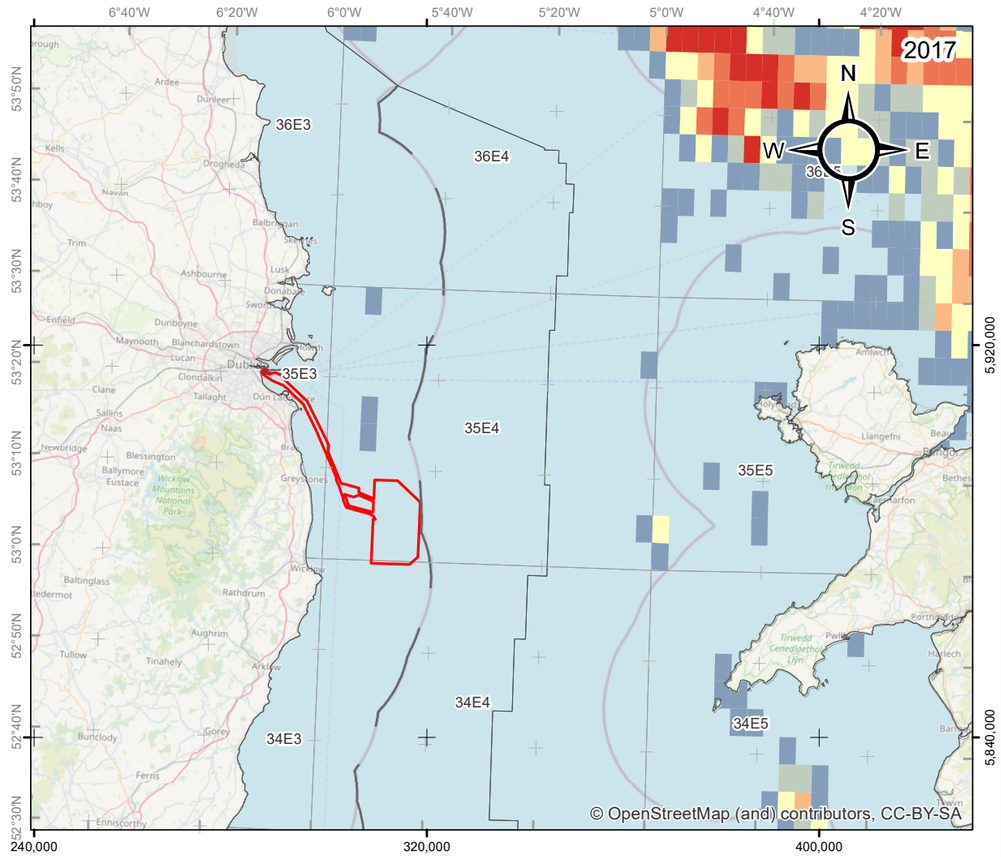
Size: A3

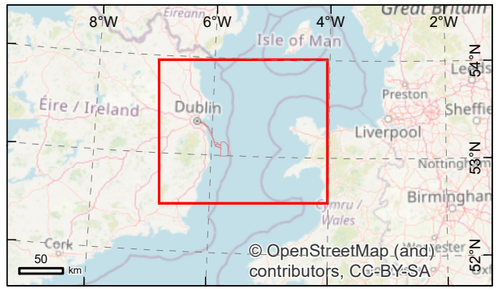
Scale: 1:650,000

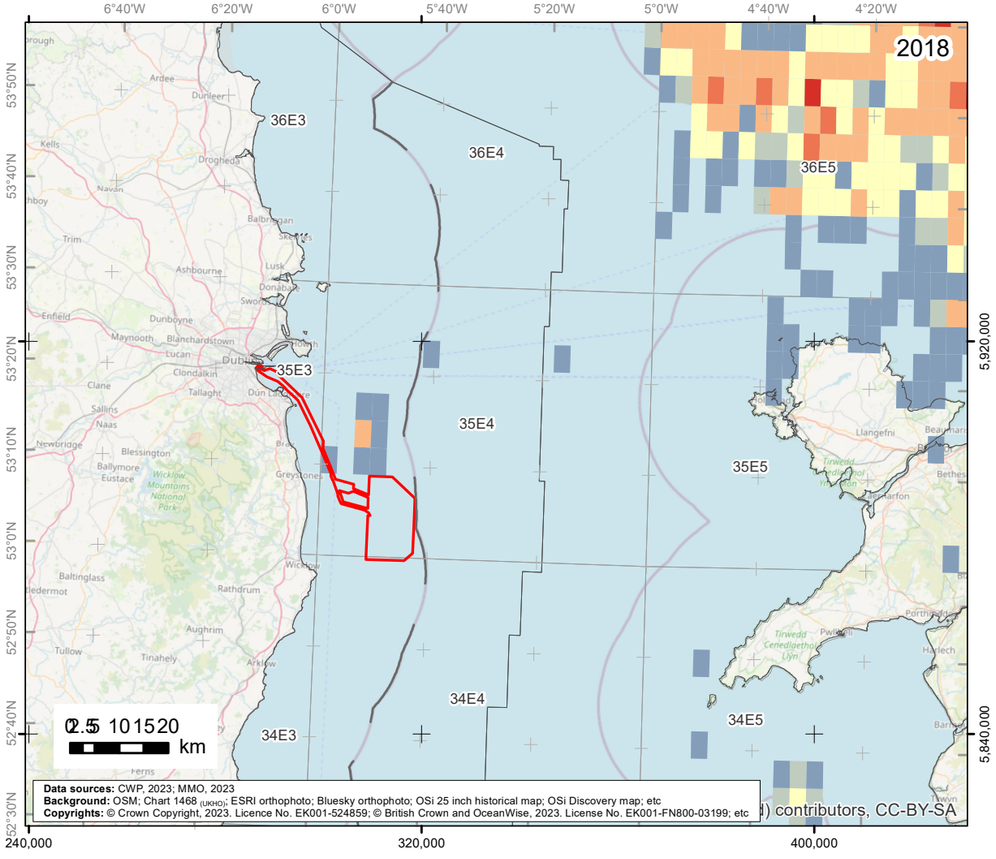
CRS: EPSG 25830

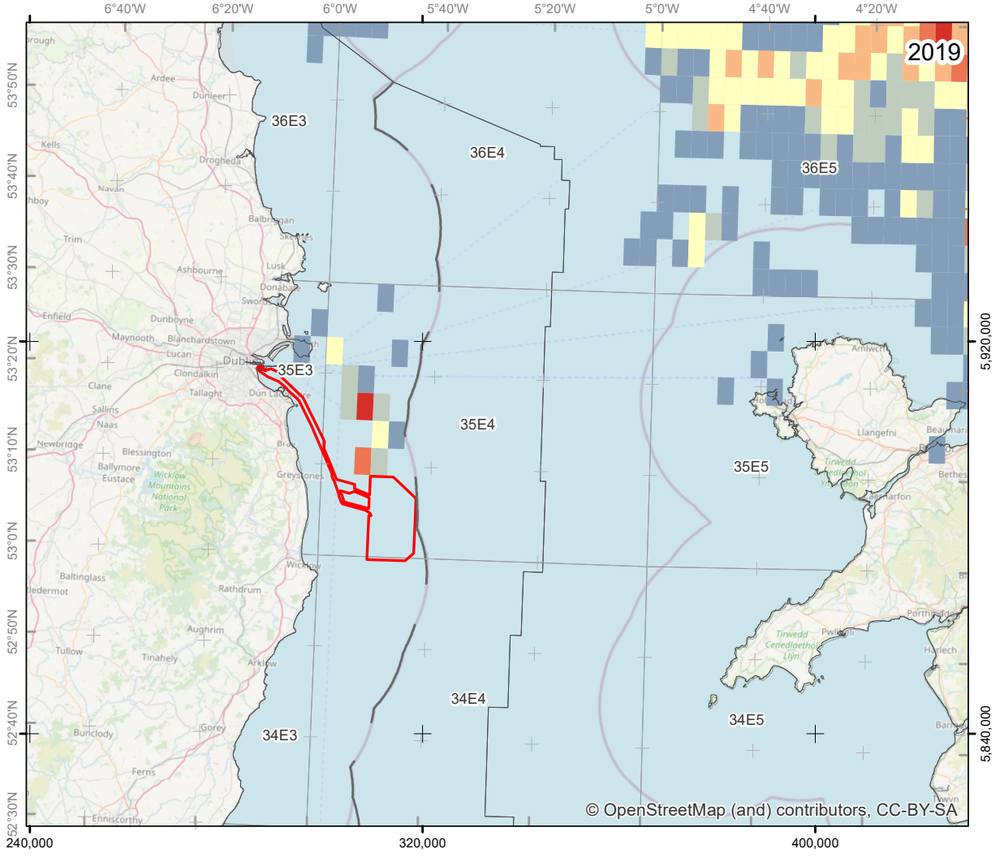
Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC











Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Dredge (UK vessels ≥15m)

First Sales Value

Total value, £

- £0.91 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £280,000.00

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Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 13
UK Dredge annual first sales value 2016-2019 for UK vessels ≥ 15 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0638

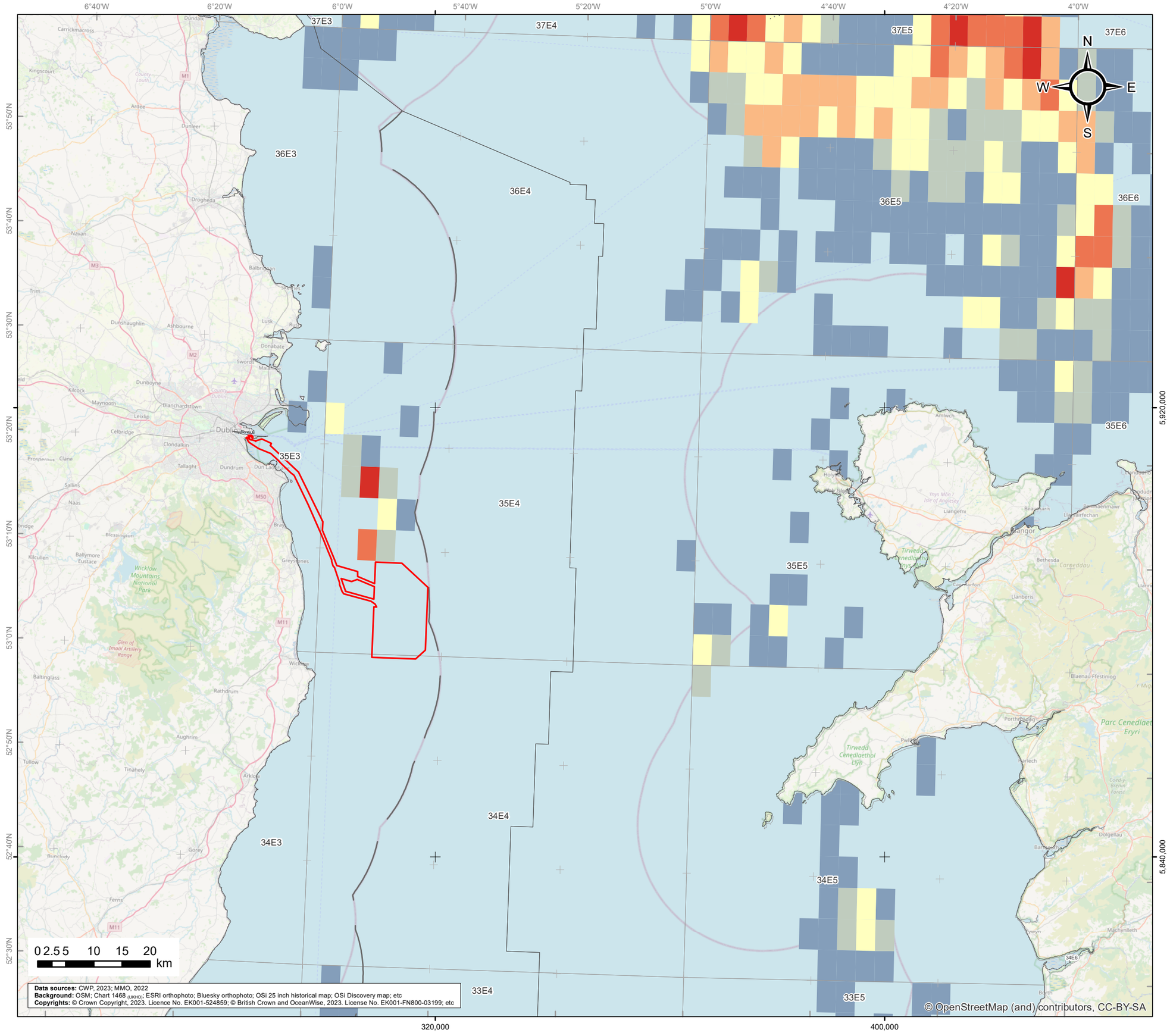
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..DREDGE.AFSV.2016.2019. UK>15M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.13)

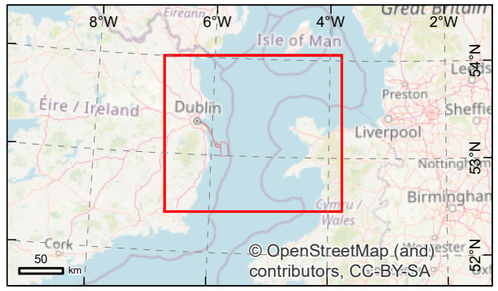
Size: A3

Scale: 1:1,250,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Dredge 2020 (UK vessels ≥15m)

First Sales Value

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £232,000.00

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Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 14
UK Dredge first sales value in 2020 for UK vessels ≥ 15 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0639

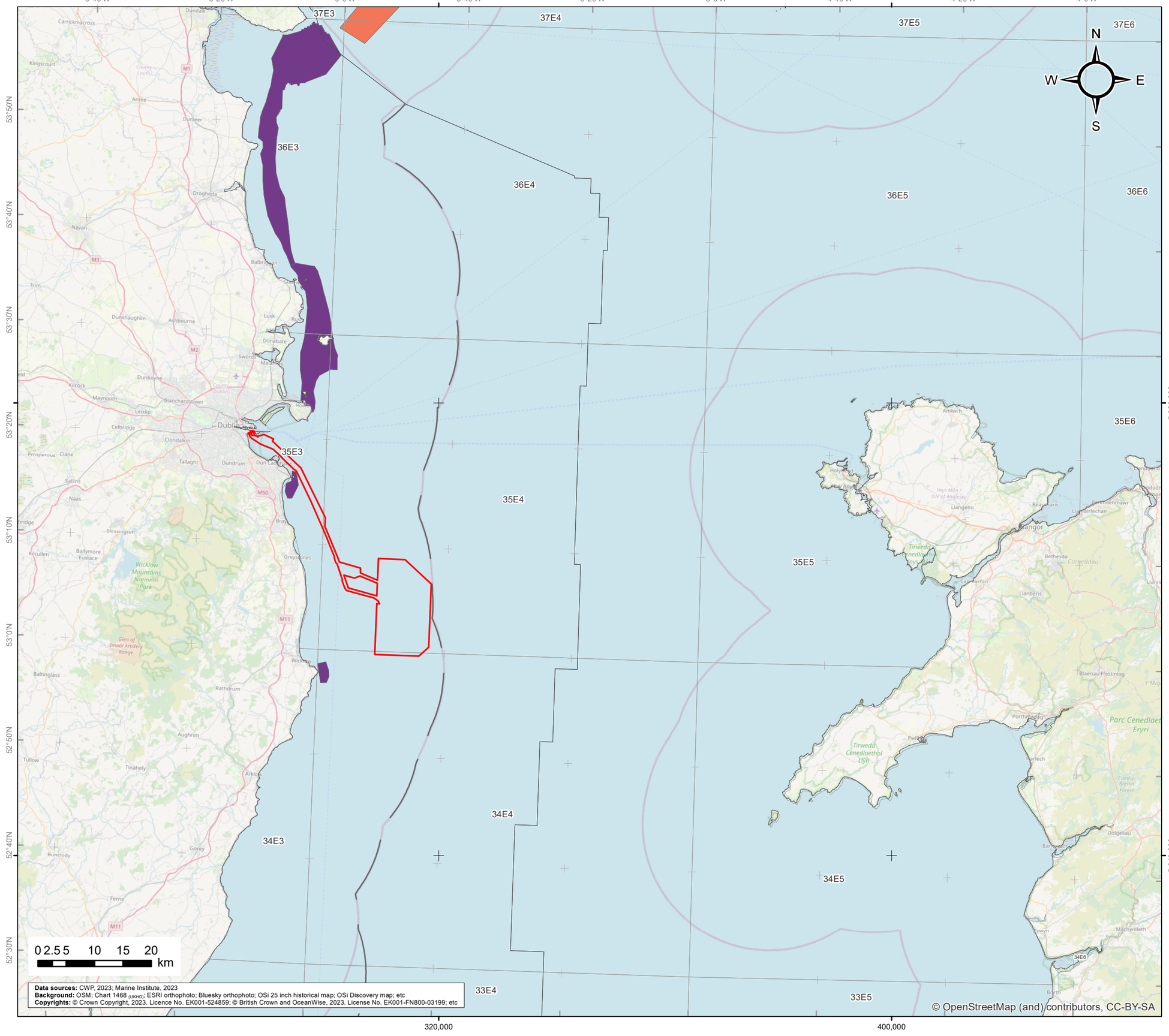
Internal descriptive code:
IS - PAB - ICES.SRs..SEA.LIMs..DREDGE.AFSV.2020.UK>15M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.14)

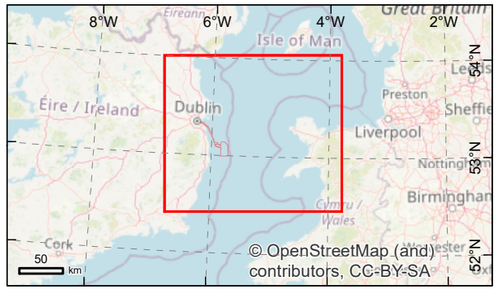
Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Irish static netting grounds

Target species

- Herring
- Mixed Demersal

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Contractor: nimA CONSULTANTS

Website: www.nima.blue

Figure 15
Static netting grounds targeted by Irish vessels under 15m in length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0640

Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.ACTIVITY.INSHORE.NETS.IRE<15M - (OSM..EIAR.Vol.04.Ch.12 Ap.03.FIG.15)

Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
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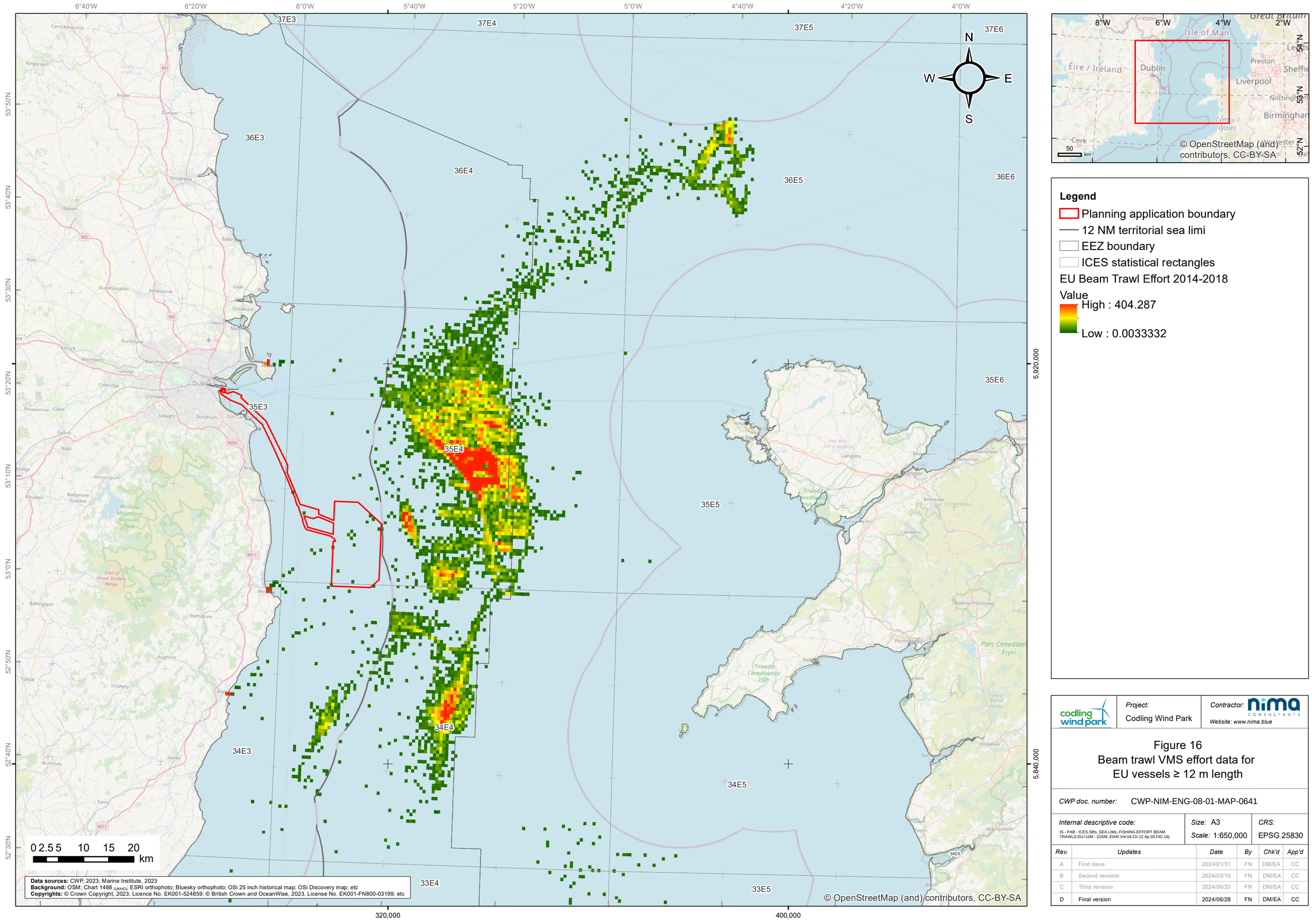

Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

EU Beam Trawl Effort 2014-2018

Value

- High : 404.287
- Low : 0.0033332

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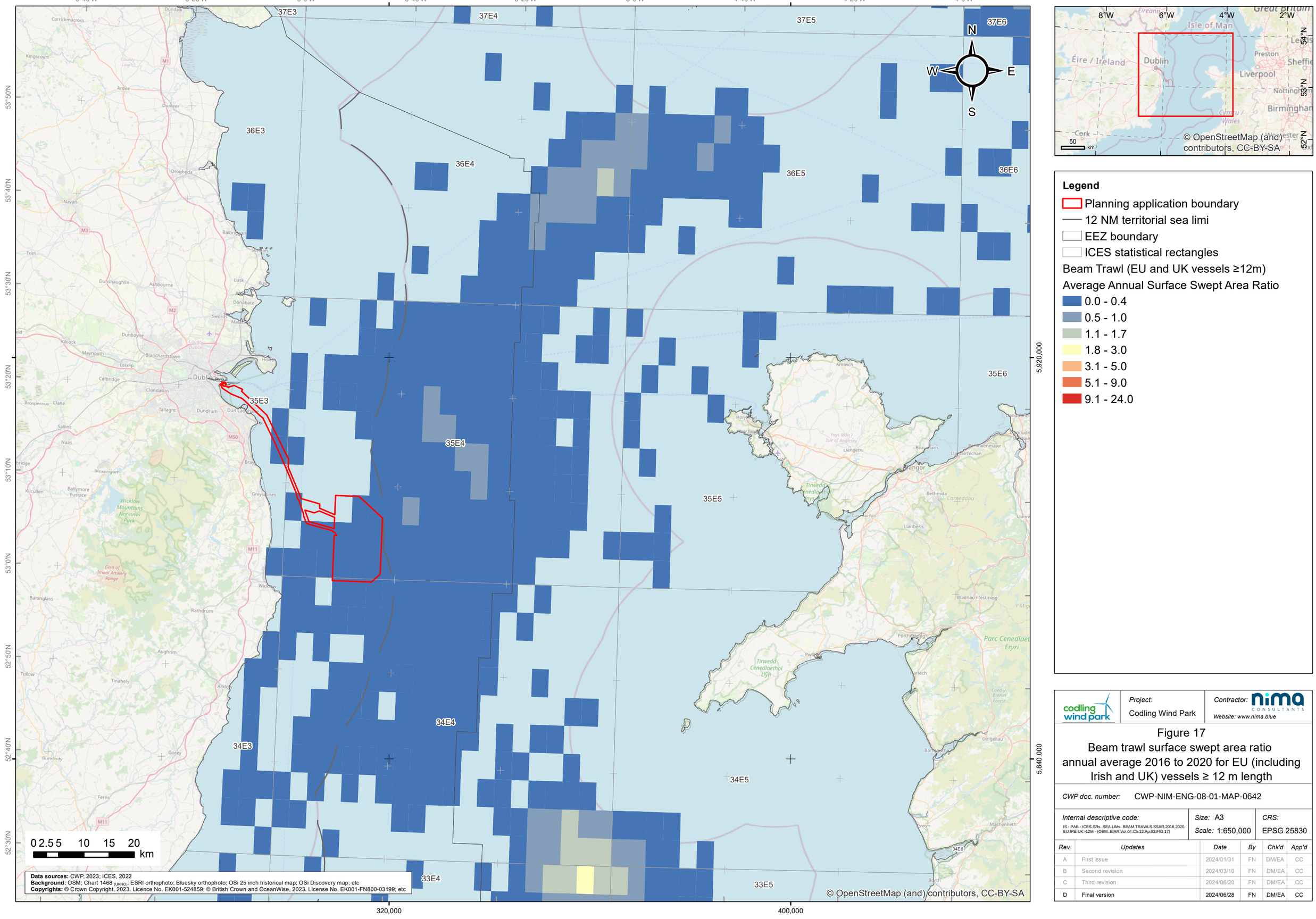
Figure 16
Beam trawl VMS effort data for EU vessels ≥ 12 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0641

Internal descriptive code:	*Size:* A3	*CRS:*
IS - PAB - ICES.SRs..SEA.LIMs..FISHING.EFFORT.BEAM. TRAWLS.EU>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.16)	*Scale:* 1:650,000	EPSG 25830

Rev.	*Updates*	*Date*	*By*	*Chk'd*	*App'd*
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Beam Trawl (EU and UK vessels ≥12m)

Average Annual Surface Swept Area Ratio

- 0.0 - 0.4
- 0.5 - 1.0
- 1.1 - 1.7
- 1.8 - 3.0
- 3.1 - 5.0
- 5.1 - 9.0
- 9.1 - 24.0

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Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 17
Beam trawl surface swept area ratio annual average 2016 to 2020 for EU (including Irish and UK) vessels ≥ 12 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0642

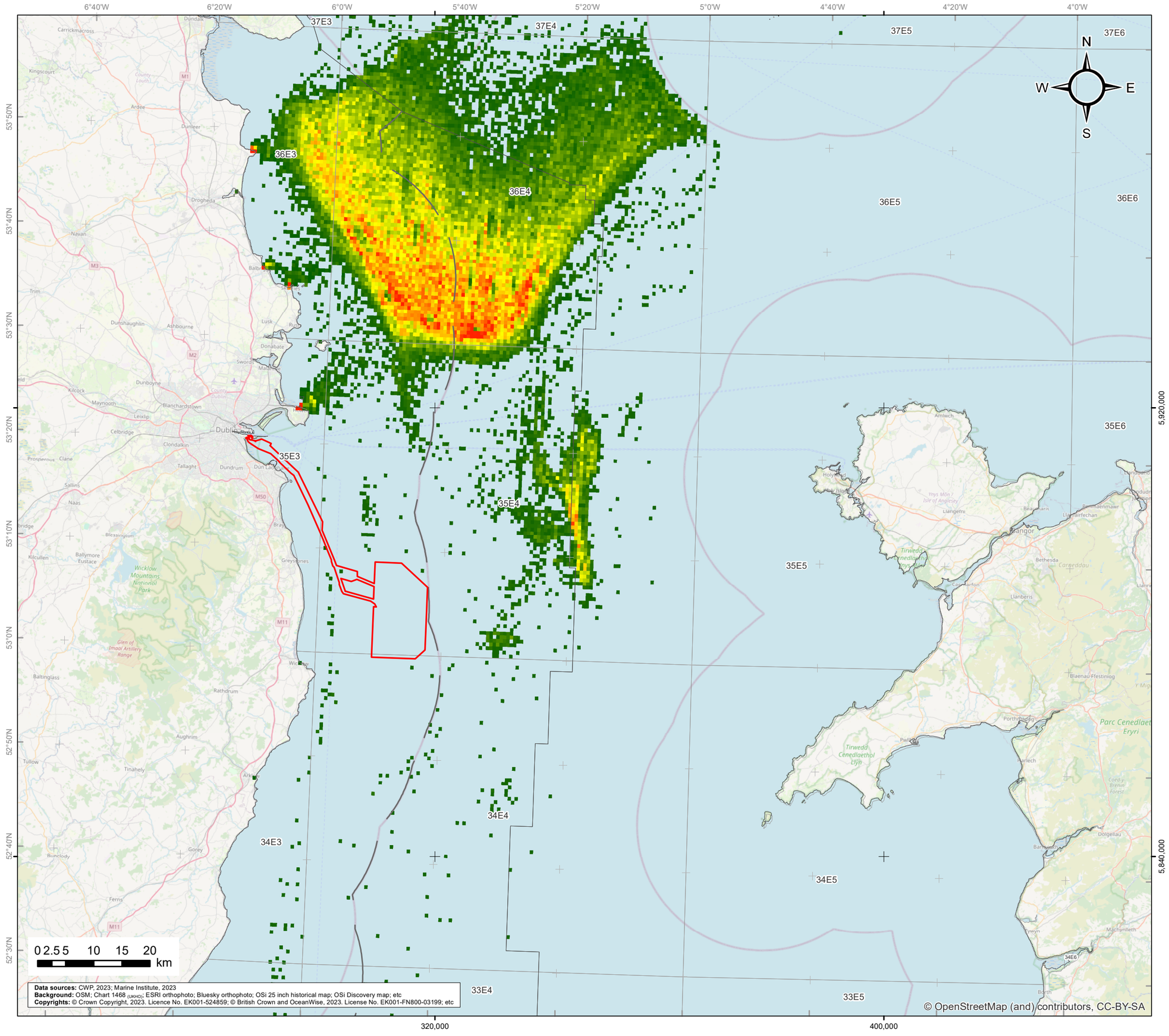
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..BEAM.TRAWLS.SSAR.2016.2020.EU.IRE.UK>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.17)

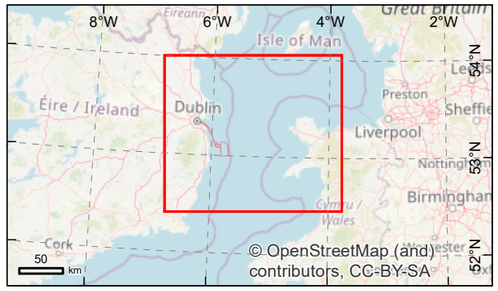
Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

EU Bottom Otter Trawl Effort 2014-2018

Value

- High : 1509.15
- Low : 0.0033332

codling wind park

Project: Codling Wind Park

Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 18
Demersal otter trawl VMS effort data for EU vessels ≥ 12 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0643

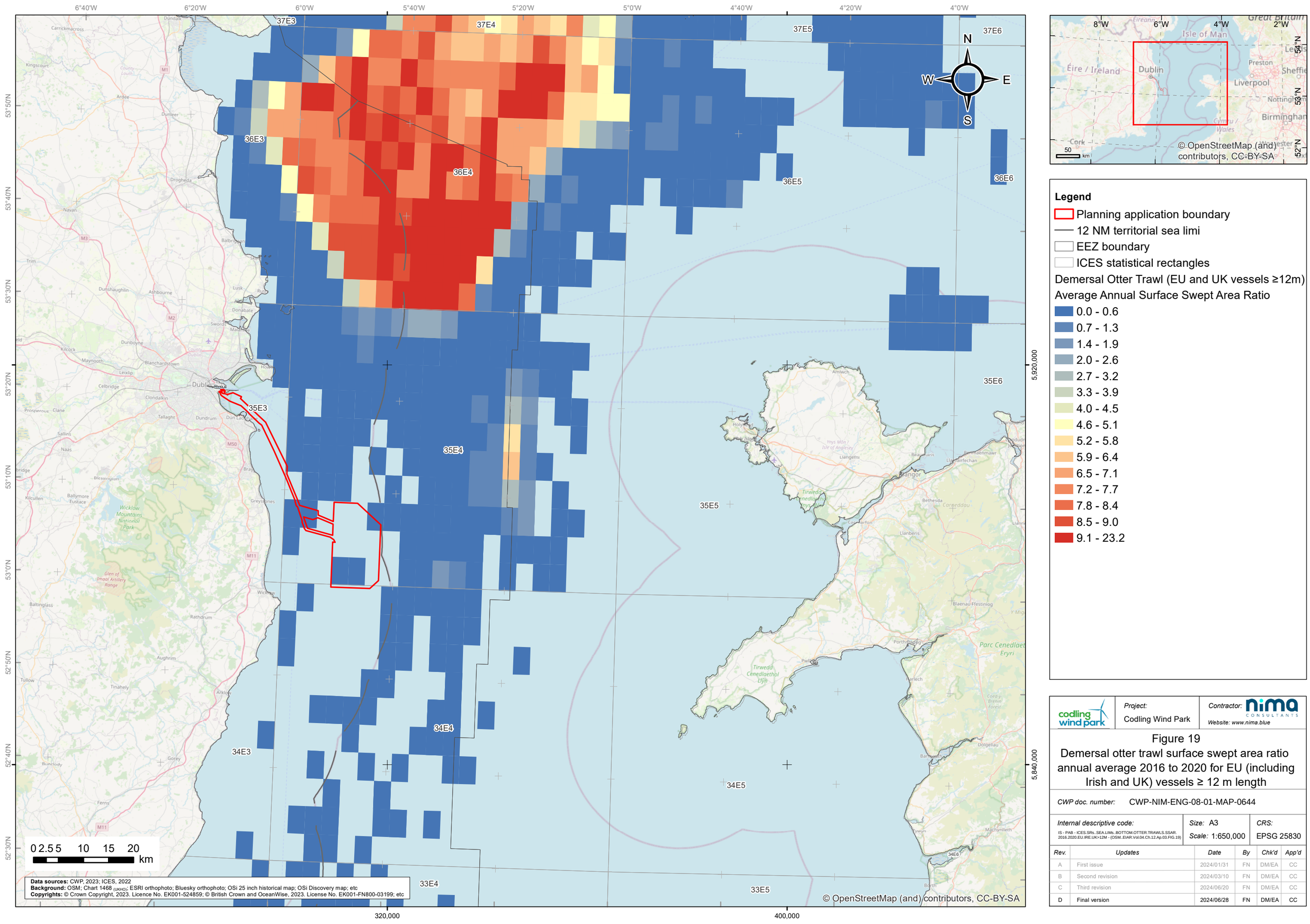
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.EFFORT.BOTTOM.OTTER.TRAWLS.EU>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.18)

Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Demersal Otter Trawl (EU and UK vessels ≥12m)
Average Annual Surface Swept Area Ratio

- 0.0 - 0.6
- 0.7 - 1.3
- 1.4 - 1.9
- 2.0 - 2.6
- 2.7 - 3.2
- 3.3 - 3.9
- 4.0 - 4.5
- 4.6 - 5.1
- 5.2 - 5.8
- 5.9 - 6.4
- 6.5 - 7.1
- 7.2 - 7.7
- 7.8 - 8.4
- 8.5 - 9.0
- 9.1 - 23.2

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Contractor: nima CONSULTANTS

Website: www.nima.blue

Figure 19
Demersal otter trawl surface swept area ratio annual average 2016 to 2020 for EU (including Irish and UK) vessels ≥ 12 m length

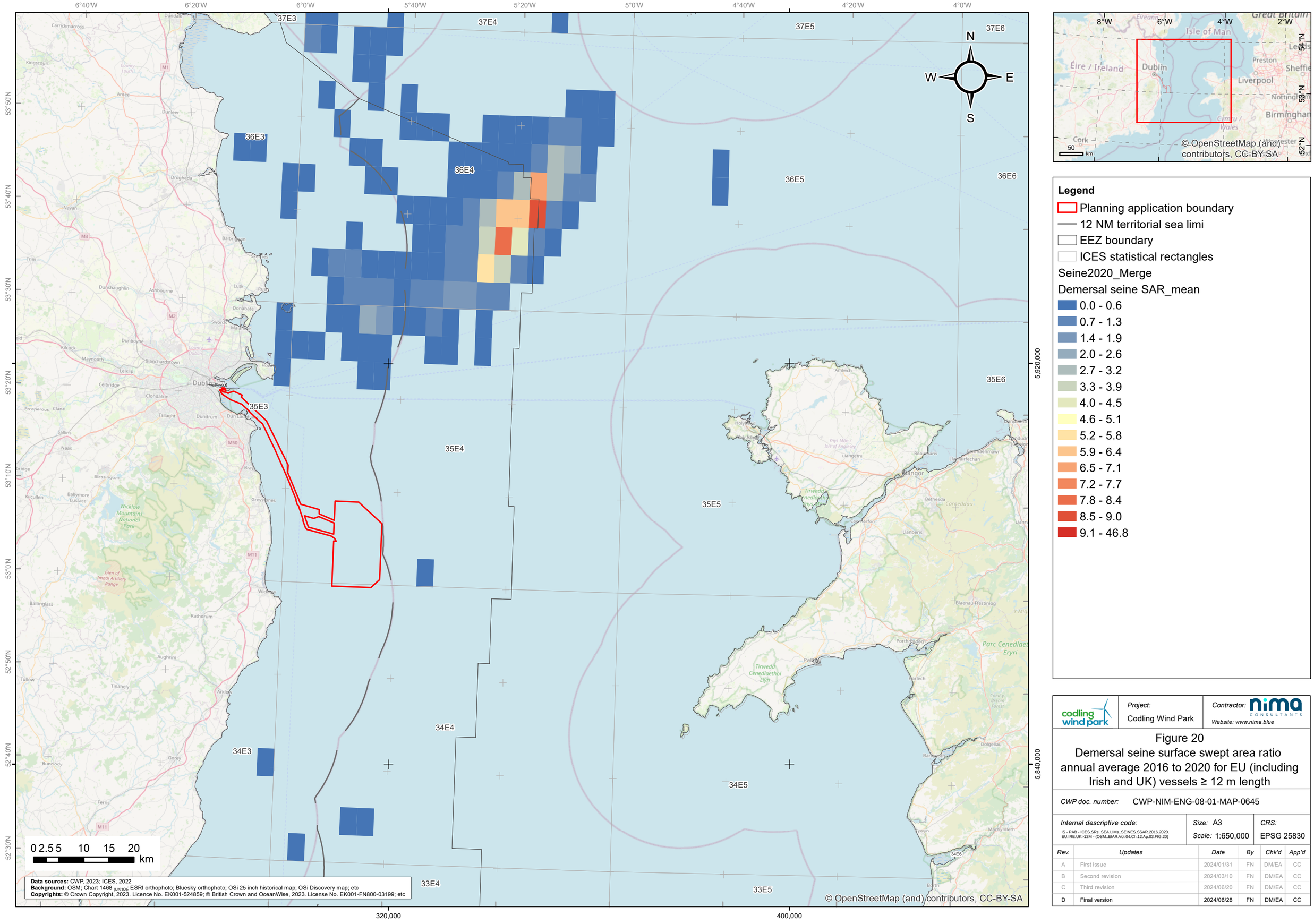
CWP doc. number: CWP-NIM-ENG-08-01-MAP-0644

Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..BOTTOM.OTTER.TRAWLS.SSAR..2016.2020.EU.IRE.UK>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.19)

Size: A3
Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Seine2020_Merge

Demersal seine SAR_mean

- 0.0 - 0.6
- 0.7 - 1.3
- 1.4 - 1.9
- 2.0 - 2.6
- 2.7 - 3.2
- 3.3 - 3.9
- 4.0 - 4.5
- 4.6 - 5.1
- 5.2 - 5.8
- 5.9 - 6.4
- 6.5 - 7.1
- 7.2 - 7.7
- 7.8 - 8.4
- 8.5 - 9.0
- 9.1 - 46.8

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Project: Codling Wind Park

Contractor: nima CONSULTANTS
Website: www.nima.blue

Figure 20
Demersal seine surface swept area ratio annual average 2016 to 2020 for EU (including Irish and UK) vessels ≥ 12 m length

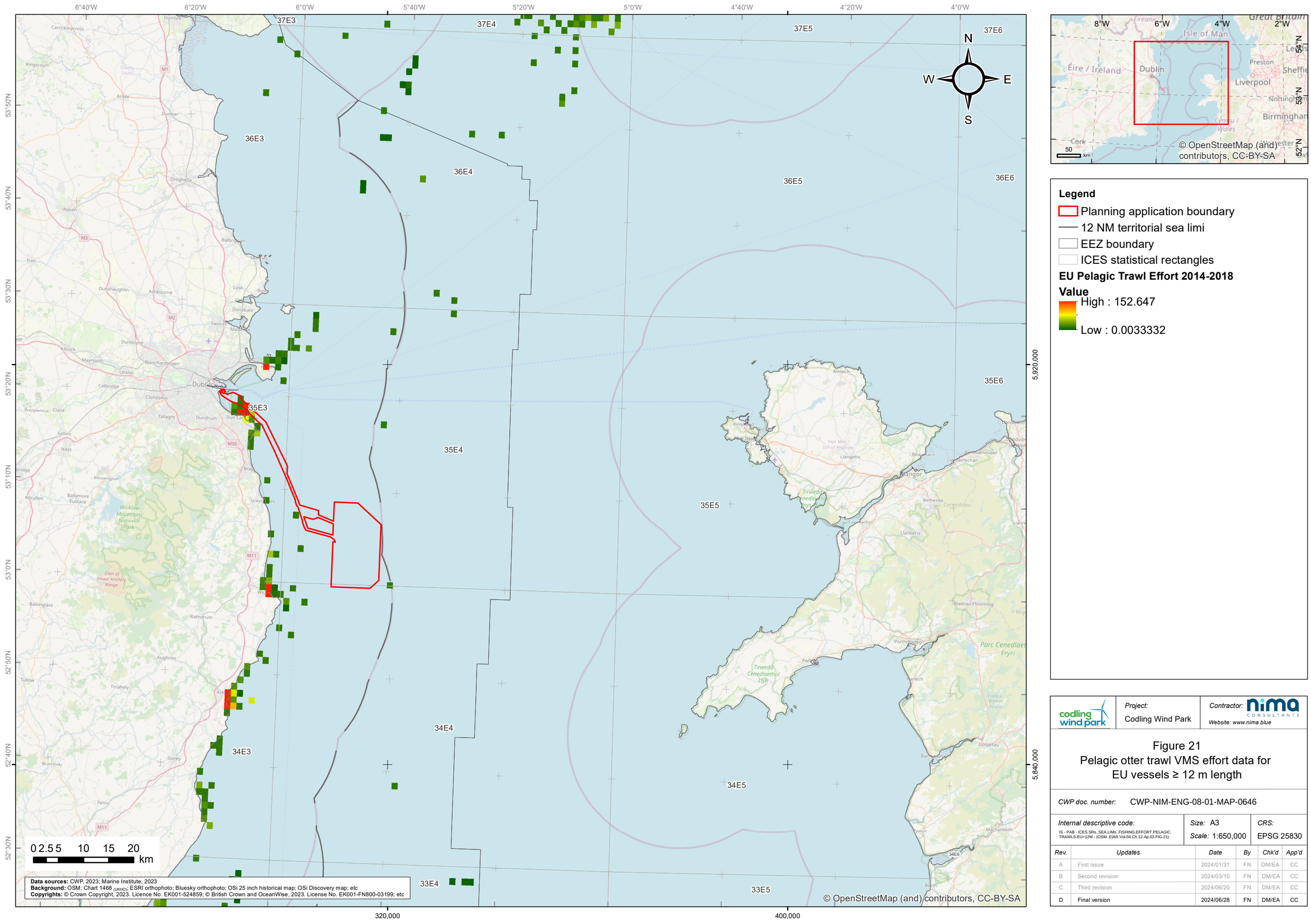
CWP doc. number: CWP-NIM-ENG-08-01-MAP-0645

Internal descriptive code:
IS - PAB - ICES.SRs..SEA.LIMs..SEINES.SSAR.2016.2020, EU.IRE.UK>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.20)

Size: A3
Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

EU Pelagic Trawl Effort 2014-2018

Value

High : 152.647

Low : 0.0033332

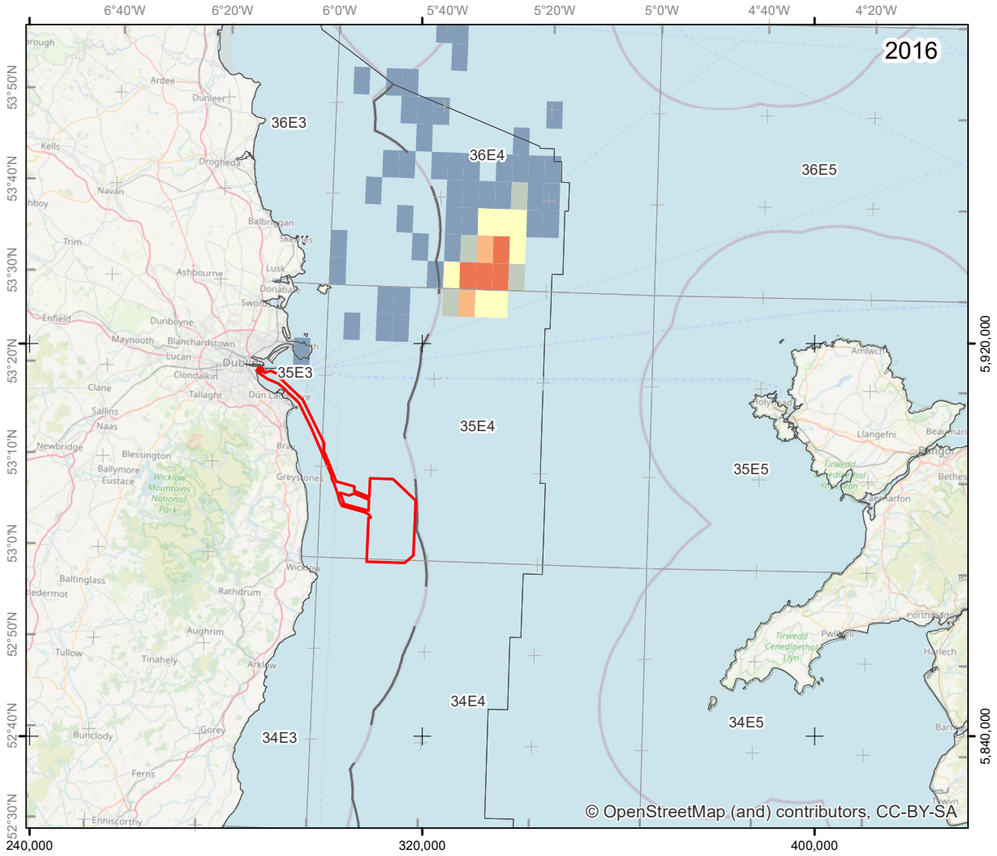
codling wind park	*Project:* Codling Wind Park	*Contractor:* nima CONSULTANTS *Website: www.nima.blue*

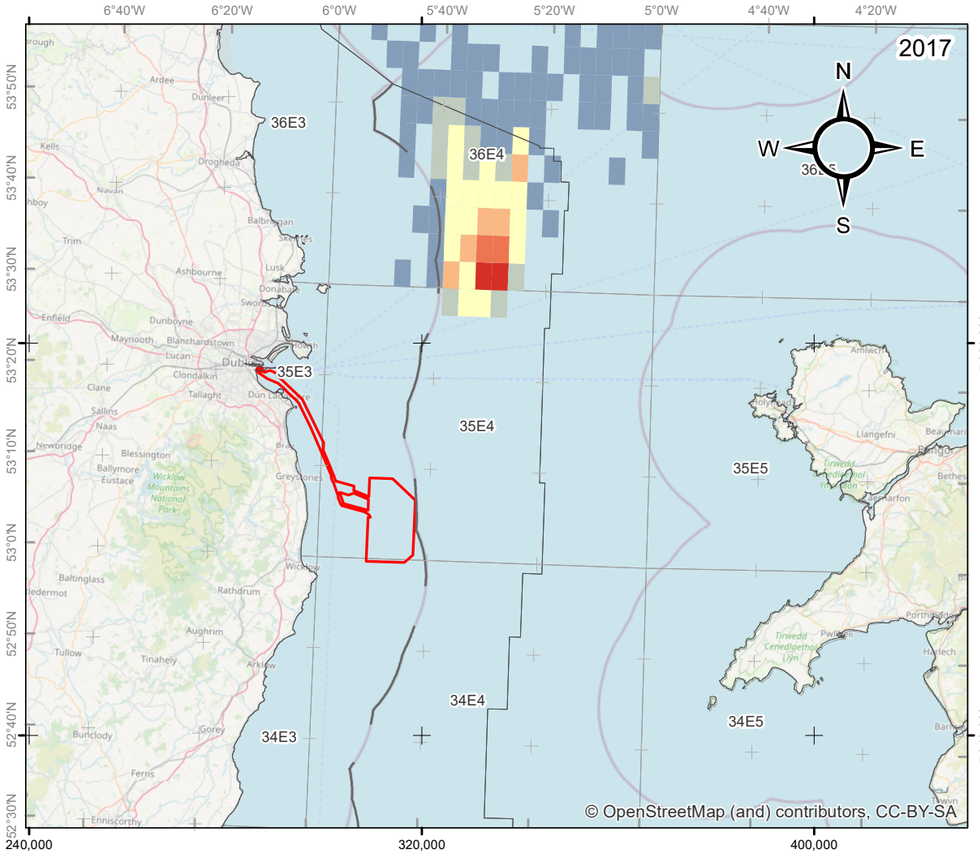
Figure 21
Pelagic otter trawl VMS effort data for EU vessels ≥ 12 m length

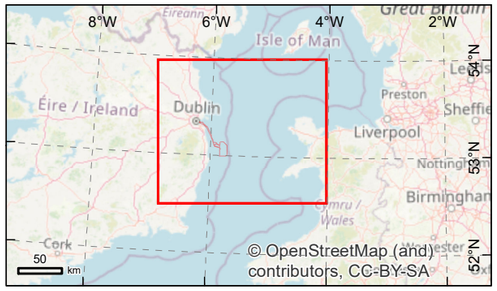
CWP doc. number: CWP-NIM-ENG-08-01-MAP-0646

Internal descriptive code:	*Size:*	*CRS:*
IS - PAB - ICES.SRs..SEA.LIMs..FISHING.EFFORT.PELAGIC. TRAWLS.EU>12M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.21)	A3	EPSG 25830
	Scale: 1:650,000	

Rev.	*Updates*	*Date*	*By*	*Chk'd*	*App'd*
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC







Legend

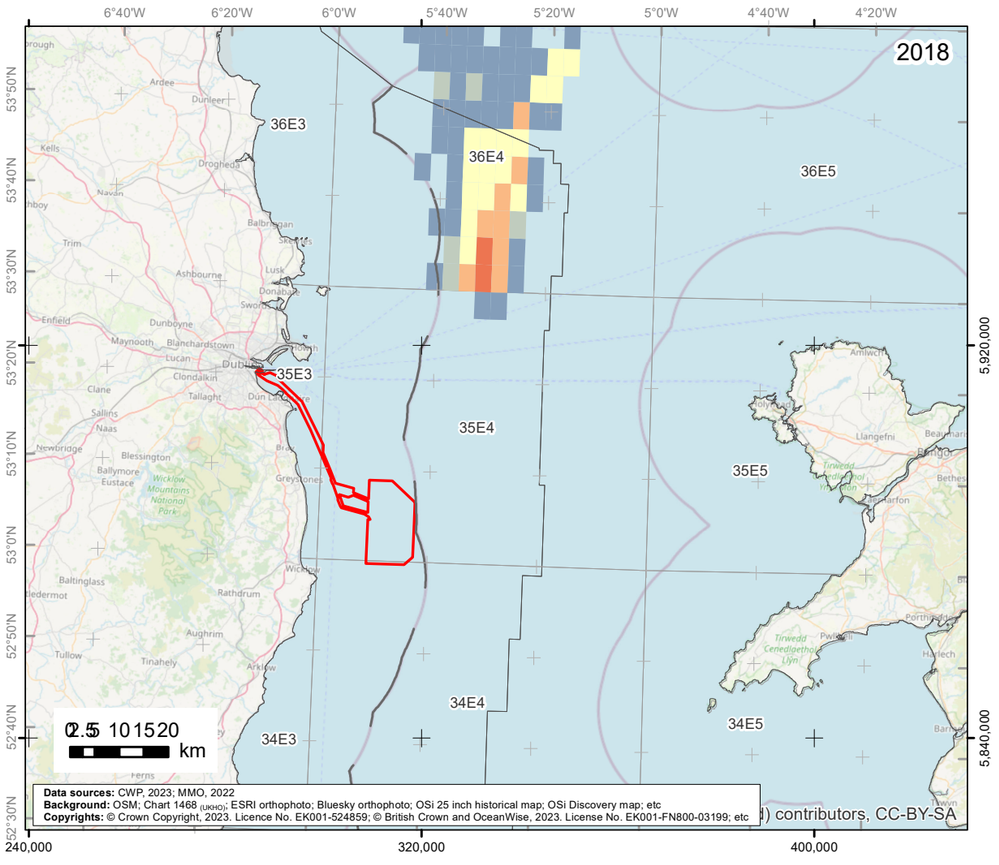
- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

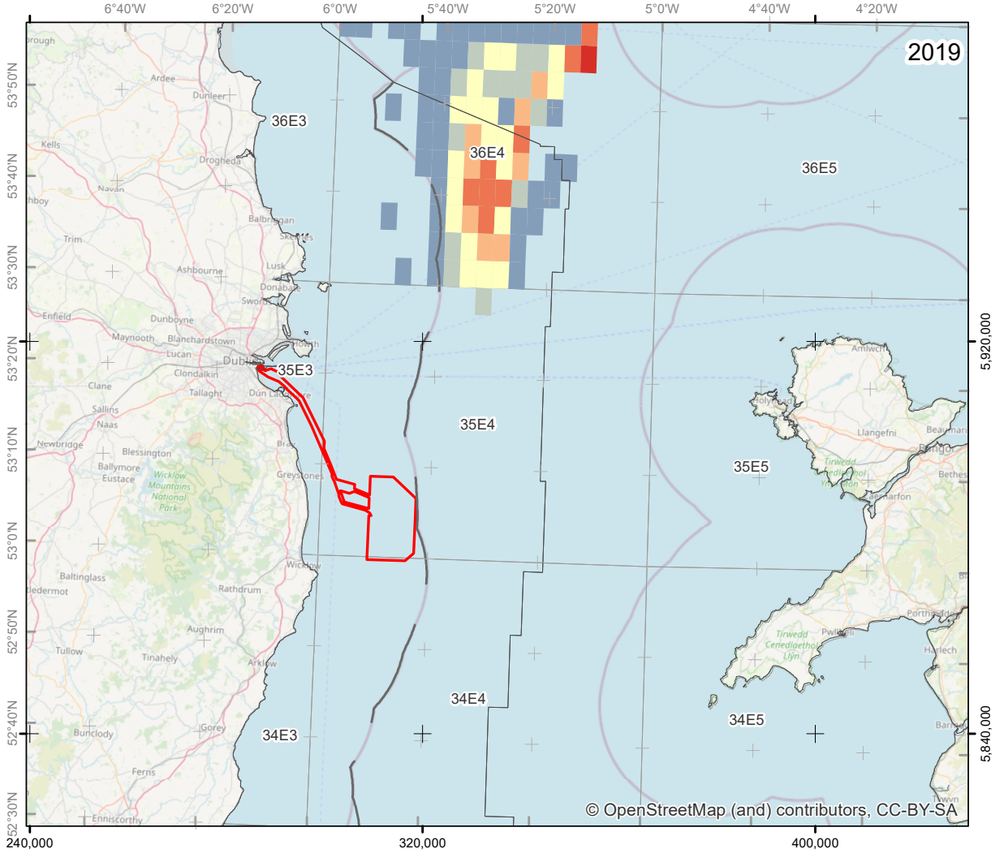
Pelagic Trawl (UK vessels ≥15m)

UK pelagic trawl first sales value

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £242,000.00





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Contractor: nima CONSULTANTS

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Figure 22
UK Pelagic annual first sales value 2016-2019 for UK vessels ≥ 15 m length

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0647

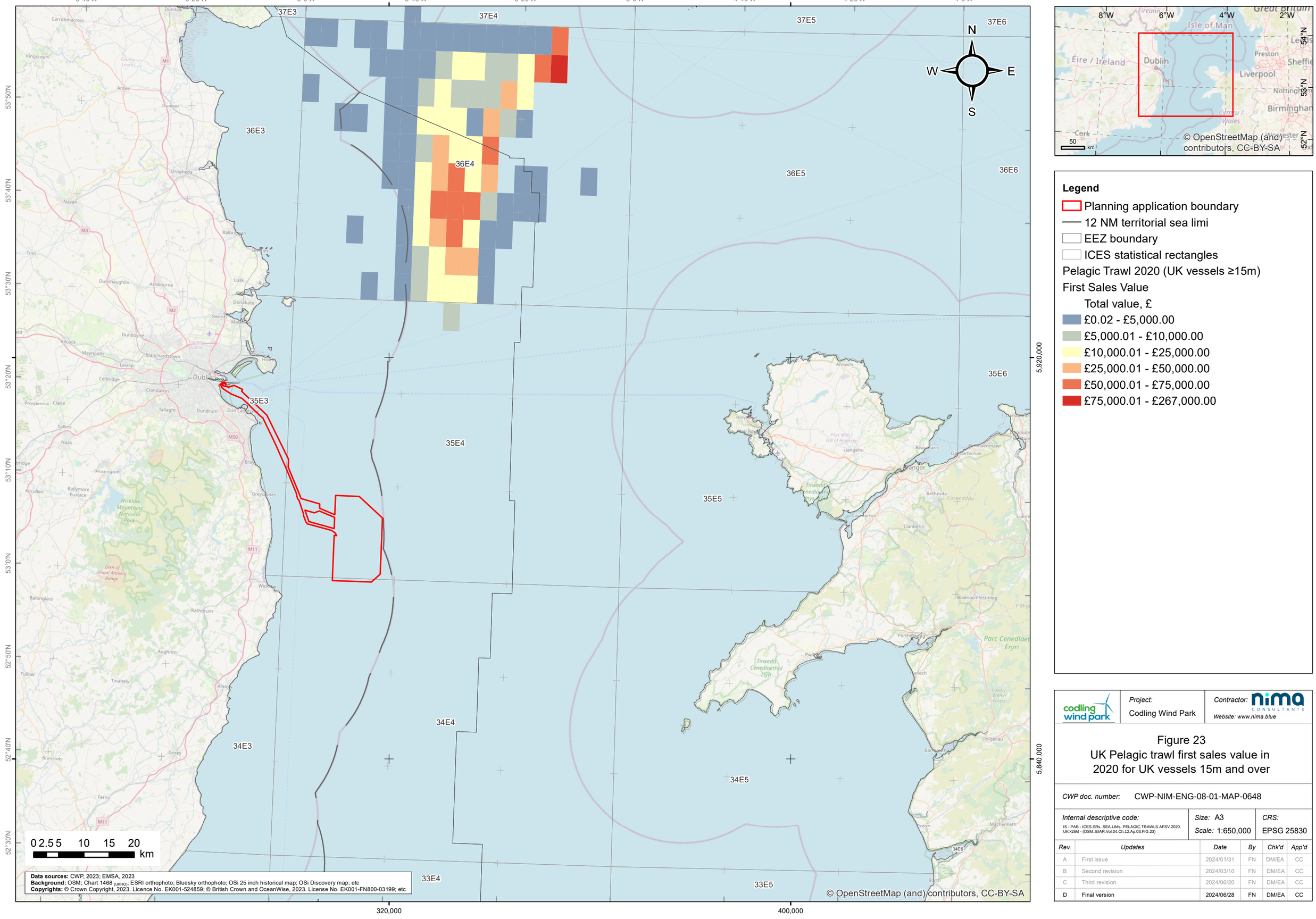
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..PELAGIC.TRAWLS.AFSV.2016.2019.UK>15M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.22)

Size: A3

Scale: 1:1,250,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC



Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Pelagic Trawl 2020 (UK vessels ≥15m)

First Sales Value

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £267,000.00

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Contractor: nimA CONSULTANTS

Website: www.nima.blue

Figure 23
UK Pelagic trawl first sales value in 2020 for UK vessels 15m and over

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0648

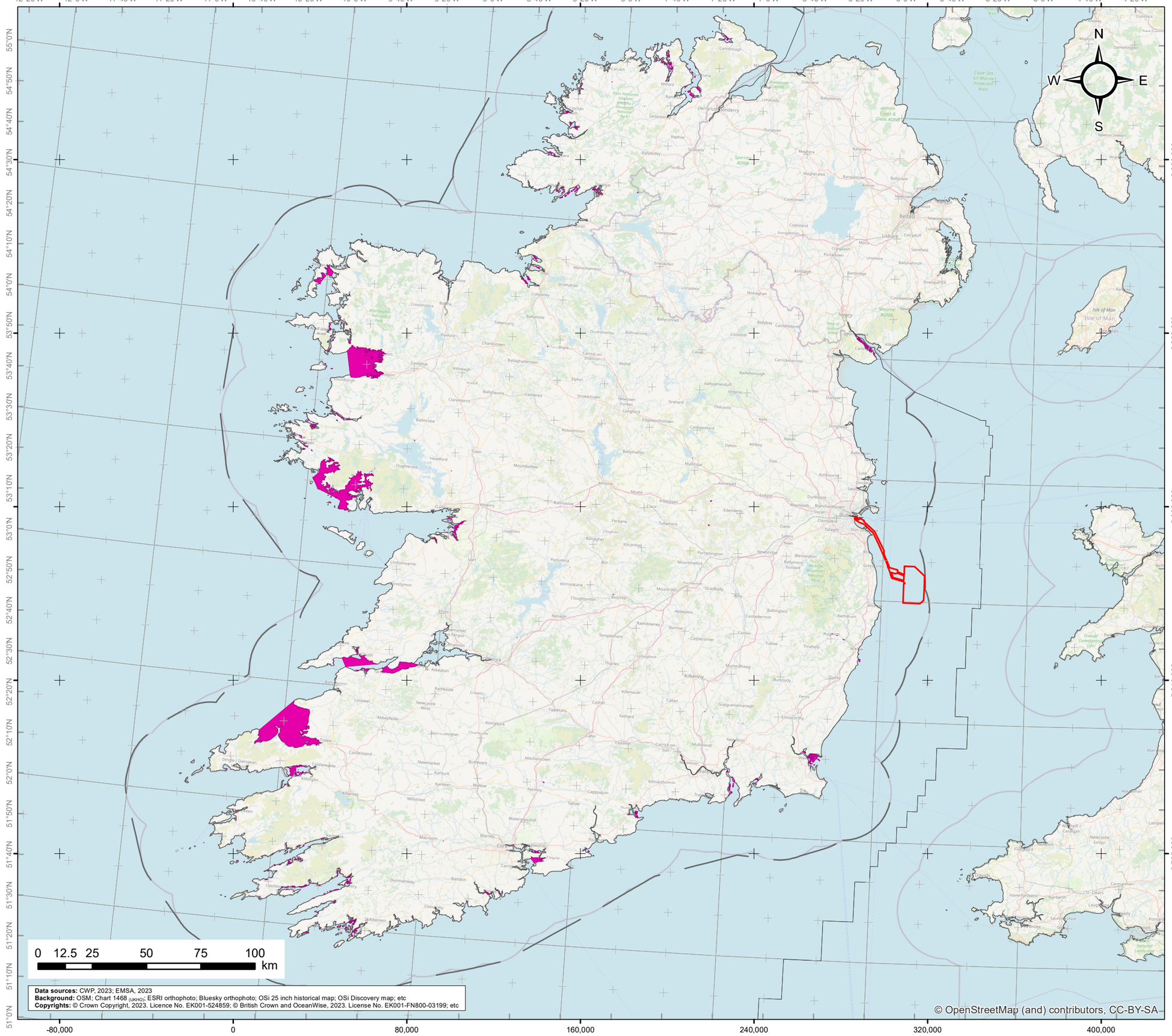
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..PELAGIC.TRAWLS.AFSV.2020. UK>15M - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.23)

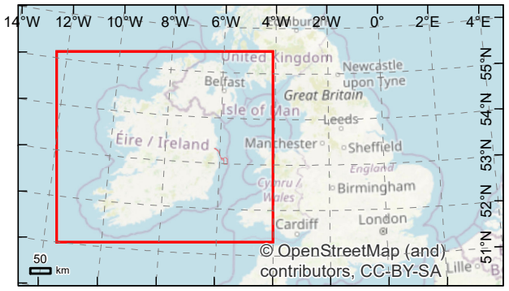
Size: A3

Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- Aquaculture Sites
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

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Contractor: nima CONSULTANTS
Website: www.nima.blue

Figure 24
Aquaculture sites

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0649

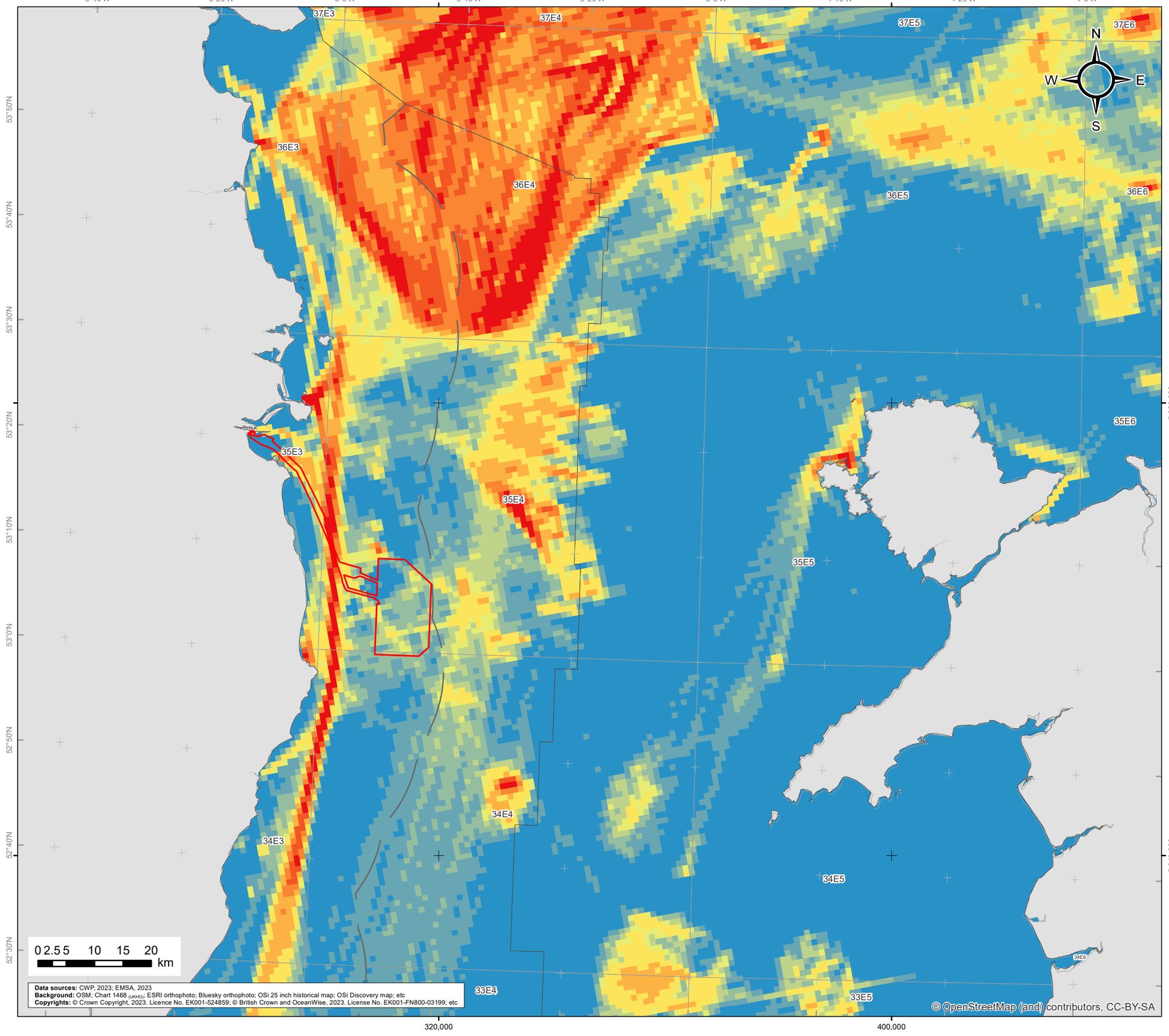
Internal descriptive code: IRE - PAB - ICES.SRs..SEA.LIMs..AQUACULTURE - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.24)

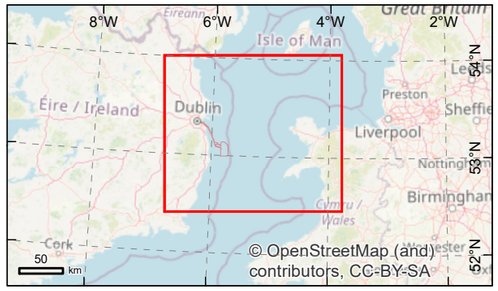
Size: A3

Scale: 1:1,700,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Fishing Vessel Route Density (2021)
(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- >250

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Contractor: nima CONSULTANTS
Website: www.nima.blue

Figure 25
Fishing vessel route density, 2021

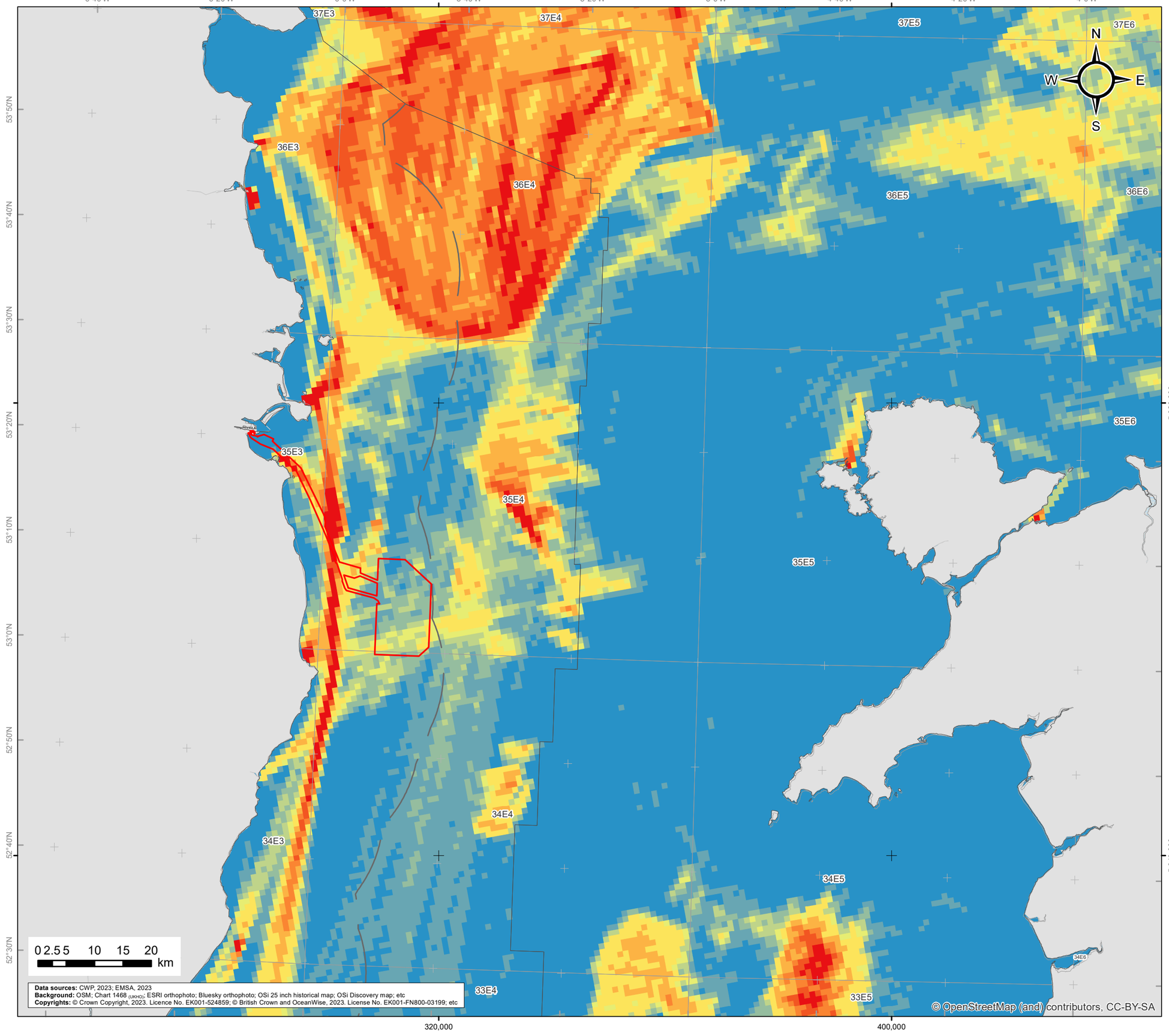
CWP doc. number: CWP-NIM-ENG-08-01-MAP-0650

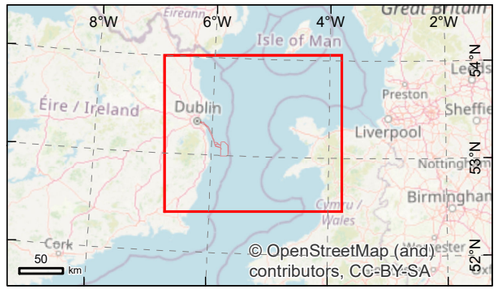
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.VESSEL.ROUTE.DENS.2021 - (OSM..EIAR.Vol.04.Ch.12 Ap.03.FIG.25)

Size: A3
Scale: 1:650,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC





Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Fishing Vessel Route Density (2022)
(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 16,363

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Project: Codling Wind Park

Contractor: nima CONSULTANTS
Website: www.nima.blue

Figure 26
Fishing vessel route density, 2022

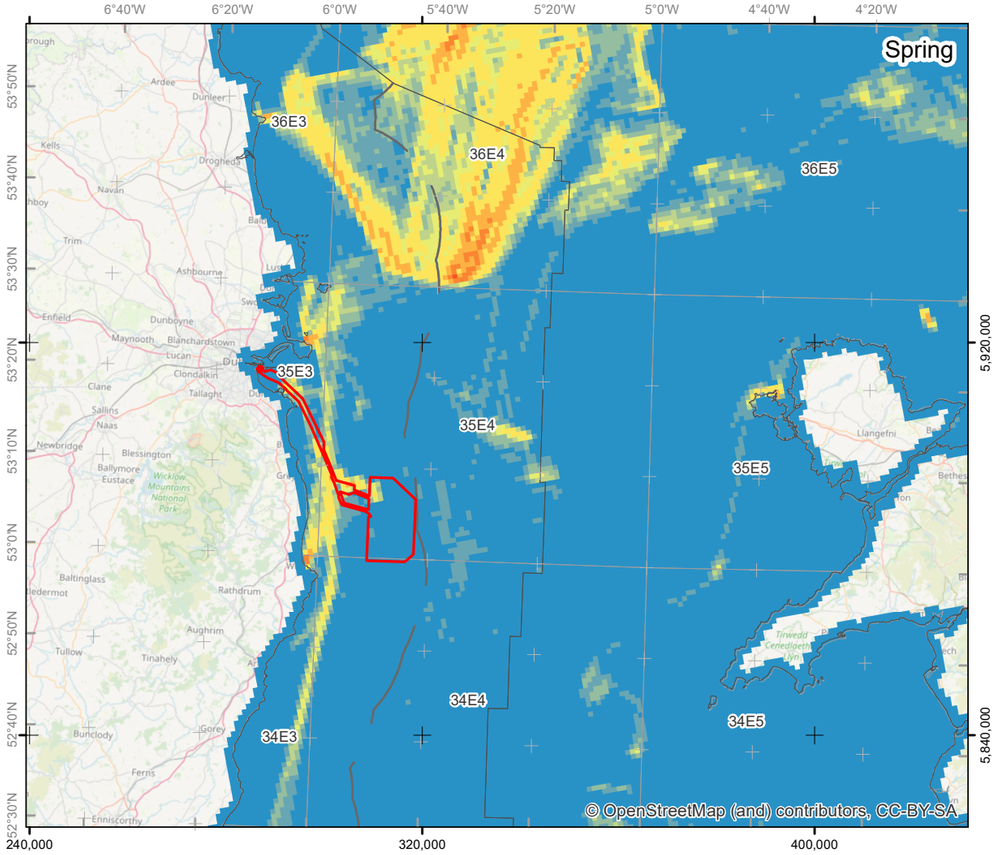
CWP doc. number: CWP-NIM-ENG-08-01-MAP-0651

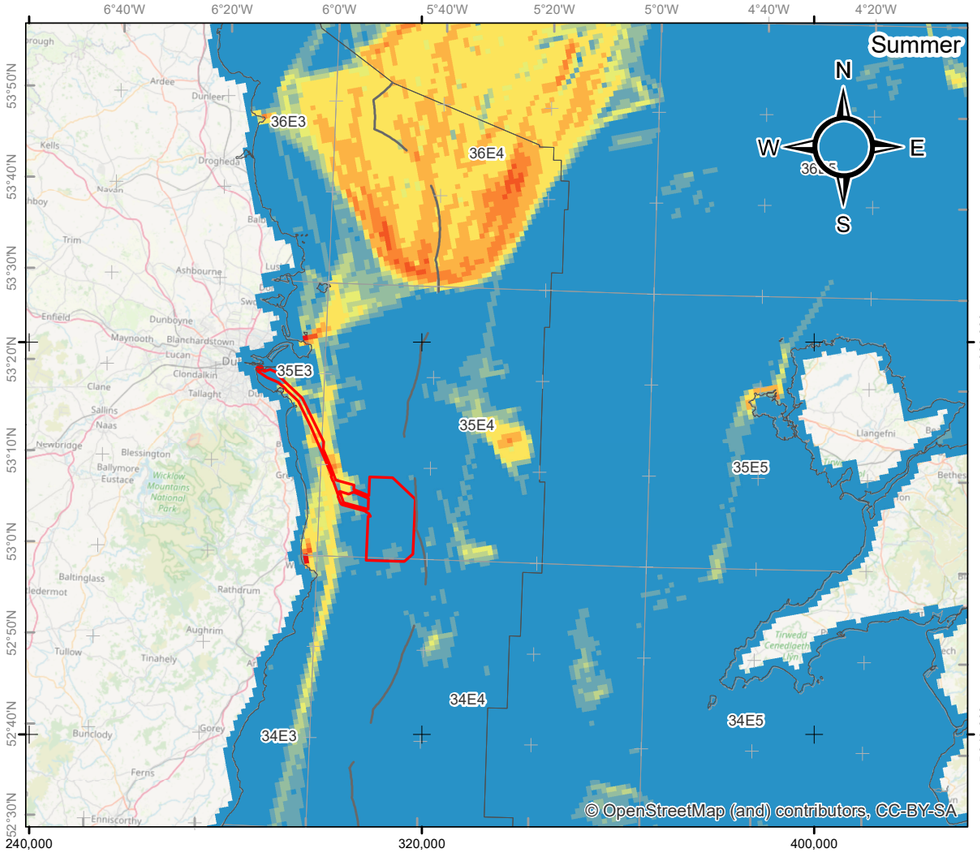
Internal descriptive code: IS - PAB - ICES.SRs..SEA.LIMs..FISHING.VESSEL.ROUTE.DENS.2022 - (OSM..EIAR.Vol.04.Ch.12.Ap.03.FIG.26)

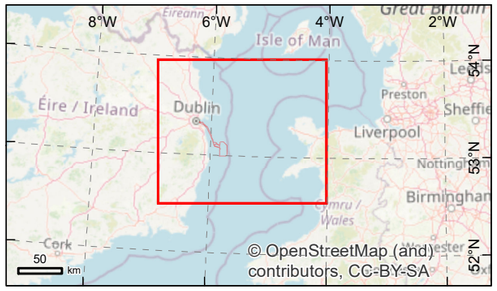
Size: A3
Scale: 1:650,000

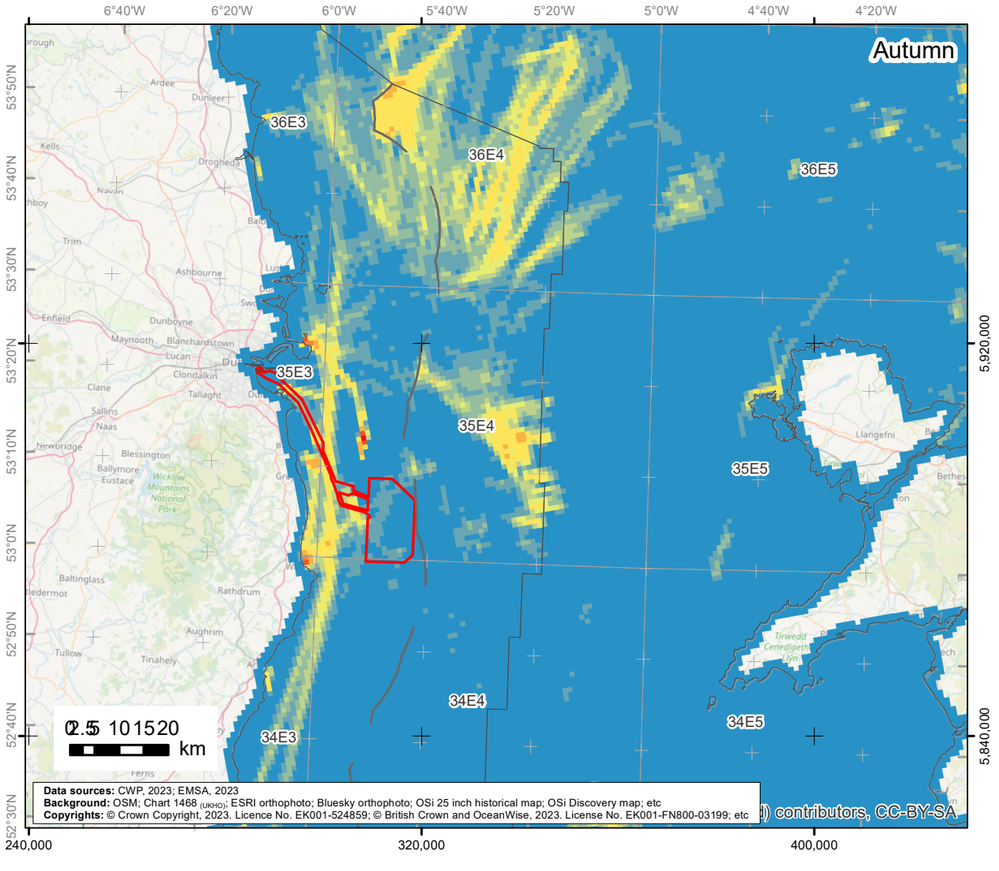
CRS: EPSG 25830

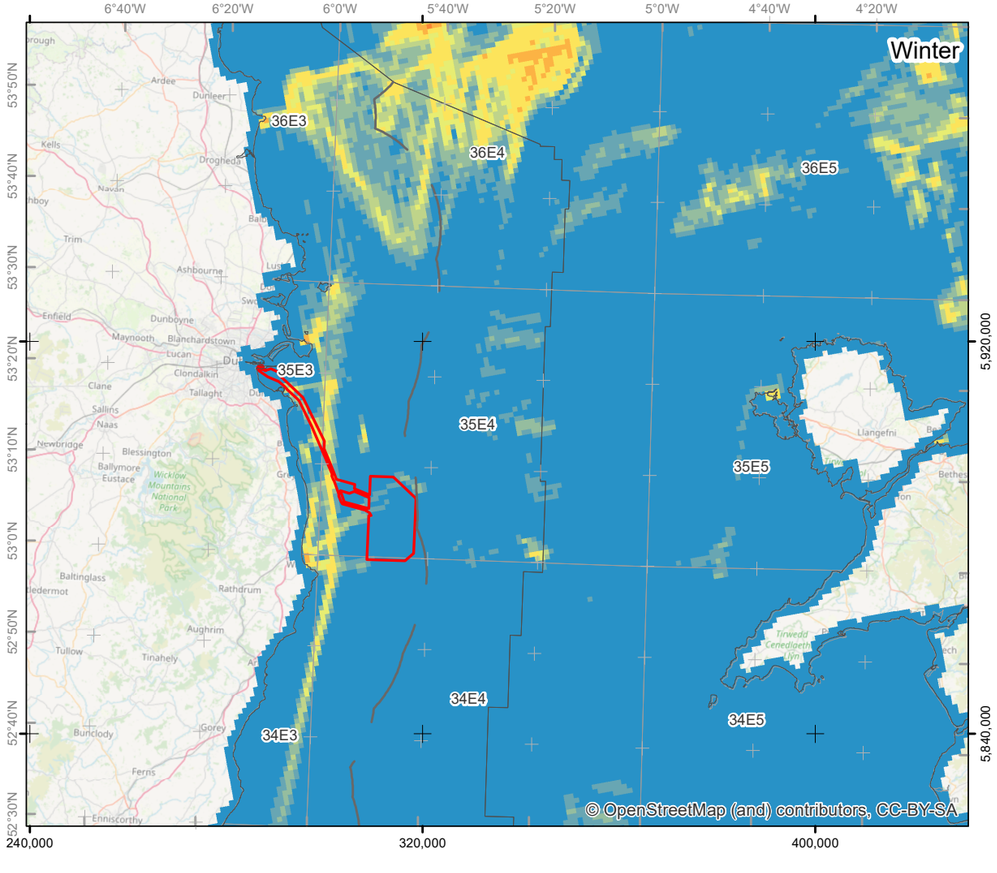
Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC











Legend

- Planning application boundary
- 12 NM territorial sea limi
- EEZ boundary
- ICES statistical rectangles

Fishing Vessel Route Density (2022)
(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 16,363

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Project: Codling Wind Park

Contractor: nima CONSULTANTS
Website: www.nima.blue

Figure 27
Fishing route density, 2022 by season

CWP doc. number: CWP-NIM-ENG-08-01-MAP-0652

Internal descriptive code: IS - PAB - ICES.SRs_SEA.LIMs_FISHING.VESSEL.ROUTE.DENS.2022.SEASON - (OSM_EIAR.Vol.04.Ch.12.Ap.03.FIG.27)

Size: A3
Scale: 1:1,250,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issue	2024/01/31	FN	DM/EA	CC
B	Second revision	2024/03/10	FN	DM/EA	CC
C	Third revision	2024/06/20	FN	DM/EA	CC
D	Final version	2024/06/28	FN	DM/EA	CC

3.3 Irish fisheries activity assessment SFPA data

3.3.1 Landings from the Irish Sea

54. The key species landed by Irish vessels from the entirety of the Irish Sea (ICES Division 7a) are presented in **Plate 1** by first sales value and in **Plate 2** for landed weight. The Irish Sea (ICES Division 7a) includes the commercial fisheries local and regional study areas, as well as highly significant nephrops grounds, which the CWP Project does not overlap.

55. Shellfish species are the most economically important, with the highest first sales value in nephrops, worth €12.1 million (based on five-year average, 2018-2022, SFPA data). This is followed by whelk (€8.2 million), brown crab (€6.1 million) and lobster (€2.7 million).

56. Two pelagic species are routinely targeted within the Irish Sea: sprat and herring, which make up a significant quantity of the overall weight, but are lower value compared to other species. Combined, the herring and sprat landings by Irish vessels from the Irish Sea have an average first sales value of €2.1 million (based on 2018-2022 SFPA data).

57. The targeted haddock demersal otter trawl fisheries is represented in the data, with an average first sales value of €1.9 million and 1,040 tonnes (based on five-year average, 2018-2022 SFPA data). Landings of haddock from the Irish Sea have fluctuated, with a drop noted in 2020.

58. Other species of note landed by Irish vessels from the Irish Sea include: razor shell (average of €2.5 million first sales value), plaice and sole (€2.2 million combined), king scallop (€1.9 million), razor clam (€1.2 million), blonde ray (€571,000), and anglerfish (€479,000).

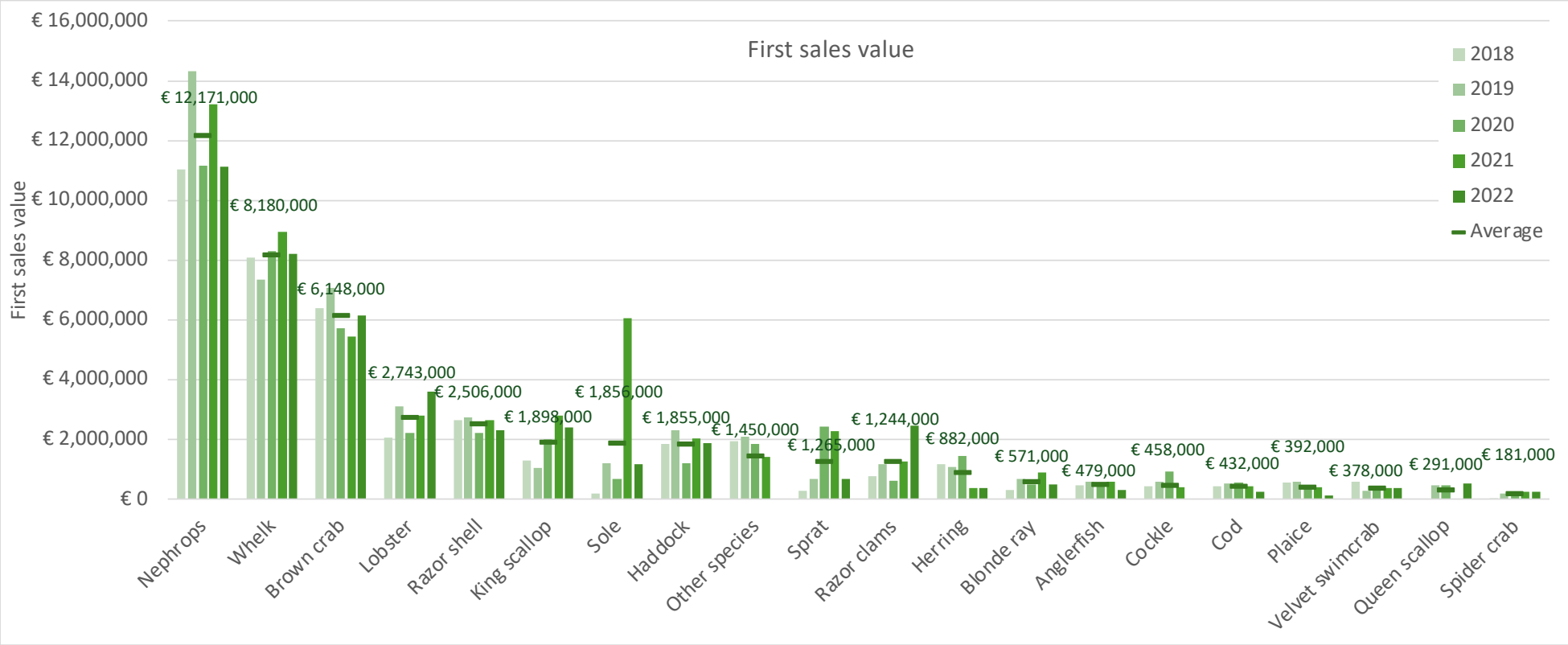

Plate 1 First sales value of landings (€) by Irish vessels taken from the Irish Sea (ICES Division 7a) from 2017 to 2022 by species (data source: SFPA, 2020; SFPA, 2023)

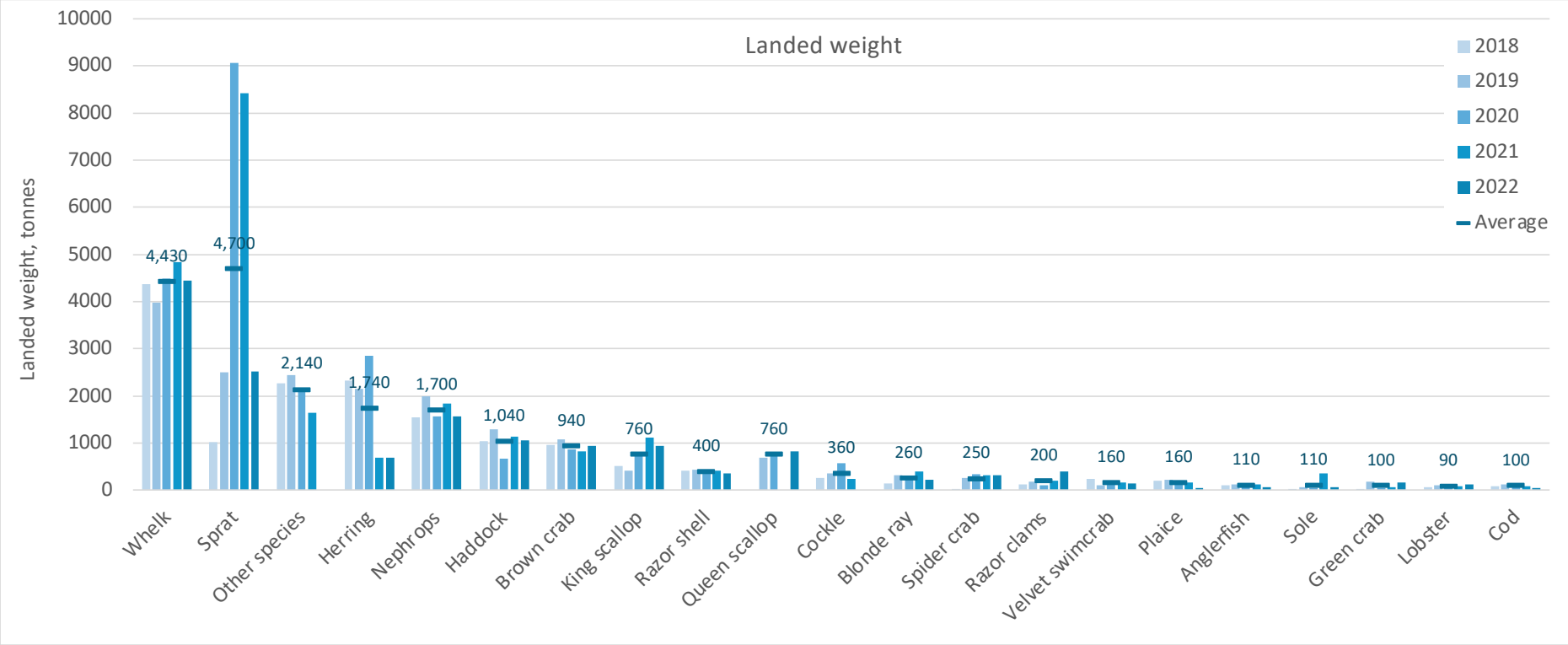

Plate 2 Weight of landings (tonnes) by Irish vessels taken from the Irish Sea (ICES Division 7a) from 2015 to 2019 by species (data source: SFPA, 2020; SFPA, 2023)

Whelk

59. Whelk landings from the Irsh Sea by Irish vessels are presented in **Plate 3** for the period 2015 to 2022. A year-on-year steady increase in weight of whelk landings is seen from 2015 to 2018, at which point landings fluctuate around an average of 4,430 tonnes from 2018 to 2022. Steep increases in price are notable from 2015 to 2019, followed by a slight drop from 2020 onwards. These fluctuations in value are due to a combination of increased quantities landed, and increased market prices, particularly noticeable from 2017 to 2018, as well as market reactions to the COVID-19 pandemic (particularly in 2020). The SFPA landings data for Irish vessels in the Irish Sea indicate a first sales value of just over €8.2 million in 2022.

60. The whelk grounds as shown in **Figure 7** and **Figure 8** are distinct and located in inshore areas along the south east coast of Ireland. It can therefore be deduced that these €8.2 million landings originate from the inshore grounds that stretch from Howth to Wexford.

61. Eighty two percent of the total whelk landed by Irish vessels from all areas is taken from the Irish Sea, highlighting the importance of this regional fishery (**Plate 4**). This is compared to 18% of landings coming from the West of Scotland (ICES division 6a), in a separate whelk fishery located along the north Donegal coast.

62. The inshore whelk fishery from Howth to Wexford, which partly overlaps the commercial fisheries local and regional study areas, is therefore nationally significant in weight and value.

Plate 3 Whelk landings by Irish vessels from the Irish Sea showing landed weight (top) and first sales value and price (bottom) (data source: SFPA, 2020; SFPA, 2023)

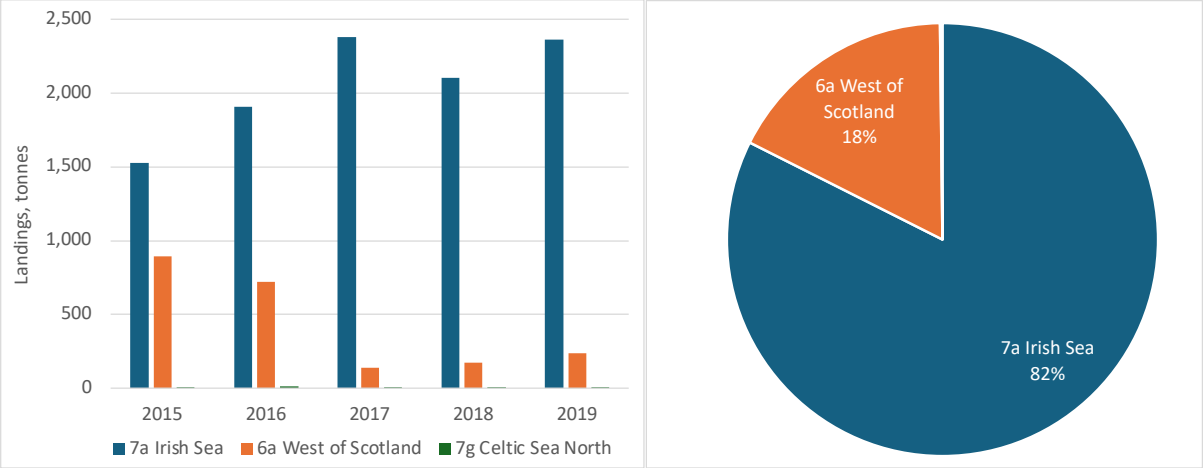

Plate 4 Total whelk landings (tonnes) by Irish vessels from all ICES divisions (left) and average annual proportion of landings of whelk by ICES division based on five-year data from 2015-2019 (right) (Source: SFPA, 2020: Note that data for West of Scotland and Celtic Sea North are not available from 2020 onwards)

King scallop

63. Landings of king scallop by Irish vessels from the Irish Sea are shown in **Plate 5**. The weight of landings have fluctuated in a cyclical nature as is expected for this species. Landed weight by Irish vessels has dropped steadily from 2015 to 2019, increased from 2020 to 2021, followed by a slight drop in 2022. The price has responded to the market availability, with increased prices in 2018 and 2019, and drops from 2020 onwards.

64. Landings by Irish vessels from all ICES divisions in 2019 are presented by weight in **Plate 6**, illustrating that 35% of king scallop landings were taken from the Irish Sea (7a), compared with 65% from other area 7 divisions, notably the Celtic Sea North (7g) and the Eastern English Channel (7d) (see **Figure 2** for map of ICES divisions). This indicates, that while significant value of king scallops are caught by the Irish fleet from the Irish Sea, the most important scallop fisheries are located outside this area, and further south.

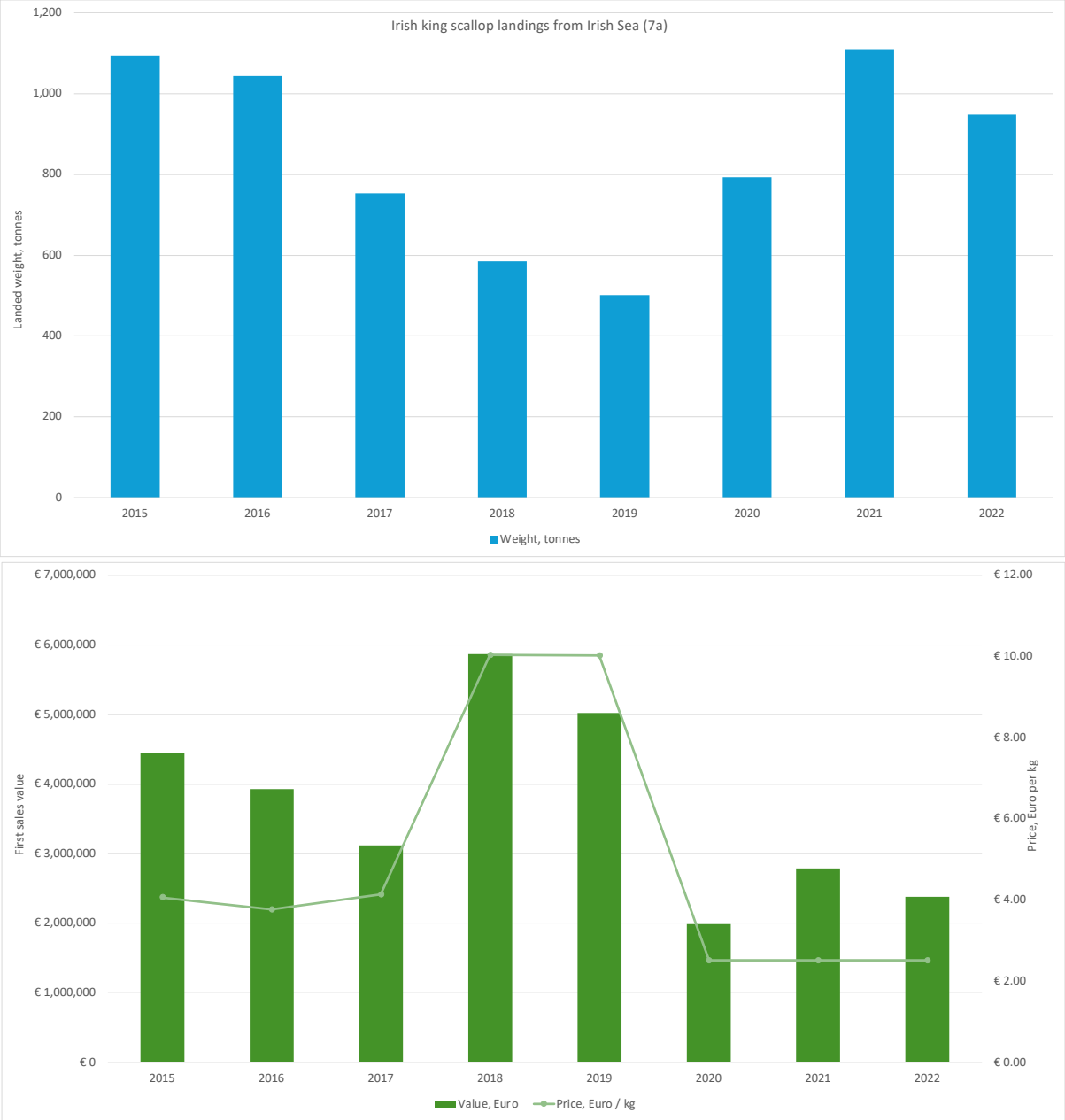

Plate 5 King scallop landings by Irish vessels from the Irish Sea showing landed weight (top) and first sales value and price (bottom) (data source: SFPA, 2020; SFPA, 2023)

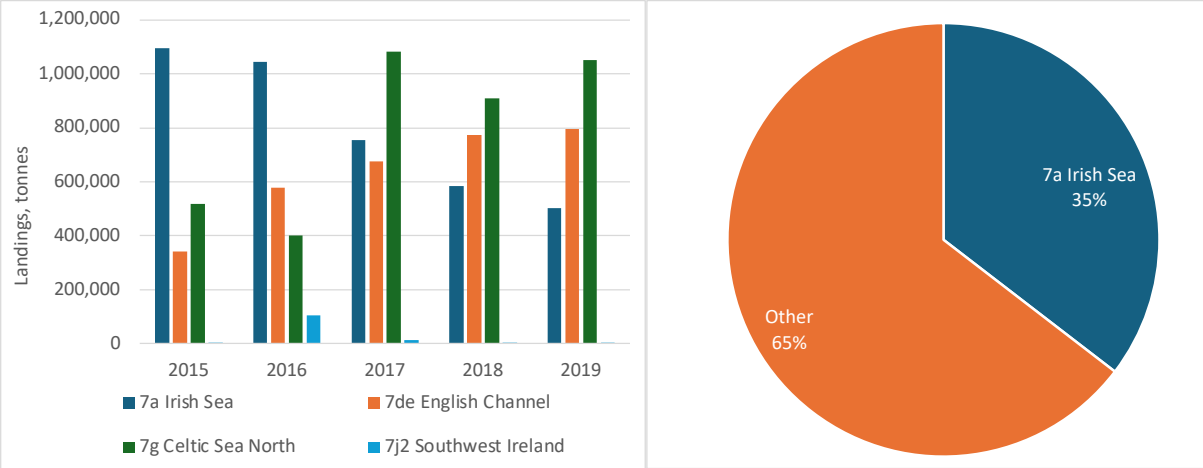

Plate 6 Total king scallop landings (tonnes) by Irish vessels from all ICES divisions (left) and average annual proportion of landings of whelk by ICES division based on five-year data from 2015-2019 (right) (Source: SFPA, 2020: Note that data for West of Scotland and Celtic Sea North are not available from 2020 onwards)

Other species

65. Other species show a similar proportion of landings from the Irish Sea in 2019, with approximately a quarter of sprat (22%), nephrops (24%) and herring (25%) landed by Irish vessels from the Irish Sea (**Plate 7**).

66. In 2019, 91% of whelk landings by Irish vessels were taken from the Irish Sea (**Plate 7**), compared with the average of 82% from 2015-2019, as depicted in **Plate 4**. Again this highlights the dependence of the Irish whelk fishery on the fishing grounds in the Irish Sea, especially in recent years.

67. Brown crab and lobster landings by Irish vessels show lower proportions from the Irish Sea, compared to elsewhere, with only 7% of brown crab and 17% of lobster taken from the Irish Sea in 2019.

68. While smaller quantities compared to other species, all landings of razor shell and razor clam fisheries by Irish vessels are from the Irish Sea. It is understood that these fisheries are not targeted within the commercial fisheries local study area as landings are not recorded from ICES rectangle 35E3 and 35E4 (see the next Section).

69. The haddock targeted fishery in the Irish Sea accounted for 30% of all Irish vessel haddock landings in 2019, with some landings recorded from the local and regional study areas.

70. The Irish fleet landed just under 2,000 tonnes of herring from the Irish Sea in 2019. It is understood that herring are not targeted across the local study area as landings are not recorded from ICES rectangle 35E3 and 35E4 (see the next Section).

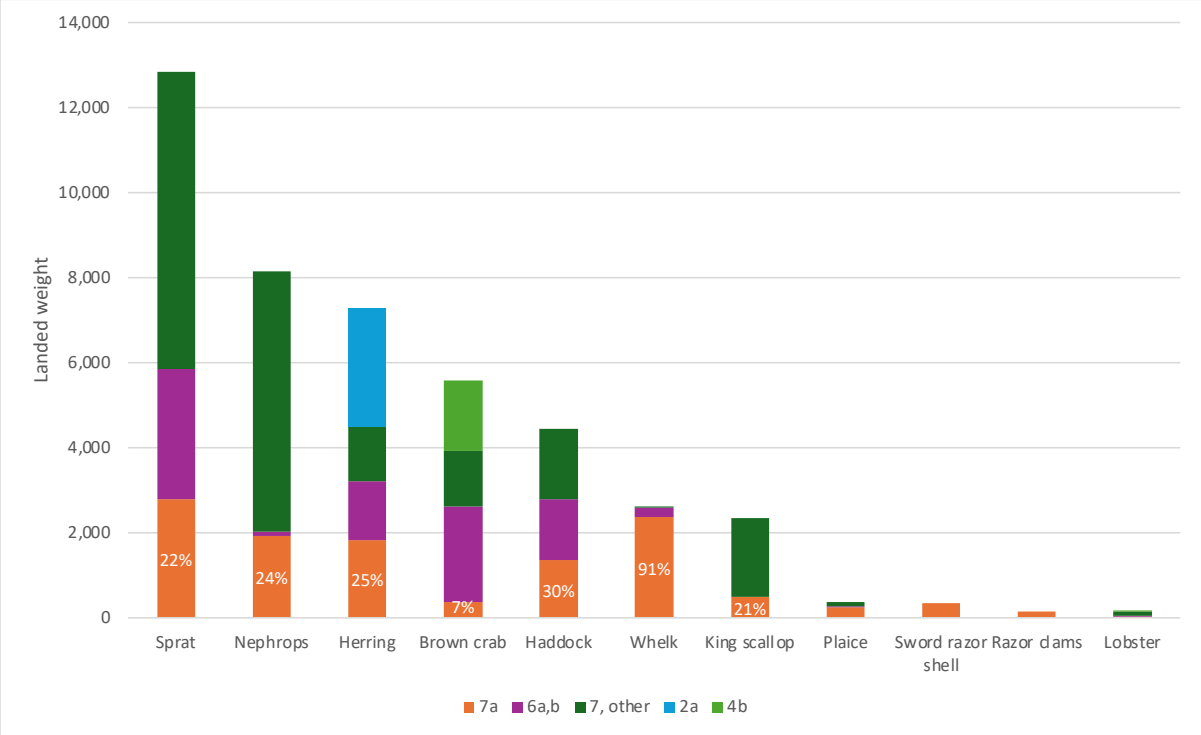

Plate 7 Total Irish vessel landings by ICES division for key species landed in 2019 (data source: SFPA, 2020)

3.4 Landings from the commercial fisheries local study area

3.4.1 Local study area

71. The dataset presented in this Section has been provided by SFPA in response to a data request and is therefore not publicly available. To ensure confidentiality the data has undergone a degree of suppression prior to release by the SFPA. The data suppression is not expected to affect key species that are landed by a sufficient number of vessels to allow amalgamation of at least three data points. Further details of data limitations and uncertainty are provided in **Section 5**. Overall the data presented is considered to have a medium-high uncertainty. Data is available for the period 2015-2019, and despite submission of data requests the SFPA is unable to provide landings by ICES rectangle for 2020 onwards.

72. Landings by Irish vessels from the commercial fisheries local study area (ICES rectangles 35E3 and 35E4) are presented for first sales value in **Plate 8**. and by landed weight in **Plate 9**. for the time period 2015 to 2019.

73. The statistics indicate that on average 350 tonnes of whelk, worth €600,000 in first sales value is landed by Irish vessels from 35E3 and 35E4. Based on industry consultation, this is understood to underestimate true levels of whelk landings.

74. Notable landings of plaice and sole are recorded in terms of value (€700,000) and weight (275 tonnes) from the local study area. This is expected to be mainly outside the 12 NM boundary in a beam trawl targeted fishery.

75. Other species of note include blonde ray (860 tonnes; €330,000 value) and king scallops (63 tonnes, €333,000 value), as well as mixed demersal species including nephrops, haddock, brill and cod.

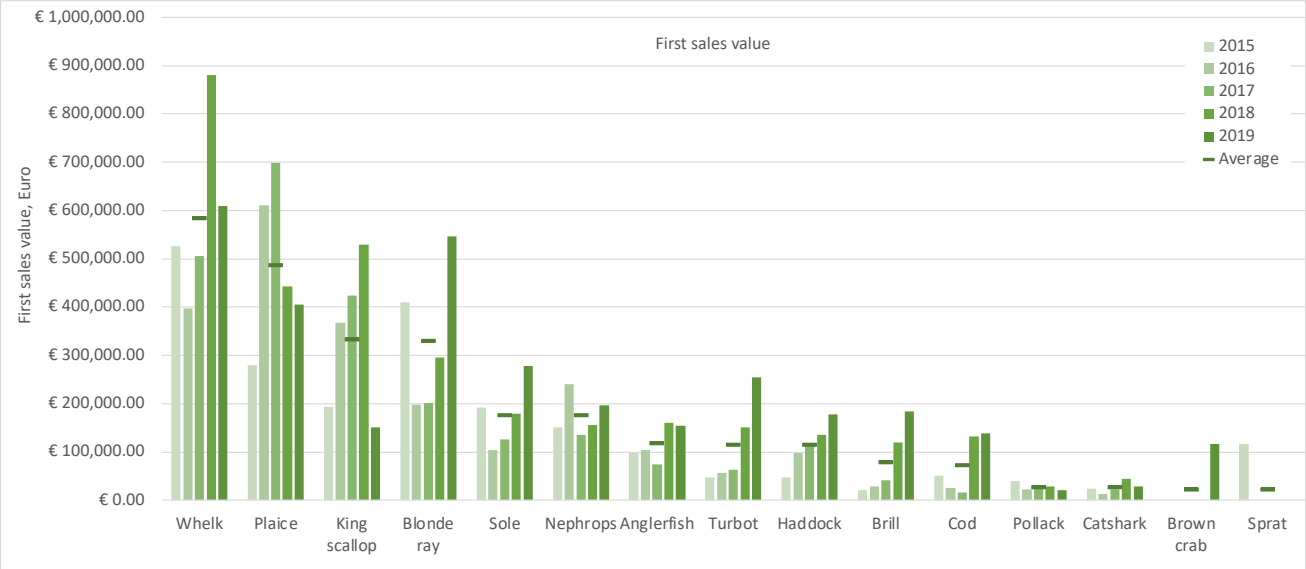

Plate 8 First sales value of landings (€) by Irish vessels taken from the commercial fisheries local study area (35E3 and 35E4) from 2015 to 2019 by species (data source: SFPA, 2020)

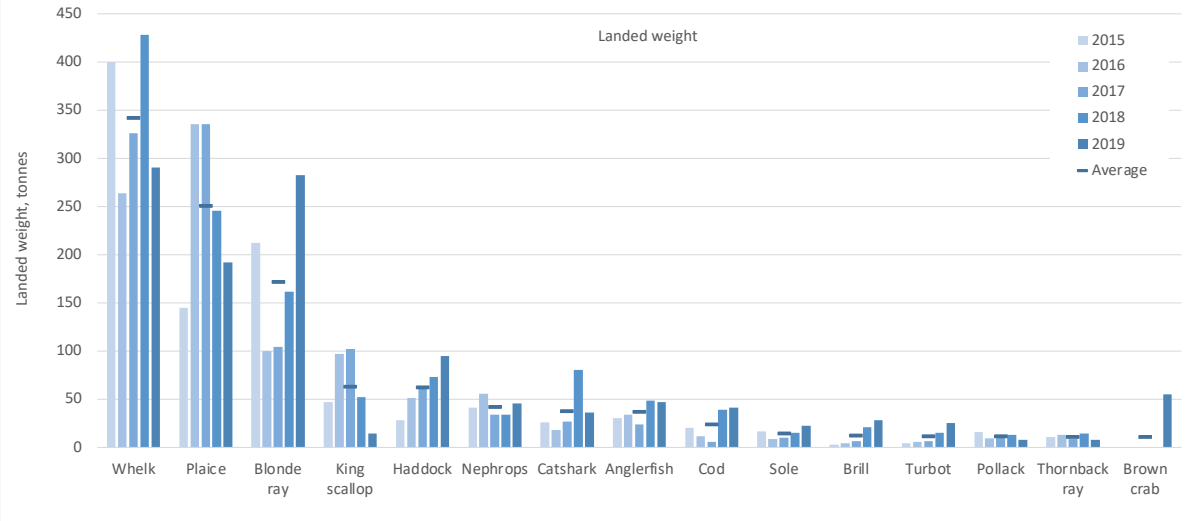

Plate 9 Weight of landings (tonnes) by Irish vessels taken from the commercial fisheries local study area (35E3 and 35E4) from 2015 to 2019 by species (data source: SFPA, 2020) [note that 656 tonnes of sprat landed in 2015 has been removed due to the scale of the graph]

76. Very little brown crab or lobster is represented within the dataset. It is speculated by the assessment team that this may be due to a disproportionate level of omission of landings by under 10 m vessels from the dataset compared to vessels >10 m. Although this cannot be corroborated as vessel length was not included as a category of the data. This speculation is also valid for whelk landings.

77. **Plate 10** presents landings made by Irish vessels from the Irish Sea by ICES rectangle and species. This allows a comparison of the importance of the commercial fisheries local study area (35E3 and 35E4) to other ICES rectangles in the Irish Sea, including the regional study area (34E3-E4, 35E3-E4 and 36E3-E4).

78. Sixteen percent of whelk landings by Irish vessels from the Irish Sea are from 35E4, making a total of 17% landed from the commercial fisheries local study area. The remaining 83% was landed from other ICES rectangles in the Irish Sea, which do not overlap with the CWP Project. The highest proportion is from ICES rectangles within the regional study area: 34E4 (37%), followed by 34E3 (17%), both of which are located south of the commercial fisheries local study area.

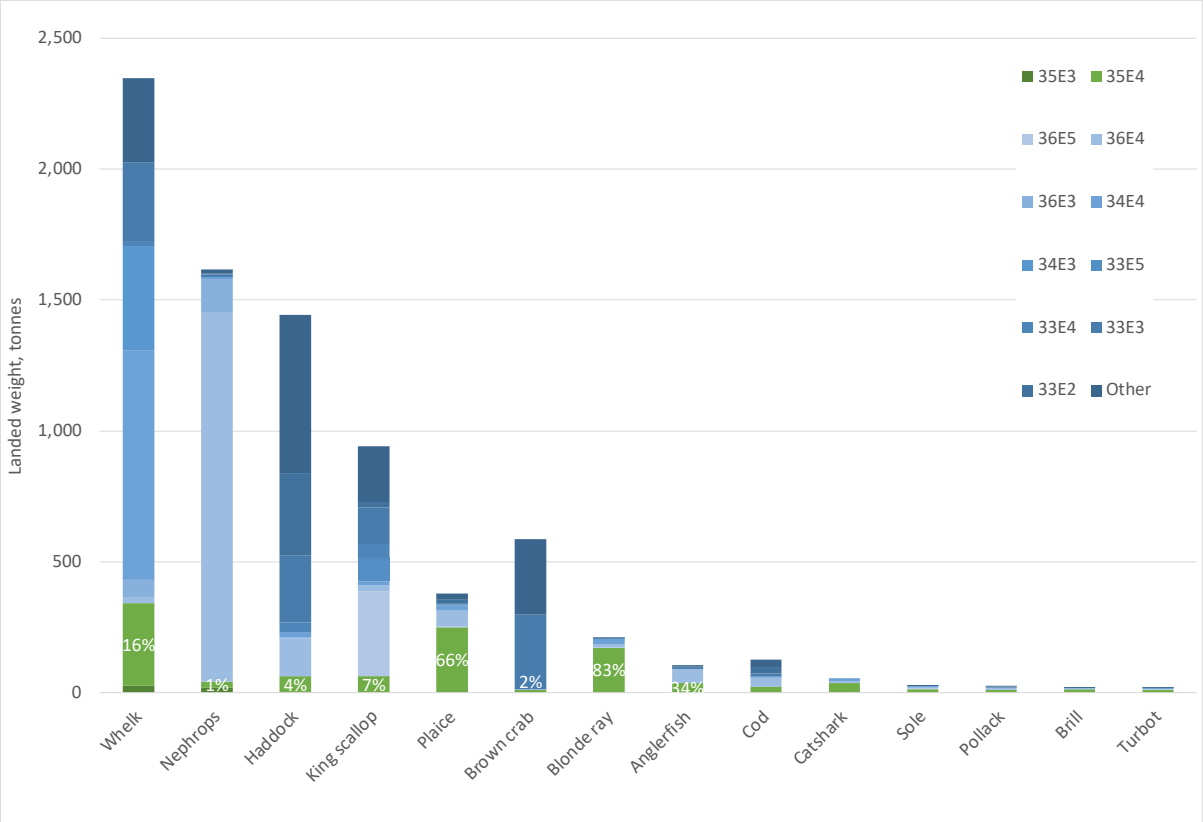

Plate 10 Average annual weight of landings (tonnes) by Irish vessels taken from the Irish Sea by ICES statistical rectangle in 2019 (greenbars represent the commercial fisheries local study area) (data source: SFPA, 2020)

79. A significant 83% of blonde ray is landed from the local study area, with the remaining 17% from elsewhere in the Irish Sea. Also notable is 66% of plaice landed from the local study area, highlighting the importance of demersal trawl fisheries in this area.

80. The distribution of whelk landings is further explored in **Plate 11** showing inter-annual variation from 2015 to 2019. The statistics indicate that in 2018, five vessels were recorded to land a combined 306 tonnes of whelk from ICES rectangle 35E4, worth €630,000 in first sales value.

81. **Plate 11** further corroborates the importance of ICES rectangle 34E4 and 34E3 (south of the local study area), that account for 63% of whelk landings based on a five-year average.

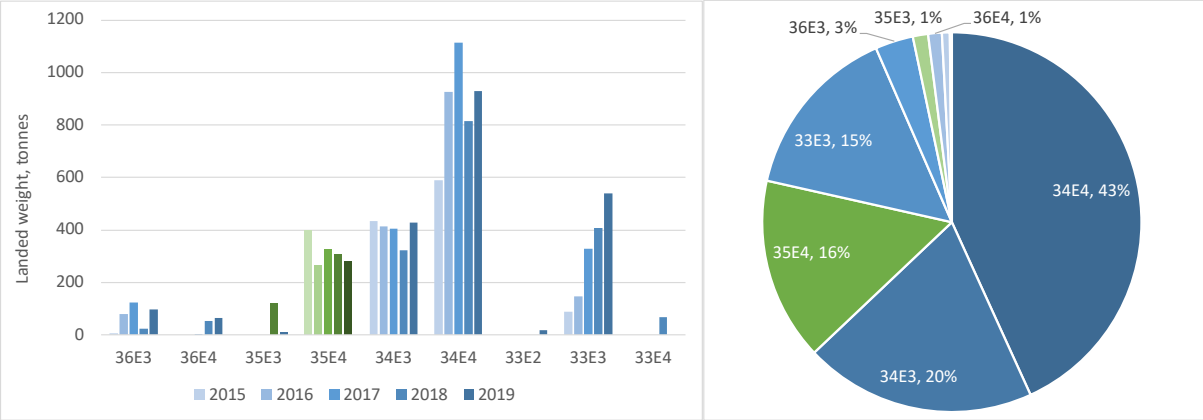

Plate 11 Whelk landings (tonnes) by Irish vessels taken from the Irish Sea by ICES statistical rectangle from 2015 to 2019 (left) and; proportion of whelk landings (tonnes) by ICES rectangle from 2015 to 2019 (right) (data source: SFPA, 2020)

3.4.2 Landings by port

82. Landings by Irish vessels from the Irish Sea are presented by species and port of landing in **Plate 12** by weight and **Plate 13** by first sales value. As described in **Section 3.12**, the key ports for species landed from the commercial fisheries local and regional study areas are (from north to south): Howth, Dún Laoghaire, Wicklow, Arklow and Kilmore Quay. The key species landed into these ports are as follows:

- Howth, nephrops, herring, king scallop, whelk, blonde ray, haddock and brown crab;
- Dún Laoghaire, whelk;
- Wicklow: whelk;
- Arklow: whelk; and
- Kilmore Quay: king scallop, brown crab and haddock.

83. Whelk landed from the Irish Sea by Irish registered vessels are not landed at any other ports in significant quantities. This demonstrates the importance of the whelk fishery to vessels landing at Howth, Dún Laoghaire, Wicklow and Arklow.

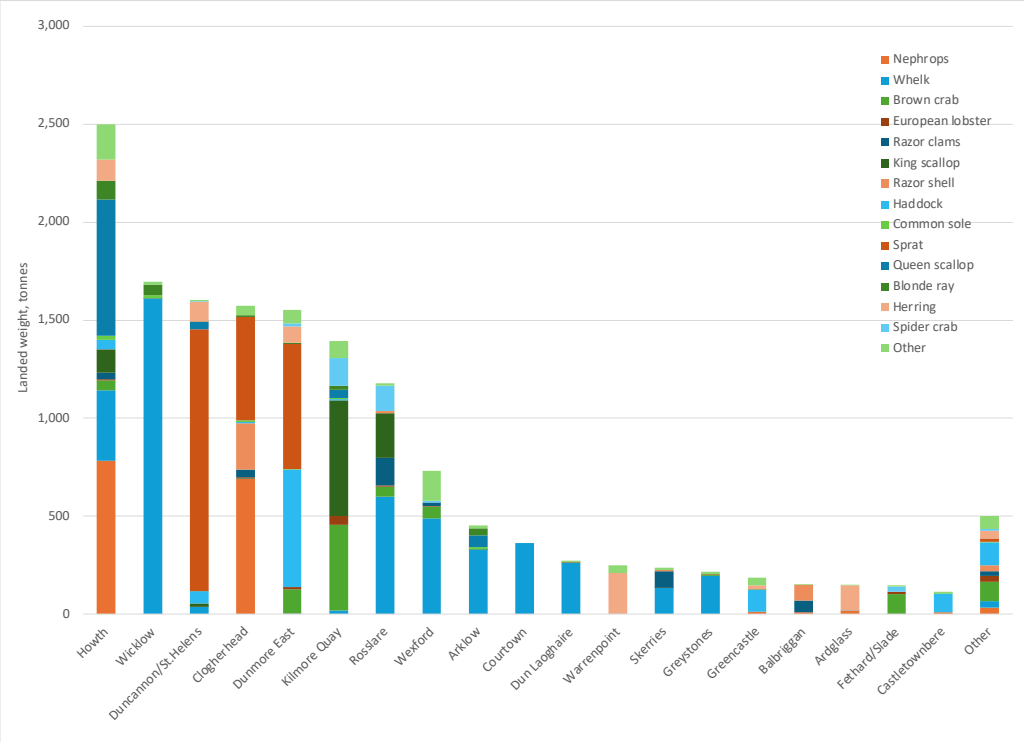

Plate 12 Irish vessel landings from the Irish Sea by port of landing and species in 2022 by weight (Source: SFPA, 2023)

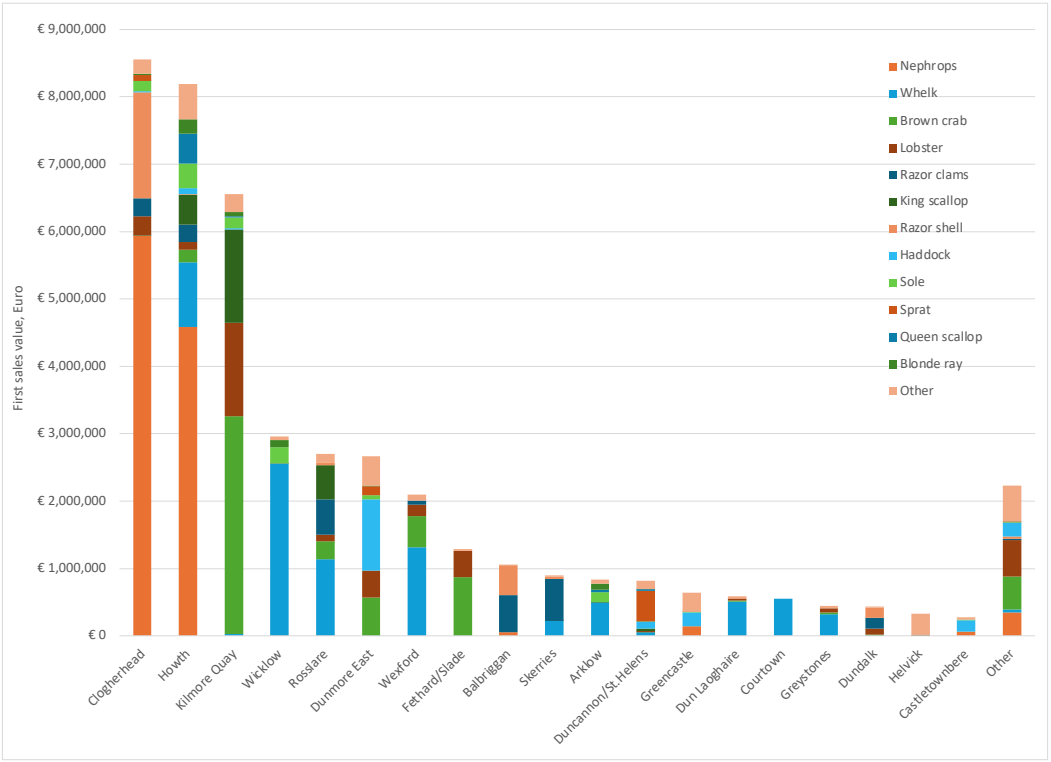

Plate 13 Irish vessel landings from the Irish Sea by port of landing and species in 2022 by first sales value (Source: SFPA, 2023)

84. Further detail on whelk landings by port is provided in **Plate 14** for landed weight of whelk per port from 2017 to 2022. Whelk are landed in highest quantities into Wicklow (average of 1,626 tonnes per annum), followed by Dun Laoghaire, Howth, Arklow and Wexford (all between 400-500 tonnes).

85. Landings data by port provided by SFPA is considered by the assessment team to underestimate the true landings into these ports. It is not known why significantly large portions of data are missing from the dataset.

86. As a comparison, the Marine Institute (2004) report on whelk fishery associated changes in southwest Irish Sea, noted whelk landings of approximately 5,500 tonnes into Wicklow, 1,000 tonnes into Dun Laoghaire and 750 tonnes into Arklow (Fahy et al., 2004).

87. The difference in landings between the Marine institute 2004 report (Fahy et al., 2004) and the data provided by SFPA (2020) is 3-fold for whelk landed into Wicklow and a 2-fold difference for Dún Laoghaire. It is postulated that data for the under 10 m vessels is missing from the SFPA (2020 and 2023) datasets.

88. Under 10 m vessels are not required to complete logbooks and therefore their landings figures are not routinely included in Central Statistics Office data.

89. This SFPA (2020) dataset for landings by port by Irish vessel from the Irish Sea is therefore assessed with medium-high uncertainty. This level of uncertainty is related to the level of data suppression within the dataset together with apparent lack of data for under 10 m vessels.

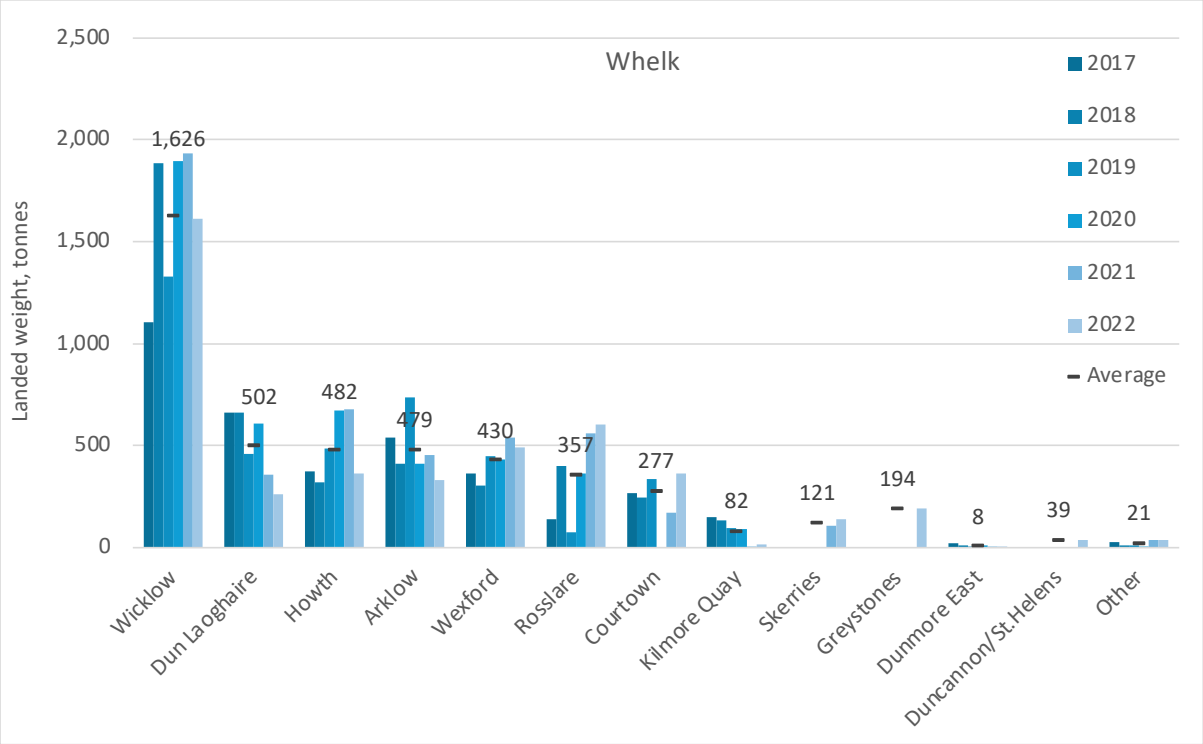

Plate 14 Landed weight of whelk by Irish vessels from the Irish Sea by port of landing from 2017 to 2022 (data source: SFPA, 2020; SFPA, 2023)

3.5 Irish fisheries activity assessment STECF data

90. Data was sourced from the STECF (2020) database for landings of whelk by Irish vessels landing into Irish ports indicating total annual landed weight (**Plate 15**) and first sales value (**Plate 16**). This data is not available for 2020 onwards.

91. Landing of whelk have increased dramatically since 2014, peaking in 2016 at over 6,000 tonnes. The total landed whelk has remained fairly consistent across the past five years (2015 to 2019) at an average weight of approximately 5,300 tonnes landed annually.

92. The overall price of whelk has increased, leading to a growth in total first sales value year on year, peaking at €10.5 million in 2019, equating to €2,155 per tonne of landed whelk.

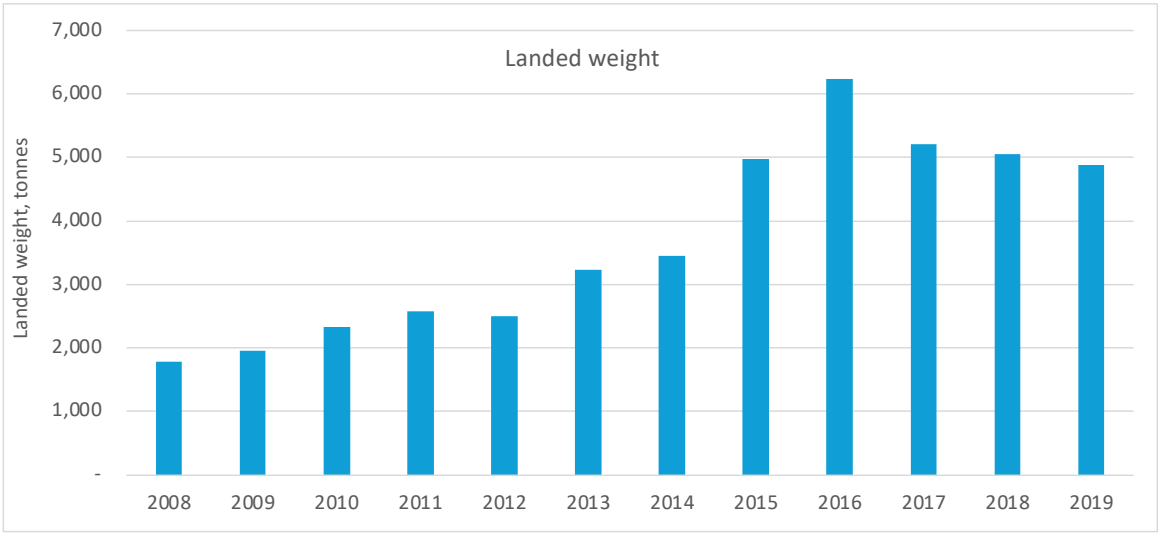

Plate 15 Total annual landings of whelk by Irish vessels landed into Ireland (data source: STECF, 2020)

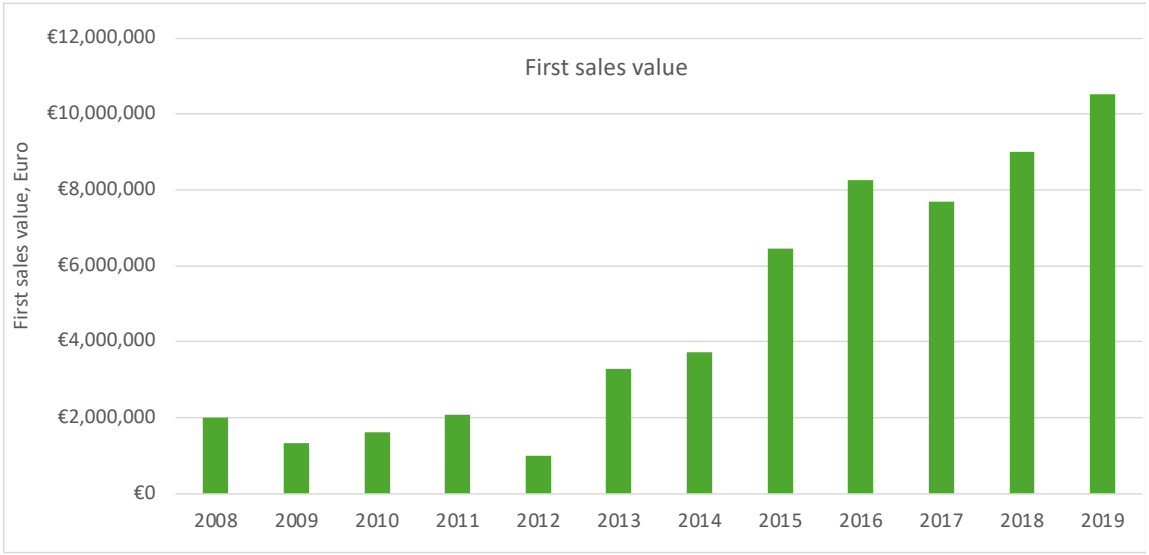

Plate 16 Total annual first sales value of whelk by Irish vessels landed into Ireland (data source: STECF, 2020)

93. Landed weight of whelk are presented for Irish vessels by vessel length category in **Plate 17**. It appears data for under 10 m vessels has been recorded within this dataset since 2013. The large majority of landings are by vessels 12 m and under (87%).

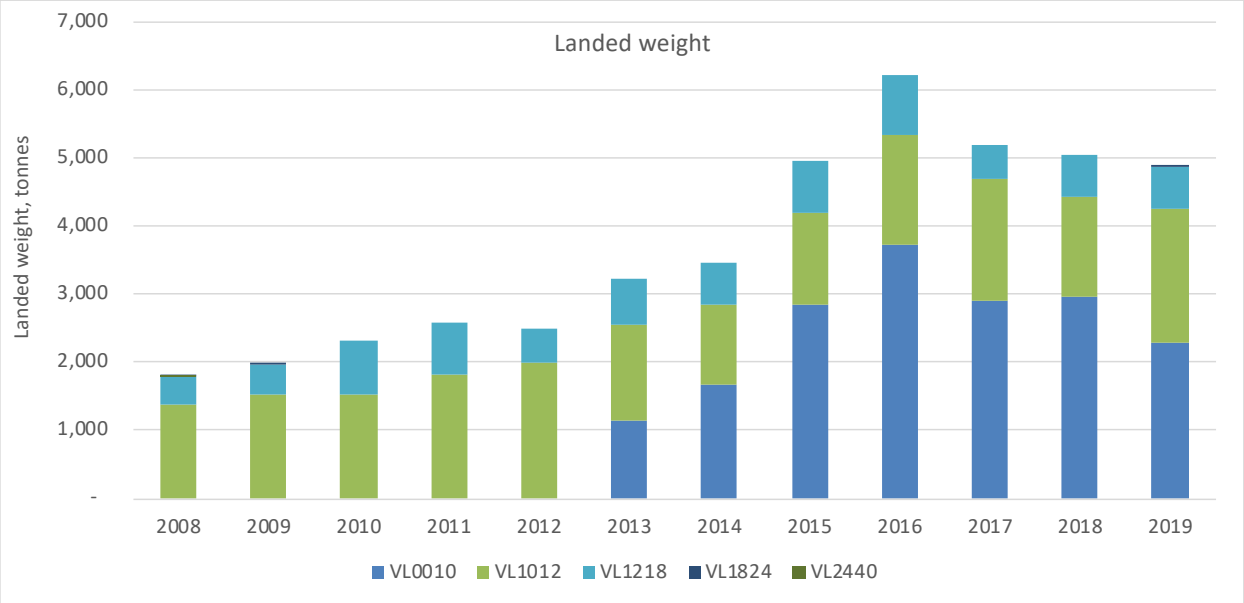

Plate 17 Total annual landings of whelk by Irish vessels landed into Ireland indicating vessel length (VL) category (data source: STECF, 2020)

3.6 Irish fisheries activity assessment other data

3.6.1 BIM Business of Seafood Reports

94. The BIM publishes an annual report on Ireland's seafood sector, including landings, imports and exports data. Data specific to whelk from BIM reports across 2015 2022 are presented in this Section, noting that data is not available from the 2021 report for whelk (as only the top ten species were reported in 2021).

95. Landings of whelk by Irish vessels >10 m in length are shown in **Plate 18**, indicating a peak of landings in 2016 of 6,300 tonnes with a first sales value of €9 million.

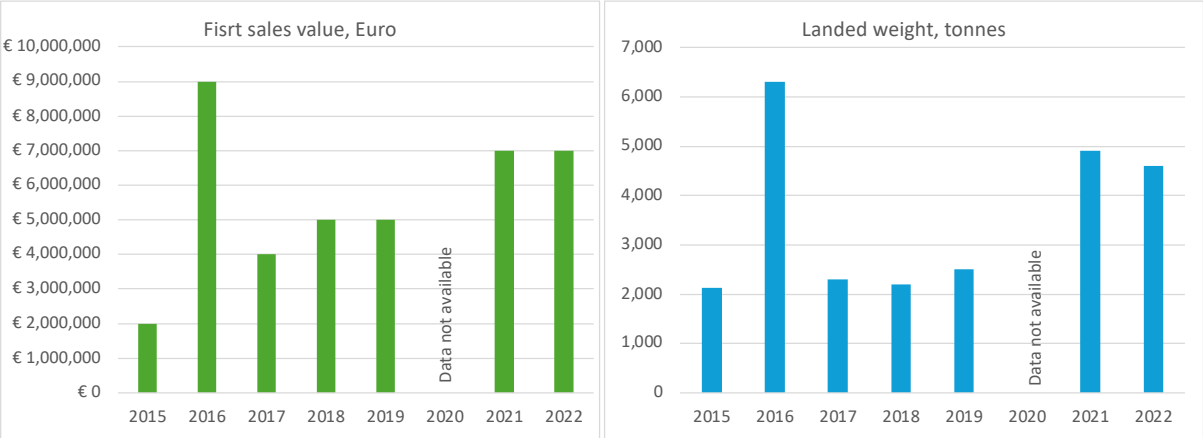

Plate 18 Landings of whelk by >10m domestic Irish vessels from 2015 to 2022 (data source: BIM, 2016; BIM, 2017; BIM, 2018; BIM, 2019; BIM, 2020)

96. The key market for whelk exported from Ireland is China (the destination for €11.6 million of Irish whelk exports in 2019), as well as South Korea and other European markets, including France and Spain.

3.6.2 Shellfish Stocks and Fisheries Review Reports

97. The Shellfish Stocks and Fisheries Review produced annually by Marine Institute and BIM (2022) provides long term data (2004-2022) on estimates of total annual landings of crustacean and shellfish into Ireland based on logbook declarations, sales notes for vessels under 10 m, gatherer dockets and co-op data. The total estimated landed weight of whelk by Irish vessels from 2004 to 2019 is presented in **Plate 19**, with first sales value, based on a 2019 unit price of €2.01 per kg (for 2004-2019) and a 2022 unit price of €1.57 per kg (for 2020-2022), presented in **Plate 20**.

98. Landings of whelk fluctuated between 2,000-4,000 tonnes from 2004 to 2014, with significant growth in 2015. Since 2015 the total estimated annual landing of whelk by Irish vessels has fluctuated around 5,000 tonnes, with a timeseries peak of just under 6,000 tonnes in 2022, corresponding to a first sales value of €9.3 million.

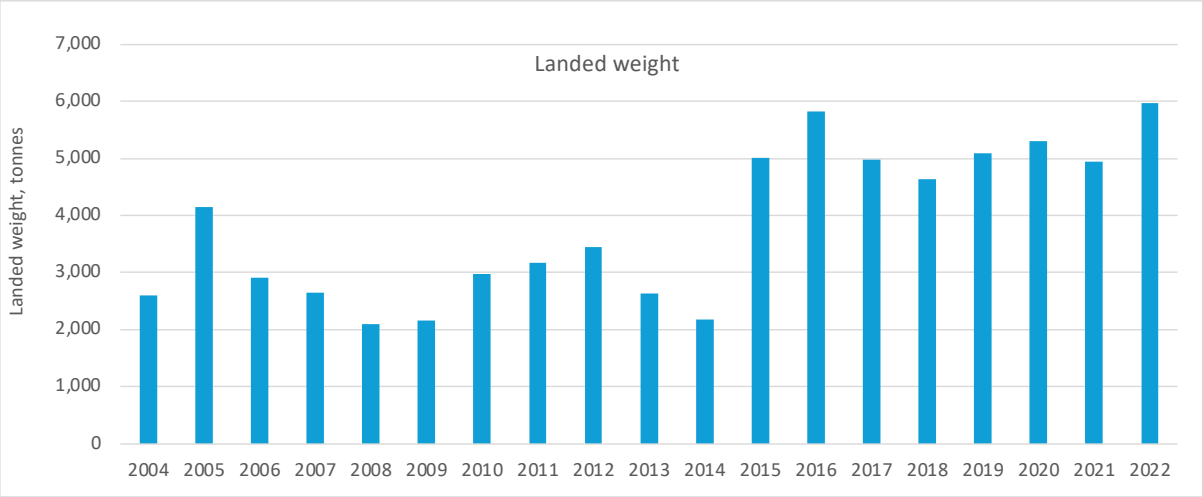

Plate 19 Total annual landings of whelk based on logbook declarations, sales notes for vessels under 10 m, gatherer dockets and co-op data (data source: Marine Institute and BIM, 2022)

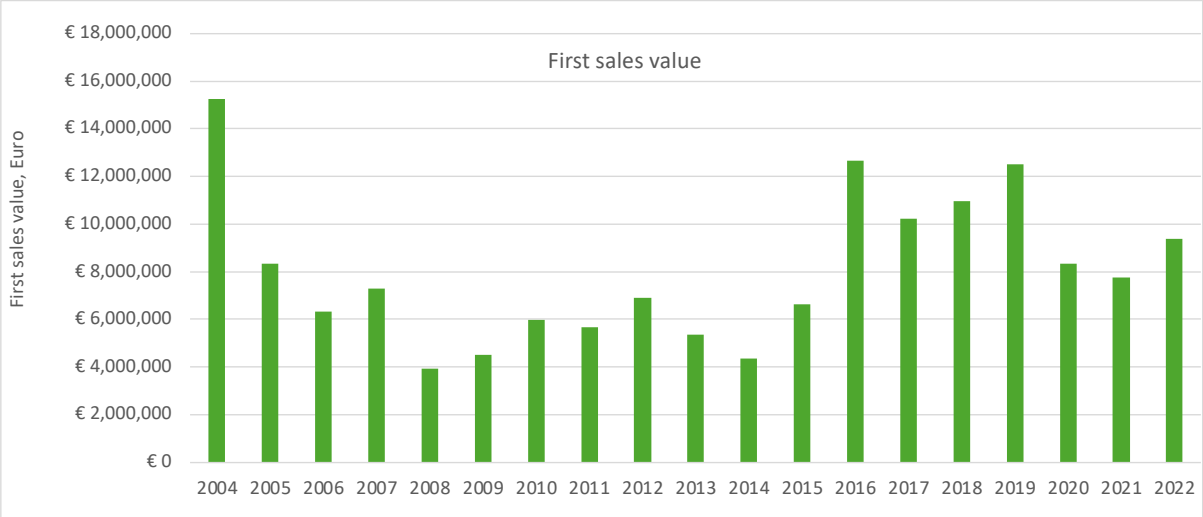

Plate 20 Total first sales value of annual landings of whelk based on logbook declarations, sales notes for vessels under 10 m, gatherer dockets and co-op data (data source: Marine Institute and BIM, 2022)

3.7 UK fisheries activity assessment

99. Landings data for UK registered vessels is available from the MMO providing data on ICES rectangle, gear, species, weight and value. Due to the Buyers and Sellers Registration legislation introduced in 2007, this data includes landings by all vessel size categories and is therefore considered to be accurate with a high degree of certainty.

100. Landings by UK vessels from the commercial fisheries local study area (35E3 and 35E4) are presented in **Plate 21** and **Plate 22**, indicating landings of queen scallop, king scallop and haddock.

101. Landings of queen scallop peaked in 2020 with 1,800 tonnes relating to a first sales value of just under £800,000. Statistics indicate that 2019 and 2020 queen scallop landings were taken from ICES rectangle 35E4 by UK Scottish registered vessels, over 10 m in length, using dredge. The landings of queen scallop fluctuate greatly over the five-year period analysed, which corroborates knowledge on the operating patterns of vessels targeting this species.

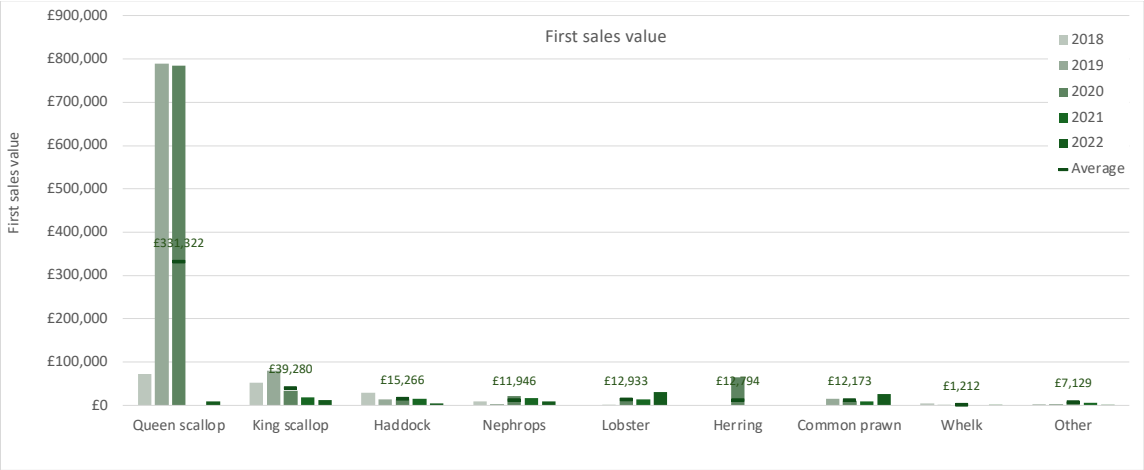

Plate 21 First sales value (£) of landings by UK vessel from 35E3 and 35E4 from 2018 to 2022 (data source: MMO, 2023)

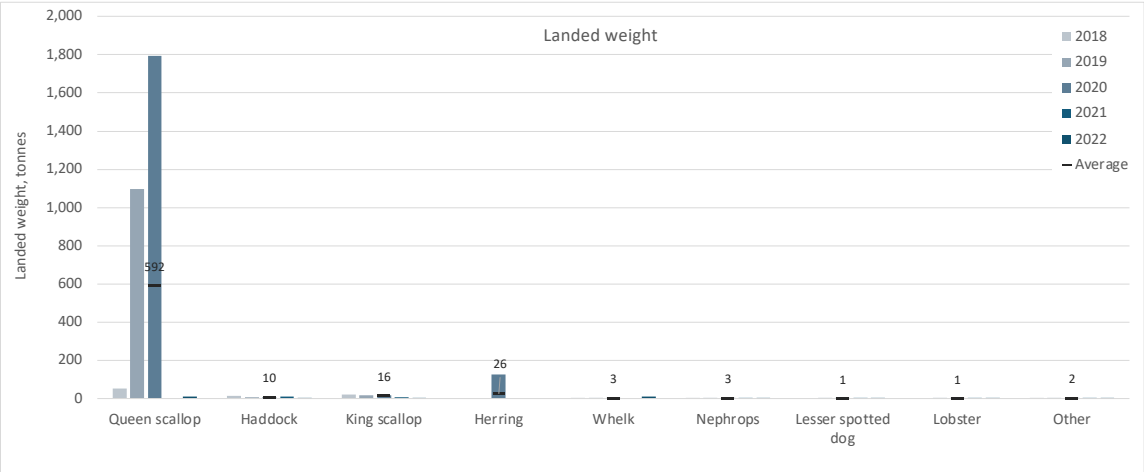

Plate 22 Weight (tonnes) of landings by UK vessel from 35E3 and 35E4 from 2015 to 2019 (data source: MMO, 2023)

3.8 Other EU Member States activity assessment

102. Landings by EU Member States from the commercial fisheries local study area (35E3 and 35E4) is available from 2012-2016 as part of the Data Collection Framework (DCF, 2019). **Plate 23** presents landings by species and nationality and **Plate 24** presents landings by gear type and nationality. Irish landings are included within these figures, but are considered to be highly uncertain due to the omission of under 10 m vessels within these the statistics submitted for Ireland. As part of this dataset, data post 2016 is no longer available by ICES rectangle and can therefore not be analysed.

103. Landings of queen scallop and king scallop by dredge and haddock by demersal trawl are reported for Northern Irish registered vessels. Landings of queen scallop by dredge are reported for Scottish vessels. Landings of plaice and blonde ray are reported for Belgium vessels. Negligible quantities are reported for all other nationalities.

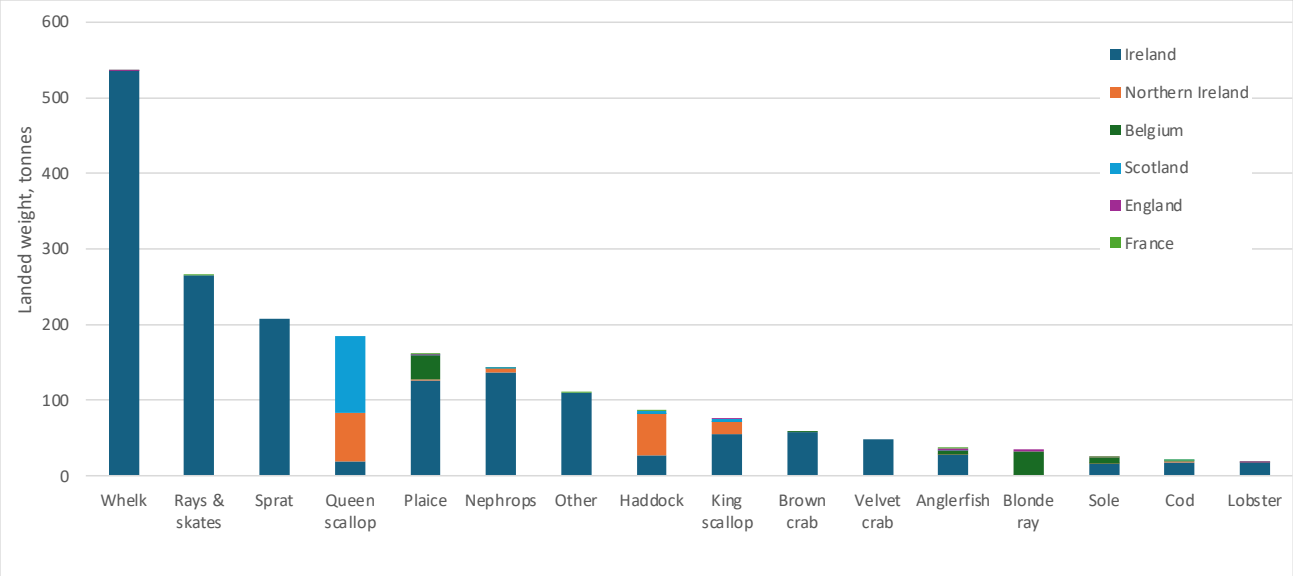

Plate 23 Average annual weight (tonnes) of landings by EU vessels (including UK) from 35E3 and 35E4, indicating species and nationality, based on five-year period from 2012-2016 (data source: EU DCF, 2019)

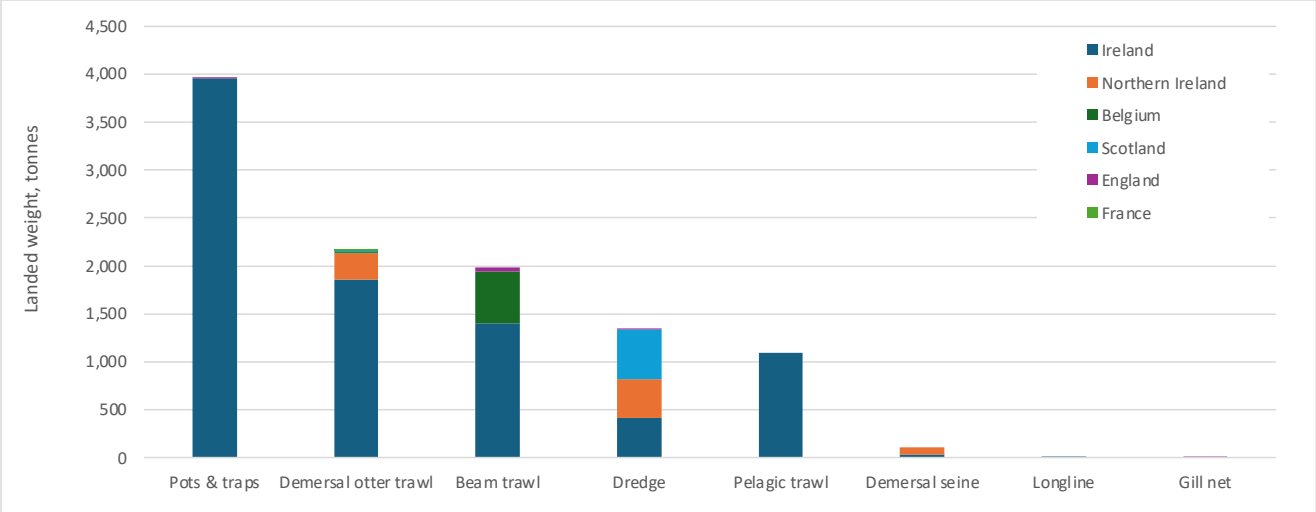

Plate 24 Average annual weight (tonnes) of landings by EU vessels (including UK) from 35E3 and 35E4, indicating gear type and nationality, based on five-year period from 2012-2016 (data source: EU DCF, 2019)

3.9 Species accounts

104. The data and landing statistics presented in **Sections 3.1.1** to **3.8** profile the species commercially caught across the local and regional study areas and wider Irish Sea. These key species are discussed in this Section in terms of biological characteristics, seasonal trends and relevant fisheries management.

3.9.1 Shellfish

Whelk

105. Common whelk (Irish name: Cuachma) *Buccinum undatum* is a gastropod mollusc that inhabits mixed sediment from the low water mark down to 1,200 m, being most common in 0-50 m water depths. Whelk reach reproductive maturity at different sizes depending on their geographical location and environmental conditions, with the size of maturity for Irish sea populations considered to be 70-85 mm shell length (Marine Institute, 2017). Whelks grow to 150 mm and live for up to 15 years, reaching maturity at 2-3 years. European populations are understood to breed from autumn to winter (Kideys et al., 1993). Eggs are fertilised internally and laid on hard benthic substrata, with juveniles emerging after approximately 3-5 months. The life cycle therefore has no pelagic phase, leading to limited dispersal between populations. Whelk distributed across the south Irish Sea is thought to be comprised of a number of populations with limited connectivity (Marine Institute, 2017).

106. Whelk are caught using plastic pots, which may be deployed by the same potting vessels that target crab and lobster. Whelk are cleaned and exported to the far east and Europe in a variety of product types, including cooked whole in-shell or meat only, in fresh or frozen forms. The fishery is very dependent on market conditions and prices. Whelk landed by Irish vessels are processed in Ireland at three main processing companies.

107. No Total Allowable Catch (TAC) or quotas are in place for whelk. A size limit of 50 mm length was introduced in 1994 (current regulation is S.I. No. 237/2006), which is based on the specified dimension of maximum shell width of 25 mm, which is approximately half the total length. This compares to an EU Minimum Conservation Reference Size (MCRS) of 45 mm for whelk. Based on size at maturity (70-85 mm) being higher than MCRS (50 mm), there is a high chance of juveniles being removed before they can contribute to the spawning stock, which leads to potential for increased risk of recruitment overfishing (Skerritt and Durrance, 2018).

108. The whelk stock status in the Irish Sea is considered to be generally depleted or locally depleted due to high fishing mortality and a MCRS below the size at maturity (Marine Institute, 2017).

109. Increasing demand for whelks, particularly from overseas markets such as Korea, Taiwan and Singapore has been a significant driver of the increased landings in recent years. In addition to markets in the Far East, whelks are still exported to the traditional markets of France, Spain and Italy. Some are exported live, particularly to France around Christmas.

King scallop

110. King scallop (Irish name: Muirin Mór) *Pecten maximus* are most common in water depths of 20 to 70 m, in areas of clean firm sand and fine gravel exposed to water currents, which provide good feeding conditions for this bivalve mollusc. Adults are largely sedentary and

usually found recessed in sediment. King scallop live to 10-15 years and reach reproductive maturity between 3-5 years, at a size of 60 mm; the average maximum size is 160 mm. Recruitment is usually unpredictable as it depends not only on successful spawning and larval production but also on retention of larvae or transport of larvae into areas suitable for settlement. Larvae are pelagic with settlement in a particular area somewhat unpredictable leading to an unstable age structure within stocks. As a consequence of this, scallop beds frequently show a regional separation of year classes and spatial variability in age structure.

111. There are no TACs or quotas in place with this species, therefore this species is primarily managed by a MCRS of 100 mm (Council Regulation 850/98), 110 mm (in the south Irish Sea) or 120 mm (used locally by agreement), and a cap on the level of effort (kWdays) that vessels ≥15 m can utilise in ICES area 7 (including 7a) by the Western Waters agreement (EC 1415/2004). In the Irish Sea, king scallop beds are mostly located outside the 12 NM fishery limit (Marine Institute, 2017). The limited seasonality data available indicates the majority of landings of king scallop are taken during winter and spring months (MMO, 2020).

Queen scallop

112. Queen scallop (Irish name: Cluaisín) *Aequipecten opercularis* is found down to depths of 100 m, on sand or gravel habitats and occur in high densities. It is fished commercially around Ireland and the UK, with particular important commercial grounds around the Isle of Man. It can grow up to 90 mm in shell height and the size of maturity is between 22-45 mm.

113. Queen scallop differ from king scallop in that they are smaller, and both shells (valves) are curved (convex), whereas for the king scallop the lower valve on which it lies is deeply convex and the upper valve is almost flat (Carter, 2008).

114. The Marine Institute (2017) shellfish review notes that biomass, landings and catch per unit effort of queen scallop in the north Irish Sea are all declining. Recorded strong recruitment years from 2010-2013 led to increased landings and effort. Overall, the stock is considered depleted.

115. The EU-set MCRS of 40 mm shell height for queen scallop currently applies to the Irish Sea, while a 55 mm size is in force in Isle of Man territorial waters, The difference in MCRS is likely to have been informed by stock assessments undertaken for queen scallop in Manx waters; furthermore, it is generally considered uneconomic to process queen scallop less than 55 mm in shell length (Beukers-Stewart and Beukers-Stewart, 2009).

116. Queen scallops are typically targeted across the regional study area from December to the end of February (based on MMO (2020) monthly landings statistics).

117. MMO landing statistics for UK vessels, indicate that 1,097 tonnes of queen scallop were landed from ICES rectangle 35E4 in 2019, compared to 53 tonnes in 2018.

Brown crab

118. Brown crab (Irish name: Portán Dearg) *Cancer pagurus* is a long-lived, large decapod crustacean. Brown crab are very productive animals, and each female can hatch between 1 and 4 million eggs. They are broadcast spawners, with a 1-6 month larvae phase. Post larvae are known to settle inshore and juvenile crabs are more common in shallow waters. Adult female brown crabs undertake extensive migrations, which may be associated with their reproductive cycle. Brown crab is found across a wide range of habitat types, ranging from rocky reefs, rock and gravel to soft mud and sand and are typically found between 6 m and 80 m, with larger crab occurring offshore. Commercial size classes moult annually, mostly during summer months, with moult frequency declining with size.

119. Brown crab are long lived, with a maximum age of 21-50 years and maximum size of 270 mm. Maturity is reached at a length of 110-120 mm and an age of 4-6 years.

120. Brown crab are caught by pots and have no TACs or quotas in place, nor is there regulation of fishing effort (such as pot limits). Primary management is by the technical measure of a MCRS of 140 mm carapace width (S.I. No.26/2019). The spawning potential of brown crab is considered well protected by this MCRS (Marine Institute, 2017). This baited pot fishery occurs all year, but mainly from March to November.

Lobster

121. European lobster (Irish name: Gliomach) *Homarus gammarus* (hereafter referred to as lobster) is a long-lived decapod crustacean. Lobster breed once per year in the summer and newly berried females begin to appear from September to December. Lobsters do not undertake any significant migrations and juveniles in the first three to four years of life may be particularly sedentary. From hatching it takes approximately five years for a lobster to recruit to the fishery. Lobsters typically inhabit rocky reef and rough ground, sheltering in crevices between rocks and boulders. The availability of suitable habitat is considered to influence the carrying capacity and size structure of lobster populations (Seitz et al., 2014).

122. Lobsters are caught by pots and there are no TACs or quotas in place, nor is there regulation of fishing effort (such as pot limits). Primary management is through a series of technical measures including an EU wide MCRS of carapace length of 87 mm (Council Regulation 850/98) and Irish national legislation stipulating a maximum landing size of 127 mm and ban on landing V-notched lobsters, or those with mutilated tails (S.I. No. 591/2014). Due to the inshore location of lobster they are predominantly targeted along the Irish coast, typically by vessels <12 m in length. The fishery takes place all year, peaking from late March to early October. Total activity across Ireland was estimated in 2013 to be 765 vessels, fishing 214,000 pots (Marine Institute, 2017). Although this pot fishery is targeted for lobster, significant bycatch of brown crab and other crab species occurs. Particularly as lobster becomes less abundant and brown crab more abundant in increasing depths.

123. The catch is sold live to export and domestic markets, with the majority of the catch exported through France.

Mussel

124. Blue mussel (Irish name: Diúilicín) *Mytilus edulis* is a sessile bivalve attached to the substratum by a byssus. Mussels can withstand wide variation in salinity, desiccation, temperature and oxygen concentration, resulting in the ability to occupy a large variety of microhabitats. Mussels can be found on any substratum providing a secure anchorage such as rocks, stones, gravel, shingle, dead shells, and even mud and sand. In soft bottom areas the mussels form stabilised mussel beds of interconnected mussels and dead shells. Mussels live to 5 years and recruit to the fishery age 0. Spawning occurs in early summer, with a pelagic larval dispersal phase (Marine Institute, 2017). Settlement of seed varies annually.

125. The mussel fishery targets seed, which are re-laid for on growing of bottom cultured mussel in aquaculture licence areas. The mussel beds targeted by Irish vessels are considered ephemeral, and therefore harvest rates can by up to 100% of a mussel bed, as seed is not required to be maintained for reproductive capacity (Marine Institute, 2017). An ephemeral mussel bed occurs when mussel seed settles, but after a short period of time, is dispersed due to hydrographic or storm conditions, and therefore the aim of the fishery is to harvest the seed before it is lost.

126. A fishing vessel requires authorisation to harvest mussel seed and a quota is allocated on an individual vessel basis. Vessels are typically over 18 m in length, using dredges to harvest the mussel seed during autumn months for onward growing in specified aquaculture licenced areas.

Nephrops

127. Nephrops (Irish name: Cloicheán Bhá Bhaile Átha Cliath) *Nephrops norvegicus* (also known as Dublin Bay prawn, prawn, langoustine or Norway lobster, hereon referred to as nephrops) are limited to muddy habitats. Nephrops live to approximately 10 years and recruit to the fishery age 2. They are non-migratory, with larvae hatching from May to July (Marine Institute, 2017).

128. Nephrops are found in water depths of 20 to 800 m and create burrows in the muddy habitat in which it resides. These burrows may be up to 10 cm in diameter, over a metre long and penetrate the sediment to a depth of 20-30 cm. Adult nephrops can grow as large as 24 cm, but generally adult nephrops range between 10-20 cm. The MCRS in the Irish Sea is 20 mm carapace length, compared to 25 mm elsewhere.

129. Stock assessments in the Irish Sea are based on two separate Functional Units (FUs). The commercial fisheries regional study area lies across part of the Irish Sea West FU15. Ireland is typically allocated approximately 37% of the nephrops EU TAC for the ICES Division 7; there are no restrictions in terms of which FUs in area 7 that this quota can be taken from. The Irish Sea fishery is targeted by single, twin or quad rigged demersal trawls, all year round, with some local trawl and pot fisheries inside 6 NM.

130. The majority of Irish landings are from the Celtic Sea FUs, although there is a well-established targeted fishery in the west Irish Sea. There are negligible creel fisheries targeting nephrops in the Irish Sea, with the landings almost exclusively taken by demersal otter trawls operating as a highly targeted fishery. Irish vessels (>12 m) fishing nephrops in the Irish Sea are required to use one of four highly selective gears and a cod end mesh size >80 mm (S.I. No. 510 of 2016) (Marine Institute, 2020).

Razor shell

131. Razor shell (Irish name: Scian Mhara Chuar) *Ensis ensis, E. magnus* and *E. siliqua* (also known as sword razor shell) are bivalve molluscs that live in vertical burrows in fine sand and muddy habitats, from extreme low water down to 60 m depth.

132. The fishery operates in water depths of 4-14 m and is limited in depth due to the fishing method which uses hydraulically pressurised water to fluidise sediments in front of the hydraulic dredge (Marine Institute and BIM, 2020). The fishery therefore occurs in coastal shallow sub-tidal waters.

133. The fishery is managed by a weekly vessel TAC, a minimum landing size (125 mm), a prohibition of landing on Sundays and a voluntary closed season for the month of June (during spawning).

3.9.2 Demersal finfish

Sole

134. Sole (Irish name: Sól) *Solea solea* is a demersal flatfish occurring on sandy and mud bottoms. Spawning occurs between April and June. The larvae remain in shallow inshore nursery areas such as estuaries, tidal inlets and shallow sandy bays, moving to join the spawning adult population at 2-3 years old. The juveniles can undertake extensive migrations, although once they reach maturity, will only carry out seasonal migrations from deeper water to shallower spawning habitat.

135. Sole are targeted by both demersal otter trawls and beam trawls. Sole are subject to a TAC and technical measures are applicable to the mixed demersal beam-trawl fishery, namely a minimum mesh size of 80 mm.

136. The catch advice for sole in the Irish Sea has increased recently (for 2021) due to increased stock size and high recruitment. Sole landings from the Irish Sea are mainly taken as bycatch from the mixed fisheries targeting rays and, to a lesser extent nephrops (Marine Institute, 2020).

Plaice

137. Plaice (Irish name: Leathóg Bhallach) *Pleuronectes platessa* is a bottom-dwelling flatfish. It spawns in the early months of the year (January to March) and sometimes makes long spawning migrations. The plaice stock in the Irish Sea is considered to be in a good state, with spawning stock biomass above the biomass target reference point since 2011. The stock is considered to be at full reproductive capacity and harvested sustainably (ICES, 2020).

138. Plaice are caught on localised sandy patches in relatively shallow waters. Ireland had a 52% share of the Irish Sea (7a) EU TAC in 2020. Irish landings of this stock are caught by demersal otter trawl fleet as a minor bycatch in mixed fisheries targeting either nephrops or haddock. Landings have decreased in recent years and are below quota levels (Marine Institute, 2020).

Turbot

139. Turbot (Irish name: Turbard) *Psetta maxima* is a large flatfish typically found at a depth range of 10 to 70 m, on sandy, rocky or mixed bottoms. Juveniles are commonly found in shallow coastal waters with the adults in deeper offshore waters. This is variable throughout the year with sexually mature turbot migrating into shallower inshore areas between April and August to reproduce, laying their eggs predominantly on gravel bottom at depths >10 m.

140. They can live up to 25 years, adults are usually 50-80 cm, but can grow up to 100 cm in length, reaching maturity at 4 years at a length of 49 cm.

141. Turbot is an economically important species caught in association with flatfish fisheries targeting plaice and sole. Turbot in the Irish Sea are not subject to an annual TAC and there is no legal EU MCRS in place for this species.

Brill

142. Brill (Irish name: Broit) *Scophthalmus rhombus* are flatfish with an oval body outline and eyes on the left side of the head. They can live up to 6 years and reach 75 cm in length, reaching maturity at 1-2 years at a length of 22 cm.

143. Little is known about the migratory behaviour of brill, but in general brill migrate further offshore with age. A study has showed that brill perform short migrations into deeper water in the autumn and winter and return to the same shallow water area each spring (Hachero-Cruzado et al. 2007). It is likely that brill are very similar in their movements to turbot and that if they have settled as juveniles in the district they are likely to stay within (or in the close vicinity of) that district throughout the year and thus their lifespan.

144. Brill are taken as a bycatch species of mixed demersal species, including nephrops trawl.

Anglerfish

145. Anglerfish (Irish name: Láimhíneach); there are two closely related species of anglerfish; white anglerfish (*Lophius piscatorius*) and black anglerfish (*L. budegassa*). White anglerfish occur throughout the north-east Atlantic and are more abundant than black anglerfish in northern areas. It is a very distinctive fish, recognizable by having its head and body depressed, a wide mouth, broad head and a fleshy 'lure' at the end of its first dorsal spine, which is used to attract prey. They can live up to 24 years and reach 200 cm in length, reaching maturity at 4-5 years at a length of 35 cm.

146. Both species are most abundant from 200-500 m, with white anglerfish also occurring down to 800 m (the maximum depth in the Irish Sea is 315 m). It is found mostly on sandy or muddy bottoms but is also present on shell, gravel and occasionally rocky areas.

147. A minimum marketing weight is in place (EC 2406/96) of 500 g gutted or 200 g tail per individual. A single TAC applies to both species of anglerfish as they are often not separated in the landings. Ireland had a 7.6% share of the ICES area 7 EU TAC in 2020.

148. Anglerfish are a highly valuable demersal fish species, caught almost exclusively by demersal otter trawls. Catches in the Irish Sea are relatively lower, compared to the Celtic Seas and West of Ireland.

Cod

149. Atlantic cod (Irish name: Trosc) *Gadus morhua* is a demersal species, distributed across the continental shelves and in the coastal waters of the northern North Atlantic. Cod prefers water temperatures from 2°C to 8°C and water depth from 10 m to 200 m. Within its geographical range cod is a generalist, both in terms of habitat use and diet.

150. Cod around Ireland are very fast growing, reaching at least 35 cm in the first year and over 90 cm as adults. They can live up to 25 years and occasionally grow to lengths of 200 cm, reaching maturity at 2-3 years at a length of 41 cm.

151. A TAC is set for cod in the Irish Sea exclusively for by-catches, with no directed fishery permitted due to the state of the stock. Ireland had a 66% share of the Irish Sea (7a) EU TAC in 2020.

152. The majority of landings by the Irish fleet are from the Celtic Sea, with a small patch of activity within the west Irish Sea. Landings of cod are associated mainly with the nephrops targeted fishery.

Haddock

153. Haddock (Irish name: Cadóg) *Melanogrammus aeglefinus* is a bottom feeding fish, occurring mainly in waters from 40–200 m deep, but are found down to 350 m. Haddock mature at around 2–3 years of age at approximately 37 cm in length. Larvae hatch after one to two weeks and, at a length of 5.5 mm, begin hunting for tiny crustaceans and other organisms from among the zooplankton. During this phase the young haddock remain in the open sea, near the surface, often seeking protection beneath the umbrellas of large Medusae (jellyfish). After one or two years, when haddock have reached about 10 cm they leave the pelagic habitat and become demersal. They can reach a maximum age of 20 years and 112 cm. However commercial caught haddock are typically between 2-6 years old and weigh around 400 g to 1 kg approximately.

154. Ireland had a 43% share of the Irish Sea (7a) EU TAC in 2020. Landings of haddock from the Irish Sea by Irish vessels are mainly taken as part of a targeted fishery, with 70% of haddock landings coming from trips where haddock was the dominant species landed. The majority of these trips are in the south of Division 7a in ICES rectangles 33E2 and 33E3 (Marine Institute, 2020).

3.9.3 Elasmobranchs

Thornback ray

155. Thornback ray (Irish name: Roc Garbh) *Raja clavata* frequents a wide variety of grounds from mud, sand, shingle and gravel. It may be found to a depth of 300 m but most common between 10 60 m. Although mainly a non-migratory species, the fish often moves close inshore during the spring. Juveniles are more likely to be found in near-shore coastal waters (Wilding and Snowden, 2008).

156. Common all around coasts of Ireland, it is the most abundant ray in inshore waters. On account of its abundance, it is an important fish commercially. Thornback ray have a maximum age of 15 years and grow up to 120 cm, reaching maturity at 4-5 years at a size of 80 cm. Thornback rays tend to lie covered in sand during the day and feed at night on a range of bottom-dwelling animals, such as shore and swimming crabs and brown shrimps. They are distinguished from other rays by the large thorns scattered on dorsal surface (Wilding and Snowden, 2008).

Blonde ray

157. Blonde ray (Irish name: Roc Fionn) *Raja brachyura* is a bottom dwelling species that prefers sandy and muddy areas. It has been recorded down to 900 m and can most commonly be found at depths around 350 m. As with many elasmobranch species, shallower coastal waters are used as nursery areas leading to a greater number of rays found near shore being juveniles.

158. Both male and female blonde rays grow to a maximum total length of approximately 120 cm and mature at approximately 80-90 cm. It is thought that the blonde ray reaches a maximum age of around 15 years (Gallagher et al., 2005). Females lay between 40 and 140 eggs a year between February and August (Shark Trust, 2008). The incubation period is approximately 7 months.

159. The blonde ray is commercially important and is caught and landed across its range (Catchpole et al., 2007). It is sometimes targeted in areas where it is locally abundant but is normally taken as bycatch in mixed demersal fisheries.

Catshark

160. Small spotted catshark (Irish name: Fiogach Beag) *Scyliorhinus canicular* (also known as lesser spotted dogfish) live near the seabed and are found in shallow coastal waters down to 400 m, but they are less common after 100 m. Females lay their eggs during spring and early summer.

161. The small spotted catshark is one of the most abundant elasmobranchs in the north east Atlantic. Fisheries typically do not target small spotted catshark, but they are taken as bycatch in mixed fisheries and discarded or used as bait within trap and pot fisheries. They are known to have high discard survival rates of approximately 70% in otter trawls (Rodríguez-Cabello et al., 2005).

162. There is limited information on stocks, and currently no concern around biomass levels or fishing pressure. The small spotted catshark is not subject to any management measures.

3.9.4 Pelagic finfish

Sprat

163. Sprat (Irish name: Salán) *Sprattus sprattus* is a pelagic schooling fish usually found in inshore waters, sometimes entering estuaries. It can also be found down to depths of 150 m. Sprat is short-lived, with a maximum age of 6 and average age at maturity of 1-2 years. Catches are therefore dominated by young fish.

164. Sprat show strong migrations between winter feeding and summer spawning grounds. They also undertake vertical migrations, moving to the surface at night.

165. Sprat stock size is mostly driven by the recruiting year class and therefore annual catches of sprat is highly variable, meaning that fisheries targeting this species must be highly adaptive to change. There is no TAC for sprat in Irish waters, with main management being technical gear restrictions with mesh sizes of 16 mm and above when sprat is the target species.

166. On average, 25 Irish vessels over 10 m in length participate in the sprat fishery annually. The majority of the catch is taken in ICES area 7j, as well as 7a, in an area off Dunmore East (Marine Institute, 2020).

167. While this is a seasonal fishery, fishers are requested (by the Minister) to avoid fishing for sprat in the Dunmore Box during September to March, to avoid bycatch of Celtic Sea herring. Dunmore East and the Dunmore Box are located in the very south west of the Irish Sea, adjacent to Kilmore Quay and County Wexford.

Herring

168. Herring (Irish name: Scadán) *Clupea harengus* is a pelagic species widely distributed throughout the North-East Atlantic. Herring spawn in coastal waters in areas where the substrate consist of gravel and small stones. The eggs are attached to the substrate and hatch after about three weeks depending on temperature. The requirement for a gravel substrate means that the spawning grounds are relatively small and well defined.

169. Herring in the Irish Sea is considered to be at full reproductive capacity and harvested sustainably (ICES, 2020). A TAC is set for herring in the Irish Sea annually and there is an EU MCRS of 20 cm.

3.10 Key fishing gears

170. There are three descriptive units used for defining fisheries (Marchal, 2008):

- Fishery - a group of vessel voyages which target the same species or use the same gear;
- Fleet - a physical group of vessels sharing similar characteristics (e.g. nationality); and
- Metier - a homogenous subdivision, either of a fishery by vessel type or a fleet by voyage type.

171. A range of fleets target different fisheries across the commercial fisheries local and regional study areas, as indicated by landings statistics. Across the local study area, the highest proportion of landings by weight are caught by pots targeting whelk and creels targeting crab and lobster. Further details of this fleet, as well as other fleets operating across the local and regional study areas, are described below.

3.10.1 Pots and traps

172. **Plate 25** and **Plate 26** show typical potting vessels, gear and the configuration of set pots and **Table 2** describes the profile of potting vessels active across the local study area.

173. For the capture of whelks, modified, weighted 25 litre plastic drum purpose designed pots are used. Pots and lines are both weighted but can drift on the seabed ~0.5-1 NM. Due to the tidal conditions, floats / marker buoys are attached with sufficient slack (typically in a ratio of 3:1 e.g., if in 10 m of water, rope is set with 30 m slack).

174. Pots are typically rigged in ‘fleets’ of between 15 to 60 pots, depending upon vessel size and area fished. Lengths of fleets may range from 100 to 500 m, anchored at each end with anchors or chain clump weights. A variety of surface markers are used, including dhans (i.e., a buoy fitted with a flag), buoys and cans. Soak times, the time between emptying and re-baiting the pots, is typically 24 hours but varies from approximately 12 hours to two days, and can be longer during periods of adverse weather. All pots are worked on a rotational basis; after hauling and emptying, pots are baited and re-set. Bait for the whelk fishery is de-clawed brown crab.

175. Creels are used for the capture of lobsters and crabs, and set in a similar configuration as described for whelk pots. Creel design is typically D-shaped in section and made from steel rods covered in netting and protected or “bumpered” with rope or rubber strips. Soft-eyed, side-entrance pots (as shown in **Plate 26**) are the most common type used to target crab and lobster and are popular because they retain the catch for longer than other pot types. Hard-eyed, top-entrance creels are also used, particularly in areas where there are different target species during the fishing season (e.g. lobsters, brown crab, velvet crab) (BIM, 2015).

176. The majority of potters are under 10 m, with some 10 to 15 m in length and operate as day boats; returning to port after hauling, emptying, baiting and re-setting fleets of pots. Typically vessels fish 200 days per year.

177. Typically, one potting vessel may simultaneously operate approximately 1,000 whelk pots and 500-1,200 creels targeting crab and lobster. The number of pots / creels per string varies between 15 60. Across the array site, potting gear is set from east to west, as the tide runs north to south, so this maximises the trail of bait.

178. The operating distance of potting vessels varies between vessels and is dependent on vessel length and power, but is considered to be typically 13 - 25 NM from port. There are typically 2-4 crew per vessel.

Table 2 Profile of typical potting vessels active across the local and regional study areas

Parameter	Indicative details
Main target species	Whelk, brown crab, lobster, velvet crab, brown shrimp
Nationality	Irish
Vessel length	Majority under 10 m, some up to 15 m
Horsepower	60 hp to 200 hp
Typical speed when shooting and hauling gear	0 to 9 knots
Typical gear	Fleets of baited pots placed on the seabed Pots typically hauled daily but may be left a number of days. Generally, day boats that return to port daily.

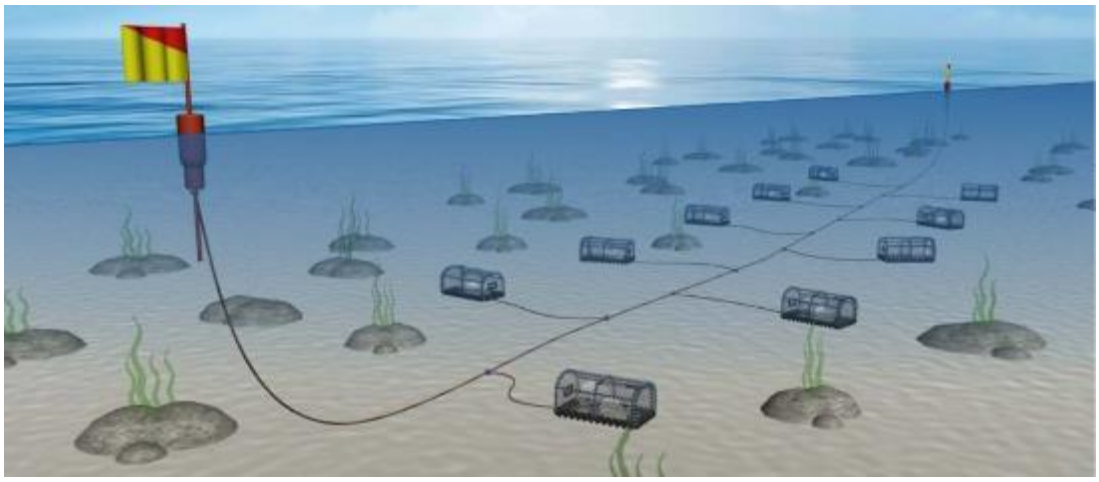

Plate 25 Typical potting gear configuration (Source: Seafish, 2015)

Plate 26 Typical potting vessels and gear at Dún Laoghaire Harbour; including creels used to target lobster and crab (bottom left) and plastic pots used to target whelk (bottom right) (Source: NiMa)

3.11 Scallop dredge

179. **Plate 27** shows a typical scallop dredging vessel and gear configuration and **Table 3** describes the profile of scallop dredging vessels active across the local and regional study areas.

180. The fishing gear used by the Irish fleet is a toothed spring loaded dredge. Dredges are rigid structures that are towed along the seabed to target king and queen scallop. Scallop dredgers

fish as the tooth bar of each dredge rakes through the sediment lifting out scallops and the spring-loaded tooth bar swings back, allowing the dredge to clear obstacles on the seabed.

181. The dredge is approximately 0.8 m wide and the bag attached to it is constructed of metal rings. The length and shape of the teeth, which penetrate the seabed, vary in size and design. The dredges are held in a series on two beams, which are fished on each side of the vessel (Tully et al., 2006).

182. Scallop dredging is an activity which is generally engaged by larger (>10 m vessel length) vessels due to the engine capacity required to tow this heavy fishing gear.

Table 3 Profile of typical scallop dredging vessels active across the local and regional study area

Parameter	Indicative details
Main target species	King scallop and queen scallop
Nationality	Irish, Scottish and Northern Irish
Vessel length	10 m to 25 m
Horsepower	200 hp to 400 hp
Typical speed when shooting and hauling gear	2 to 6 knots
Typical gear	Up to 8 dredged per side of vessel Each dredge consists of a triangular frame leading to an opening, a tooth bar with spring-loaded teeth, and a bag of steel rings and netting back.

Plate 27 Typical scallop dredging vessel and gear configuration (Source: NiMa; and Seafish, 2015)

3.11.1 Otter trawl

183. **Plate 28** shows a typical demersal trawler and associated gear and **Table 4** describes the profile of demersal otter trawling vessels active across the local and regional study area. A demersal trawl is a cone shaped net that is towed on the seabed to target demersal fish

species and nephrops. The mouth of the trawl is held open by a pair of trawl doors (otter boards).

184. The species composition of the catch depends on the area and depth fished and the gear design. Demersal otter trawlers across the local and regional study area either target nephrops or haddock, as well as mixed demersal species including cod, ray and flatfish species. Demersal trawl can be operated as single, twin trawl or pair trawl. Twin trawl involves a clump weight located between two nets, thereby doubling the spread of the gear.

185. The pair trawl is made from similar gear, but instead of the otter boards it is the two vessels that open the trawl. This method allows the net to be towed at a greater speed than if operated by a single boat and means that faster moving fish can be caught.

186. Landings data indicate that Irish and Northern Irish registered vessels operating bottom trawls are active in the local and regional study area.

Table 4 Profile of typical demersal trawling vessels active across the local and regional study area

Parameter	Indicative details
Main target species	Nephrops, haddock, cod, ray species and mixed demersal fish species
Nationality	Irish and Northern Irish
Vessel length	Up to 35 m
Horsepower	300 hp to 850 hp
Typical speed when shooting and hauling gear	2 to 6 knots
Typical gear	Demersal otter trawl Possible twin or multi-rig bottom trawl Two trawl doors approximately 1 tonne each hold the net open horizontally Various forms of ground gear depending on target species.

Plate 28 Typical demersal trawling vessel and gear configuration (Source: Marine Traffic, 2020 and Seafish, 2015)

3.11.2 Beam trawl

187. **Plate 29** shows a typical beam trawler and associated gear and **Table 5** describes the profile of beam trawling vessels active across the wider Irish Sea.

188. Beam trawl gear is used to target flatfish such as sole and plaice, and ray species, such as blonde ray, which are often somewhat buried in the seabed. Beam trawls are towed either astern of the vessel on the smaller boats, or, more commonly, from derricks (one from the port side and one from the starboard side) forward of amidships on the larger boats. Traditional beam trawls use tickler chains to scare the flatfish into the net.

189. Beam trawling is an activity which is generally engaged by larger (>10 m vessel length) vessels due to the engine capacity required to tow this heavy fishing gear. The largest class of beam trawlers are around 25 to 40 metres long, generally having in the region of 1,000 horsepower, towing two beam trawls 12 metres wide. This size of beam trawl can weigh up to nine tonnes each, enabling the trawler to tow at speeds up to seven knots. The medium class of beamers, from 12 to 18 metres, usually have between 300 - 500 horsepower to tow 4 - 7 metre beams.

190. Larger Irish and Belgian-registered vessels, >15 m in length, operate further offshore.

Table 5 Profile of typical beam trawling vessels active across the local and regional study area

Parameter	Indicative details
Main target species	Plaice, sole, turbot, brill, anglerfish, blonde ray, other ray species
Nationality	Irish and Belgium
Vessel length	25 m to 40 m for larger offshore fleets 10 m to 14 m for inshore fleet
Horsepower	200 hp to 2,000 hp for larger vessels 50 hp to 300 hp for smaller vessels
Typical speed when shooting and hauling gear	3.5 to 8 knots
Typical gear	Twin beam, maximum length 12 m each beam Each beam weighing <10 tonnes Chain matting or individual chains attached to underside

Plate 29 Typical beam trawling vessel and gear configuration (Source: Marine Traffic, 2020 and Seafish, 2015)

191. **Plate 30** shows a typical pelagic trawler and associated gear and **Table 6** describes the profile of pelagic trawling vessels active across the wider Irish Sea.

192. Pelagic trawling is a method of towing a trawl in mid-water i.e. at any point in the water column between the surface and seabed. It is, generally, used to target shoaling species such as sprat and herring.

193. All classes of trawler can use pelagic trawls. From 10 metre inshore vessels targeting shoals of pelagic fish in shallow water, up to the specialist pelagic vessels, over 40 metres long.

194. Within the local and regional study area, landings data indicates that pelagic trawling is primarily undertaken by Irish and Belgian registered vessels.

Table 6 Profile of typical pelagic trawling vessels active across the local and regional study area

Parameter	Indicative details
Main target species	Sprat, herring
Nationality	Irish
Vessel length	Up to 50 m
Horsepower	500 hp to 1,200 hp
Typical speed when shooting and hauling gear	2 to 5 knots
Typical gear	Pair or single trawls Net depth changed by altering either warp (rope) length or towing speed

Plate 30 Typical pelagic trawling vessel and gear configuration (Source: NiMa; and Seafish, 2015)

3.12 Ports and vessel fleets

3.12.1 Overview

195. Vessels that routinely operate across the commercial fisheries local and regional study areas are based at a number of Irish ports, including (from north to south): Howth, Dún Laoghaire, Wicklow, Arklow and Kilmore Quay. Vessels based at other ports, including Irish, Northern Irish and Scottish ports may also occasionally operate across the region.

4 Future existing environment

196. Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. This includes the following:

- Market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, including the 2020-2021 COVID pandemic;
- Market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;
- Stock abundance: fluctuation in the biomass of individual species stocks in response to status of the stock, recruitment, natural disturbances (e.g. due to storms, sea temperature etc.), changes in fishing pressure etc.;
- Fisheries management: including new management for specific species where overexploitation has been identified, or changes in TACs leading to the relocation of effort, and/or an overall increase / decrease of effort and catches from specific areas;
- Environmental management: including the potential restriction of certain fisheries within protected areas;
- Improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g. by moving from beam trawl to demersal seine; and
- Sustainability: with seafood buyers more frequently requesting certification of the sustainably of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries management and wider environmental impacts.

197. The variations and trends in commercial fisheries activity are an important aspect of the existing environment assessment and form the principal reason for assessing both five years of data and longer term data were available, particularly for key species (e.g., 16 years, from 2004 to 2019, for Irish whelk fishery).

198. Overall, given the time periods assessed, the anticipated evolution of the existing environment without the CWP Project is expected to be reflected within the current existing environment assessment undertaken.

5 Data limitations and uncertainties

199. A range of different data limitations and uncertainty exist for all of the commercial fisheries datasets assessed within this technical report. The level of uncertainty and confidence of each data set is defined in **Table 7** based on the professional judgement of the assessment team.

200. The principal limitation is that reliable, verifiable landings statistics are not formally reported for the under 10 m vessel fleets, as formal logbooks are not required to be maintained and submitted. This leads to incomplete landing statistics datasets, where data for under 10 m vessels is either included (i.e. through sales notes), estimated or completely omitted.

201. In addition, limitations of landings data include the spatial size of ICES rectangles which can misrepresent actual activity across the CWP Project and care is therefore required when interpreting these data.

202. Lack of recent landings statistics for EU (non-Irish) fleets is also recognised as a data limitation; based on the most recent European Commission data call, more recent landings data (2017-2019) is no longer available by ICES rectangle (35E3 and 35E4). Data at a scale of ICES division (i.e. the whole of the Irish Sea) is less useful to understand fishing activity specific to the area overlapping the CWP Project.

203. Limitations of VMS data are primarily focused on the coverage being limited to vessels 12 m and over. It is important to be aware that where mapped VMS data may appear to show inshore areas as having lower (or no) fishing activity compared with offshore areas, this is not necessarily the case because VMS data do not include vessels typically operating in inshore area (i.e. which typically comprises of vessels <12 m in length). This is particularly important when assessing the activity across the OECC for the potting fleet.

204. Extensive attempts were made to source data directly from processors and commercial fishing businesses directly, with the intention of assessing amalgamated sales notes for a representative sample of the industry. Such data was not possible to obtain for EIA purposes.

205. Despite the data limitations and uncertainties, a good range of fisheries data has been available from a range of sources including:

- Fisheries dependant data from SFPA, EU DCF, Eurostat and MMO;
- Scientific stock assessments from Marine Institute and BIM and ICES;
- Officially amalgamated datasets covering logbook declarations, sales notes for vessels under 10 m, gatherer dockets and co-op data as assessed by Marine Institute and BIM;
- Fisheries independent scouting surveys.

206. Overall, the range of data sources available, coupled with industry consultation and expert judgement provide sufficient knowledge to characterise the existing environment for the purpose of undertaking an EIA for commercial fisheries.

Table 7 Data limitations and uncertainty (the uncertainty and confidence levels are defined based on judgement and are intended to inform the appropriateness of data used to inform the Applicant's EIA)

Data source	Type of data	Limitations and uncertainty
Landing statistics		
SFPA	Landings statistics (2015-2022) data for Irish-registered vessels, with data on year, species, landed weight and 3 separate datasets for: ICES division; Port of landing; & ICES rectangle (up to 2019).	The data has undergone a degree of suppression to ensure confidentiality of data, however, it is unknown which records are suppressed (i.e. for which species or fleets). Data for whelk is not consistent with other datasets analysed for the same period and area. • Data assessed with: medium-high uncertainty and medium-low confidence
BIM	Business of Seafood reports (2015-2022) including import and export data for whelk.	The data is based on formal import and export records. • Data assessed with: low uncertainty and high confidence.
Marine Institute and BIM	Estimates of annual Irish landings of shellfish into Ireland (2004-2022).	The data is based on a wide range of sources to provide an accurate landing estimation for all vessel lengths, including logbook declarations and sales notes for vessels under 10 m, gatherer dockets, and co-op data. • Data assessed with: low uncertainty and medium-high confidence.
STECF	Landings statistics (2008-2019) data for Irish-registered vessels landing whelk.	The data includes a long time series and includes all vessel lengths, indicating length category and data for all fleet segments. • Data assessed with: low uncertainty and medium confidence.
EU DCF	Landings statistics (2012-2016) data for EU landings from ICES rectangles 35E3 and 35E4 by country, species and gear type.	The data is submitted by individual member states and therefore limitations vary per country. Consultation with Irish fishermen indicated inaccurate reflection of landings likely due to omission of vessels under 10m. Other EU fleets exploiting these ICES rectangles are likely to be >25m in length with landings recorded accurately. • For Irish vessels data is assessed with: high uncertainty and low confidence. • For all other EU vessels data is assessed with: low uncertainty and high confidence.
MMO	Landings statistics (2018-2022) data for UK-registered vessels.	The data is recorded from sales notes and landing declarations for all vessel lengths. Due to the UK legislation of Registration of Buyers and Sellers data is considered accurate and verifiable. • Data assessed with: low uncertainty and high confidence.
Spatial data and Vessel Monitoring System (VMS) data		
Marine Institute	Inshore grounds targeted by Irish vessels <15m in length for a range of gear types and target species.	The data is based on interviews with the fishing industry undertaken by the Marine Institute, as well as expert knowledge. • Data assessed with: low uncertainty and medium-high confidence.

Data source	Type of data	Limitations and uncertainty
Marine Institute	VMS data indicating effort by gear type (2014-2018)	The data is only available for 12m and over vessels, so is not representative of <12m vessels. • Data assessed with: medium uncertainty and medium confidence.
ICES	EU VMS data (2016-2020) for vessels 12m and over for surface swept area ratio.	The data is only available for 12m and over vessels, so is not representative of <12m vessels. • Data assessed with: medium uncertainty and medium confidence.
MMO	UK VMS data indicating first sales value by gear type (2019 and 2020)	The data is only available for 15m and over vessels, so is not representative of <15m vessels. • Data assessed with: medium uncertainty and medium confidence.
ICES	VMS polygon data (2009-2019) of king scallop fishing activity	The data is based on historic VMS and expert knowledge from the ICES scallop working group. • Data assessed with: low uncertainty and medium-high confidence.
EMSA	EU AIS data for fishing vessels indicating route density for vessels actively fishing and in transit.	The data is only available for vessels that carry AIS and have AIS turned on, so is not representative of <12m vessels. • Data assessed with: medium uncertainty and medium confidence.

6 Summary

207. This technical report has presented commercial fisheries activity data for the following countries: Ireland; UK; and Belgium. Based on quota allocations and landing statistics it is understood that vessels registered to other countries do not operate across the CWP Project commercial fisheries local study area.

208. The key fleet metiers operating across the local and / or regional study areas include (in no particular order):

- Irish potting vessels targeting whelk;
- Irish potting vessels targeting brown crab and lobster;
- Irish scallop dredgers targeting king scallop;
- UK scallop dredgers targeting queen scallop (mainly Scottish registered vessels);
- Irish demersal otter trawlers targeting haddock and mixed demersal species;
- Irish demersal otter trawlers targeting nephrops and mixed demersal species;
- Razor shell hydraulic dredge fishery;
- Mussel seed dredge fishery;
- Irish and Belgian beam trawlers targeting plaice, sole, blonde ray and mixed demersal species; and
- Irish pelagic trawlers targeting sprat.

209. It is noted that a portion of vessels in the first two metiers listed above will inter-change gear (between plastic pots and creel) to target a mixture of shellfish species to adapt to seasonal variations in fisheries and market demands.

210. This technical report reviewed all datasets available to characterise the commercial fisheries activity across the local and regional study areas and wider Irish Sea. Given the range of datasets assessed and the comprehensive analysis undertaken, it is considered that this technical report is adequate for the purposes of an EIAR assessment.

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