



NORTH FALLS

Offshore Wind Farm

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

Chapter 14 Commercial Fisheries

Document Reference No: 004447024-02

Date: May 2023

Revision: 02



NORTH FALLS

Offshore Wind Farm

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

Date: May 2023

Project	North Falls Offshore Wind Farm
Sub-Project or Package	Environmental Impact Assessment
Document Title	Preliminary Environmental Information Report Chapter 14 Commercial Fisheries
Document Reference	004447024-02
Revision	02
Supplier Reference No	PB9244-RHD-PE-ZZ-RP-YE-0056

This document and any information therein are confidential property of North Falls Offshore Wind Farm Limited and without infringement neither the whole nor any extract may be disclosed, loaned, copied or used for manufacturing, provision of services or other purposes whatsoever without prior written consent of North Falls Offshore Wind Farm Limited, and no liability is accepted for loss or damage from any cause whatsoever from the use of the document. North Falls Offshore Wind Farm Limited retains the right to alter the document at any time unless a written statement to the contrary has been appended.

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
01 (Draft A)	13/02/23	1 st draft for RHDHV review	RK/AWG	GK	-
01 (Draft B)	16/02/23	1 st draft for NFOW review	RK/AWG	GK	-
02 (Draft A)	06/04/2023	2 nd draft for RHDHV review	AWG	GK/HF	-
02 (Draft B)	17/04/23	2 nd draft for NFOW review	AWG	HF/GK	-
02 (Draft C)	25/04/2023	Final	AWG	HF/GK	DH/TC/AP

Contents

14	Commercial Fisheries	12
14.1	Introduction.....	12
14.2	Consultation	12
14.3	Scope	15
14.3.1	Study area	15
14.3.2	Realistic worst-case scenario	15
14.3.3	Summary of mitigation embedded in the design.....	21
14.4	Assessment methodology	22
14.4.1	Legislation, guidance and policy.....	22
14.4.2	Data sources	26
14.4.3	Impact assessment methodology	29
14.4.4	Cumulative effects assessment methodology.....	31
14.4.5	Transboundary impact assessment methodology	31
14.4.6	Assumptions and limitations	31
14.5	Existing environment	31
14.5.1	Surveillance sightings.....	31
14.5.2	UK fishing activity	34
14.5.3	Belgian fishing activity	35
14.5.4	Dutch fishing activity	36
14.5.5	French fishing activity	37
14.5.6	Future trends in baseline conditions	37
14.6	Assessment of significance	38
14.6.1	Potential impacts during construction	38
14.6.2	Potential impacts during operation.....	51
14.6.3	Potential impacts during decommissioning.....	68

14.7	Cumulative effects	69
14.7.1	Identification of potential cumulative effects	69
14.7.2	Other plans, projects and activities	70
14.7.3	Assessment of cumulative effects.....	78
14.8	Transboundary impacts	86
14.9	Inter-relationships	86
14.10	Interactions	87
14.11	Potential monitoring requirements	90
14.12	Summary	90
14.13	References	97

Tables

Table 14.1	Consultation responses	13
Table 14.2	Consultation undertaken via the FLO to gather baseline information to inform this chapter	14
Table 14.3	Realistic worst-case scenarios	17
Table 14.4	Embedded mitigation measures	21
Table 14.5	NPS assessment requirements	22
Table 14.6	Available data and information sources	26
Table 14.7	Definition of sensitivity for commercial fisheries receptors.....	29
Table 14.8	Definition of magnitude for commercial fisheries receptors	29
Table 14.9	Significance of effect matrix	30
Table 14.10	Definition of significance of effect	30
Table 14.11	Surveillance sightings in ICES rectangles in the study area, nationality and method (2011 – 2020) (Source: MMO, 2021)	33
Table 14.12	Potential cumulative effects	70

Table 14.13 Summary of projects considered for the CEA in relation to North Falls (project screening).....	71
Table 14.14 Commercial fisheries inter-relationships	86
Table 14.15 Interaction between impacts - screening	88
Table 14.16 Interaction between impacts – phase and lifetime assessment	89
Table 14.17 Summary of likely significant effects on commercial fisheries receptors	91

Figures (Volume II)

Figure 14.1 Commercial Fisheries Study Area

Figure 14.2 Surveillance Sightings by Nationality (2011 - 2020) (Source: MMO 2021)

Figure 14.3: Surveillance Sightings by Method (2011 - 2020) (Source: MMO, 2021)

Figure 14.4: Historic Fishing Rights

Figure 14.5 UK Landings (£) by Method (Average 2016 - 2020) (Source: MMO, 2021)

Figure 14.6: UK Landings (£) by Species (Average 2016 - 2020) (Source: MMO, 2021)

Figure 14.7 KEIFCA Surveillance Sightings (2015-2020) (Source: KEIFCA, 2022)

Figure 14.8 Anonymised Potting Grounds from Consultation (Source: Appendix 14.1)

Figure 14.9 Anonymised Netting (Drift Nets, Set Nets, Gillnets, Trammel Nets) Grounds from Consultation (Source: Appendix 14.1)

Figure 14.10 Anonymised Trawling Grounds from Consultation (Source: Appendix 14.1)

Figure 14.11 Anonymised Longlining Grounds from Consultation (Source: Appendix 14.1)

Figure 14.12 HHFA Fishing Grounds from Consultation (Source: BMM, 2022)

Figure 14.13 UK Landings (£) by Vessel Length (Average 2016 - 2020) (Source: MMO, 2021)

Figure 14.14 UK VMS (£) Beam Trawls (Average 2016 - 2020) (Source, MMO, 2021)

Figure 14.15 UK VMS (£) Bottom Otter Trawls (Average 2016 - 2020) (Source: MMO, 2021)

Figure 14.16 UK VMS (£) Pots and Traps (Average 2016 - 2020) (Source: MMO, 2021)

Figure 14.17 Belgian Surveillance Sightings (2011 - 2020) (Source: MMO, 2021)

Figure 14.18 Belgian Landings (tonnes) by Method (Average 2012 - 2016) (Source: STECF, 2017)

Figure 14.19 Belgian Landings (tonnes) by Species (Average 2012 - 2016) (Source: STECF, 2017)

Figure 14.20 Belgian VMS (€) Beam Trawls (Average 2010 - 2014) (Source: ILVO, 2015)

Figure 14.21 Belgian VMS (€) Demersal Trawls (Average 2010 - 2014) (Source: ILVO, 2015)

Figure 14.22 Belgian VMS (€) Seine Nets (Average 2010 - 2014) (Source: ILVO, 2015)

Figure 14.23 Dutch Surveillance Sightings (2011 - 2020) (Source: MMO, 2021)

Figure 14.24 Dutch Landings (€) by Method (Average 2017 - 2021) (WUR, 2022)

Figure 14.25 Dutch Landings (€) by Species (Average 2017 - 2021) (Source: WUR, 2022)

Figure 14.26 Dutch VMS (€) Beam Trawls Vessels Over 12m (Average 2017 - 2021) (Source: WUR, 2022)

Figure 14.27 Dutch VMS (€) Seine Nets Vessels Over 12m (Average 2017 - 2021) (Source: WUR, 2022)

Figure 14.28 French Surveillance Sightings by Method (2011 -2020) (Source: MMO, 2021)

Figure 14.29 French Landings (tonnes) by Method (Annual Average 2012 - 2016) (Source: STECF, 2017)

Figure 14.30 French Landings (tonnes) by Species (Annual Average 2012 - 2016)
(Source: STECF, 2017)

Figure 14.31 AIS Tracks of a 22m Potting Vessel Fishing within Hornsea One

Figure 14.32 AIS Tracks of a 30m Beam Trawler Fishing within Walney Extension

Figure 14.33 AIS Tracks of a 20m Trawler Undertaking an Overtrawl Survey within Beatrice

Figure 14.34 AIS Tracks of a 33m Scallop Dredger Fishing within Moray East and Beatrice

Figure 14.35 Marine Protected Areas – Cumulative Effects

Figure 14.36 Aggregate Site Agreements – Cumulative Effects

Figure 14.37 Existing or Planned Windfarms – Cumulative Effects

Figure 14.38 All Cumulative Effect Considerations

Figure 14.39 Developments Screened into the Cumulative Effects Assessment for Commercial Fisheries

Figure 14.40 Offshore Wind Farm Projects of Relevance to Commercial Fisheries

Figure 14.41 MPAs with Bottom Towed Gear Prohibition Byelaws of Relevance to Commercial Fisheries

Figure 14.42 Aggregate Extraction Sites of Relevance to Commercial Fisheries

Figure 14.43 Interconnector Cables of Relevance to Commercial Fisheries

Figure 14.44 UK VMS Value (£) Demersal Trawls / Seine Nets (average 2016-2020) and Cumulative Projects

Figure 14.45 Belgian VMS by Value (€) Beam Trawls (average 2010-2014) and Cumulative Projects

Figure 14.46 Belgian VMS by Value (€) Demersal Trawls (average 2010-2014) and Cumulative Projects

Figure 14.47 Dutch VMS by Value (€) Beam Trawls (average 2017-2021) and Cumulative Projects

Figure 14.48 Dutch VMS by Value (€)Seine Nets (average 2017-2021) and Cumulative Projects

Figure 14.49 French Surveillance Sightings (2011-2020) and Cumulative Projects

Appendices (Volume III)

Appendix 14.1 Commercial Fisheries Technical Report

Glossary of Acronyms

AIS	Automatic Identification System
CBRA	Cable Burial Risk Assessment
Cefas	Centre for the Environment and Fisheries and Aquaculture Science
CFWG	Commercial Fisheries Working Group
CEA	Cumulative Effects Assessment
COLREG	International Regulations for Preventing Collisions at Sea
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
EC	European Commission
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FLCP	Fisheries Liaison and Coexistence Plan
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
ICES	International Council for the Exploration of the Sea
ILVO	Flanders Research Institute Agricultural, Fisheries and Food Research
KEIFCA	Kent and Essex Inshore Fisheries Conservation Authority
km	Kilometre
Km ²	Square kilometre
m	Metre
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MPA	Marine Protected Area
MW	Megawatts
nm	Nautical Mile
NPS	National Policy Statements
NSIP	Nationally Significant Infrastructure Projects
NtM	Notice to Mariners
OFLO	Offshore Fisheries Liaison Officers
OSP	Offshore Substation Platform
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (Oslo/Paris Convention)
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
PINS	Planning Inspectorate
SAC	Special Area of Conservation
SOLAS	International Convention for the Safety of Life at Sea

SPA	Special Protection Area
STECF	Scientific, Economic and Technical Committee on Fishing
UK	United Kingdom
VMS	Vessel Monitoring Systems
WTG	Wind Turbine Generator
WUR	Wageningen University and Research

Glossary of Terminology

Array areas	The two distinct offshore wind farm areas (including the 'northern array area' and 'southern array area') which together comprise the North Falls offshore wind farm.
Array cables	Cables which link the wind turbine generators with each other and the offshore substation platform(s).
Beam trawl	A trawl net whose lateral spread during trawling is maintained by a beam across its mouth.
Benthic	Relating to, or occurring at the sea bottom.
Demersal	Living on or near the seabed.
Diadromous	Migrating between fresh and salt water.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to the EIA and information to support HRA.
Horizontal directional drill	Trenchless technique to bring the offshore cables ashore at the landfall. The technique will also be used for installation of the onshore export cables at sensitive areas of the onshore cable route.
Interconnector cable	Cable between the northern and southern array areas
Interconnector cable corridor	The corridor of the seabed between the northern and southern array areas
Landfall	The location where the offshore cables come ashore.
Landfall search area	Locations being considered for the landfall, comprising the Essex coast between Clacton-on-Sea and Frinton-on-Sea.
Offshore cable corridor	The corridor of seabed from the array areas to the landfall within which the offshore export cables will be located.
Offshore export cables	The cables which bring electricity from the offshore substation platform(s) to the landfall.
Offshore project area	The overall area of the array areas and the offshore cable corridor.
Offshore substation platform(s)	Fixed structure(s) located within the array areas, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable voltage for export to shore via offshore export cables.
Otter trawl	A trawl net fitted with two 'otter' boards which maintain the horizontal opening of the net.
Safety zones	A marine zone outlined for the purposes of safety around a possibly hazardous installation or works / construction area
Scour protection	Protective materials to avoid sediment being eroded away from the base of the wind turbine generator foundations and offshore substation platform foundations as a result of the flow of water.
The Applicant	North Falls Offshore Wind Farm Limited (NFOW).
The Project or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.

14 Commercial Fisheries

14.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) considers the effects of the North Falls offshore wind farm (hereafter “North Falls” or “the Project”) on commercial fisheries. The chapter provides an overview of the existing environment for the offshore project area, followed by an assessment of the likely significant effects for the construction, operation, and decommissioning phases of the Project.
2. This chapter has been written by Brown and May Marine Ltd, with the assessment undertaken with specific reference to the relevant legislation and guidance, of which the primary sources are the National Policy Statements (NPS). Details of these and the methodology used for the Environmental Impact Assessment (EIA) and Cumulative Effects Assessment (CEA) are presented in Section 1.4.
3. The assessment should be read in conjunction with the following linked chapters:
 - Chapter 11 Fish and Shellfish Ecology (Volume I);
 - Chapter 15 Shipping and Navigation (Volume I); and
 - Chapter 31 Socio-economics (Volume I).
4. Additional information to support the commercial fisheries assessment includes:
 - Appendix 14.1 Commercial Fisheries Technical Report (Volume III).

14.2 Consultation

5. Consultation has been undertaken in line with the general process described in Chapter 6 EIA Methodology (Volume I). The key element to date has included scoping. The feedback received has been considered in preparing the PEIR.
6. Table 14.1 provides a summary of how the consultation responses received to date in relation to the North Falls Scoping Report (2021) have influenced the approach that has been taken.
7. This chapter will be updated following the consultation on the PEIR in order to produce the final assessment, which will be presented in an Environmental Statement (ES), that will be submitted with the Development Consent Order (DCO) application. Full details of the consultation process will also be presented in the Consultation Report alongside the DCO application.
8. In addition to formal consultation via scoping, consultation of relevance to commercial fisheries has been undertaken via the Fisheries Liaison Officer (FLO) appointed for the Project to collect baseline information. Engagement has also been undertaken via the Commercial Fisheries Working Group (CFWG) that has been established by the Project. The face-to-face consultation undertaken via the FLO and through CFWG meetings to gather baseline information to inform this chapter is described in Table 14.2.

Table 14.1 Consultation responses

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
The Planning Inspectorate (PINS)	August 2021/ Scoping Opinion	The Inspectorate notes that an assessment of underwater noise and vibration arising from construction activities is proposed to be undertaken for Fish and Shellfish. This will include assessment of disturbance and displacement of fish species and impacts upon spawning and nursery areas, as well as migration patterns. Chapter 2.9 (Commercial Fisheries) should draw upon and cross-reference to the findings of this assessment as appropriate.	The likely significant effects on commercial fisheries as a result of impacts on exploited fish and shellfish species has been assessed for construction (Section 14.6.1), operation (Section 14.6.2), decommissioning (Section 14.6.3) and cumulative effects (Section 14.7.3).
		The Scoping Report does not state whether the Applicant intends to time any of the proposed construction and / or operational activities as to avoid key period relating to commercial fishing activities.	The likely significant effects on commercial fisheries as a result of impacts on exploited fish and shellfish species has been assessed for construction (Section 14.6.1), operation (Section 14.6.2), decommissioning (Section 14.6.3) and cumulative effects (Section 14.7.3). Consideration has been given to fish species with known spawning and nursery grounds in areas relevant to the project in Chapter 11 Fish and Shellfish Ecology (Volume I).
		The ES should consider the potential of The Project to disrupt fishing and recreational activities (including restriction of access) during both the construction and operational phases and any likely significant effects should be reported within the relevant assessments of the ES (e.g. 'Socio economics' and 'Tourism and recreation').	The likely significant effects of the Project on commercial fishing receptors has been assessed for construction (Section 14.6.1), operation (Section 14.6.2) and decommissioning (Section 14.6.3).
Marine Management Organisation (MMO)	August 2021/ Scoping Opinion	Relevant impacts on fish receptors and commercial fisheries have been appropriately scoped in.	Noted.
		Due to the high importance of the fishing activity in the area (e.g., sole and plaice fisheries) the MMO recommend early engagement with the relevant fisheries associations, such as Kent & Essex Inshore Fisheries and Conservation Authorities (KEIFCA) to address key potential socio-economic impacts such as displacement and loss of fishing grounds resulting for multiple developments co-existing in the same area.	Consideration has been given in this assessment to commercial fishing receptors for construction (Section 14.6.1), operation (Section 14.6.1), decommissioning (Section 14.6.3) and cumulative effects (Section 14.7). The likely significant effects of the Project on fish and shellfish receptors is addressed in Chapter 11 Fish and Shellfish Ecology (Volume I).
		The MMO understands that the local fishing industry has seen a decline in the quantity of fish within the North Sea in	Consideration has been given in this assessment to commercial fishing receptors

Consultee	Date / Document	Comment	Response / where addressed in the PEIR
		recent years, and given that the proposed work is within area known to be spawning and nursery grounds for key commercial species, it is recommended the impacts of the proposed works should carefully consider the long term impact on fish stocks.	for construction (Section 14.6.1), operation (Section 14.6.1), decommissioning (Section 14.6.3) and cumulative effects (Section 14.7). The likely significant effects of the Project on fish and shellfish receptors is addressed in Chapter 11 Fish and Shellfish Ecology (Volume I).

Table 14.2 Consultation undertaken via the FLO to gather baseline information to inform this chapter

Date	Consultee	Description
28/09/2022	Representative 1	Secretary of Thanet Fishermen's Association
29/09/2022	Representative 2	Southwold Fishermen's Association
08/12/2022	Representative 3	Rederscentrale (Belgium)
07/12/2022	Representative 5	Kent & Essex (KE) Inshore Fisheries Conservation Authority (IFCA)
Meeting requested	Representative 6	National Fishermen's Federation Organisation
Meeting requested	Representative 7	Visned
Meeting requested	Representative 8	Visafslag Hollands Noorden
09/12/2022	Representative 9	CRPMEM - Hauts De France
Meeting requested	Representative 10	CRPMEM - Normandie
North Falls CFWG 19/10/2022	Representative 11 Representative 12 Representative 13 Representative 14 Representative 15 Representative 16	Orford & District Fishermen's Association Harwich Haven Fishermen's Association Felixstowe Ferry Fisherman's Association West Mersea Fishermen's Association Southwold Fishermen's Representative Thanet Fishermen's Association
31/10/2022	Fisher 1	Harwich Haven Fishing Association
09/11/22	Fisher 2	Southwold Fishermen's Association
09/11/22	Fisher 3	Southwold Fishermen's Association
16/11/22	Fisher 4	Southwold Fishermen's Association
16/11/22	Fisher 5	Southwold Fishermen's Association
23/11/22	Fisher 6	Orford & District Fishermen's Association
15/11/22	Fisher 7	Felixstowe Ferry Fishermen's Association
15/11/22	Fisher 8	Felixstowe Ferry Fishermen's Association
15/11/22	Fisher 9	Felixstowe Ferry Fishermen's Association
15/11/22	Fisher 10	Felixstowe Ferry Fishermen's Association
15/11/22	Fisher 11	Felixstowe Ferry Fishermen's Association
15/11/22	Fisher 12	Felixstowe Ferry Fishermen's Association
15/11/22	Fisher 13	Felixstowe Ferry Fishermen's Association

Date	Consultee	Description
15/11/22	Fisher 14	Felixstowe Ferry Fishermen's Association
22/11/22	Fisher 15	Felixstowe Ferry Fishermen's Association
22/11/22	Fisher 16	Felixstowe Ferry Fishermen's Association
22/11/22	Fisher 17	Felixstowe Ferry Fishermen's Association

14.3 Scope

14.3.1 Study area

9. The offshore project area is situated in International Council for the Exploration of the Sea (ICES) division IVc (southern North Sea) with the northern and southern array areas located approximately 12.1nm (22.5km) and 20.3nm (37.6km) from shore, respectively.
10. The study area used to characterise the commercial fisheries baseline (Figure 4.1, Volume II) has been defined with reference to the ICES rectangles that overlap with the offshore project area. These are as follows:
 - ICES rectangle 32F1, where the majority of the offshore project area is located (including the whole offshore cable corridor and interconnector cable corridor and practically the totality of the array areas);
 - ICES rectangle 33F1, where a small section of one of the array areas (northern array area) is located; and
 - ICES rectangle 32F2 – where a small section of one of the array areas (southern array area) is located.
11. The study area defined above has been used to identify fisheries active in areas relevant to the Project and the levels of fishing that the offshore project area sustains. Where relevant, however, data and information has been analysed for wider areas to provide context and describe the extent of fishing activity for the key fleets identified.

14.3.2 Realistic worst-case scenario

12. The final design of North Falls will be confirmed through detailed engineering design studies that will be undertaken post-consent. In order to provide a precautionary but robust impact assessment at this stage of the development process, realistic worst-case scenarios have been defined in terms of the potential effects that may arise. This approach to EIA, referred to as the Rochdale Envelope, is common practice for developments of this nature, as set out in Planning Inspectorate Advice Note Nine (2018). The Rochdale Envelope for a project outlines the realistic worst-case scenario for each individual impact, so that it can be safely assumed that all other scenarios within the design envelope will have less impact. Further details are provided in Chapter 6 EIA Methodology (Volume I).
13. The realistic worst-case scenarios for the commercial fisheries assessment are summarised in Table 14.3. These are based on North Falls parameters

described in Chapter 5 Project Description (Volume I), which provides further details regarding specific activities and their durations.

Table 14.3 Realistic worst-case scenarios

Impact	Parameter	Notes
Construction		
Impact 1: Temporary loss or restricted access to fishing grounds	Maximum temporary fishing area lost/maximum restriction in access to fishing as a result of the following: <ul style="list-style-type: none"> • Installation of up to 72 wind turbine generators (WTGs) and up to two offshore substation platforms (OSPs); • Installation of up to 228km of array/interconnector cables; • Installation of up to four offshore export cables of up to 62.7km in length each (250.8km in total); • 500m construction safety zones and 50m pre-commissioning safety zones; • Advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities; and • Up to 500m advisory exclusion of fishing along vulnerable sections of cables (e.g. cables awaiting burial or protection). 	Installation activities and physical presence of constructed infrastructure may lead to reduction in access to, or exclusion from established fishing grounds. There is potential for some loss of fishing opportunities over the construction period, though any effect is expected to be localised, and the operational range of relevant fleets will not typically be limited to the offshore project area.
Impact 2: Displacement of fishing activities into other areas	As above for temporary loss or restricted access to fishing grounds.	Fishing activity may be displaced from the offshore project area, leading to gear conflict and increased fishing pressure on adjacent grounds. There is potential for displacement of fishing activity, though any effect is expected to be localised, and the operational range of relevant fleets will not typically be limited to the offshore project area.
Impact 3: Increased steaming times to fishing grounds	The maximum potential for disruption of established steaming routes as a result of the following: <ul style="list-style-type: none"> • Installation of up to 72 WTGs and up to two OSPs; • 500m construction safety zones and 50m pre-commissioning safety zones; and • Advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities. 	This effect will be confined to the array areas, therefore limited deviations to steaming routes are expected for certain vessels.
Impact 4: Interference with fishing activities (navigational conflict)	The maximum potential for navigational conflict with fishing activities as a result of the following: <ul style="list-style-type: none"> • Maximum number of vessels on site at any one time: 35 • Indicative construction vessel movements: 3,090 over three-year offshore construction period (average of 1,030 movements per year; three movements per day) 	The maximum number of vessels transits and the maximum duration of the construction programme would result in the greatest potential for conflict/interaction between construction vessels and commercial fishing activities.

Impact	Parameter	Notes
Impact 5: Safety issues for fishing vessels	<p>Safety risks as a result of potential interactions between fishing vessels, fishing gear and installed or partially installed infrastructure in the offshore project area:</p> <ul style="list-style-type: none"> • Installation of up to 72 WTGs and up to two OSPs; • Installation of up to 228km of array/interconnector cables; • Installation of up to four offshore export cables of up to 62.7km in length each (250.8km in total); • Assumes cables may be surface laid before being buried/protected; and • Potential for obstacles on the seabed that may represent a fastening risk to fishing gears (i.e. accidentally dropped objects). 	<p>This represents the maximum number of structures on the seabed including array/interconnector cables and offshore export cables and therefore the maximum potential for gear snagging and associated loss or damage to fishing gear.</p> <p>Obstacles on the seabed during construction could potentially cause damage to, or complete loss of, fishing gears. In addition, activities associated with construction works such as construction vessel anchoring, jack up legs or cable trenching could produce spoil or mounds onto which fishing gears could fasten.</p> <p>Safety issues for fishing vessels associated with the potential for collision with construction vessels and allision with infrastructure are described and assessed in Chapter 15 Shipping and Navigation (Volume I).</p>
Impact 6: Impacts on commercial fishing as a result of impacts on commercially exploited species	See Chapter 11 Fish and Shellfish Ecology (Volume I)	
Operation and Maintenance		
Impact 7: Temporary habitat loss/physical disturbance	<p>Unplanned repairs and reburial of cables may be required during operation and maintenance, the following estimates are included:</p> <ul style="list-style-type: none"> • Reburial of c. 5km of array/interconnector cable is estimated over the life of the Project; • Reburial of c. 5km of offshore export cable is estimated over the life of the Project; • Five array/interconnector cable repairs of c. 600m are estimated over the Project life; • Four offshore export cable repairs are of c. 600m estimated over the project life. • Advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing maintenance works; and • Up to 500m advisory exclusion of fishing along vulnerable sections of cables (e.g. cables awaiting burial or protection). 	<p>This represents the maximum estimated total area of seabed disturbance from unplanned repairs and reburial of cables that may be required during operation and maintenance.</p>

Impact	Parameter	Notes
Impact 8: Complete loss or restricted access to traditional fishing ground	<p>Maximum fishing area lost/maximum restriction in access to fishing as a result of the following:</p> <ul style="list-style-type: none"> • Presence of up to 72 WTGs and up to two OSPs; • Presence of up to 228km of array/interconnector cables; • Presence of up to four offshore export cables of up to 62.7km in length each (250.8km in total); • Array/interconnector cable protection - up to 45.6km of cable protection may be required in the unlikely event that array/interconnector cables cannot be buried (based on 20% of the length); • Offshore export cable protection - up to 25km of cable protection may be required in the unlikely event that offshore export cables cannot be buried (based on 10% of the length); • 500m operational safety zones for major maintenance activities; • Up to 500m advisory exclusion of fishing along vulnerable sections of cables (i.e. in the event that sections of cables become exposed). 	This represents the maximum loss of fishing grounds throughout the offshore project area.
Impact 9: Displacement of fishing activities into other areas	As above for complete loss or restricted access to fishing grounds.	The worst case represents the maximum duration and extent of fishing exclusion throughout the operation phase and hence the greatest potential to displacement of fishing activity into other areas.
Impact 10: Increased steaming times to fishing grounds	<p>The maximum potential for disruption of established steaming routes as a result of the following:</p> <ul style="list-style-type: none"> • Presence of up to 72 WTGs and up to two OSPs; • 500m construction safety zones and 50m pre-commissioning safety zones; and • Advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities. 	This effect will be confined to the array areas therefore limited deviations to steaming routes are expected for certain vessels.
Impact 11: Interference with fishing activities (navigational conflict)	<p>The maximum potential for navigational conflict with fishing activities as a result of the following:</p> <ul style="list-style-type: none"> • Maximum number of vessels on site at any one time: 22; and • Indicative operation and maintenance vessel trips to port per year is up to 1,460 round trips of small vessels, and 127 round trips of large vessels (1,587 in total); 	This represents the maximum number of vessel transits during operation and maintenance that results in the greatest potential for conflict between operation and maintenance vessels and fishing gear.
Impact 12: Safety issues for fishing vessels	<p>Safety risks as a result of potential interactions between fishing vessels, fishing gear and North Falls infrastructure:</p> <ul style="list-style-type: none"> • Presence of up to 72 WTGs and up to two OSPs; • Presence of up to 228km of array/interconnector cables; • Presence of up to four offshore export cables of up to 62.7km in length each (250.8km in total); 	This represents the maximum number of structures on the seabed including array/interconnector cables and offshore export cables and therefore the maximum potential for gear snagging and associated loss or damage to fishing gear. Obstacles on the seabed during construction could potentially cause damage to, or complete loss of, fishing

Impact	Parameter	Notes
	<ul style="list-style-type: none"> • Presence of array/interconnector cable protection - up to 45.6km of cable protection may be required in the unlikely event that array/interconnector cables cannot be buried (based on 20% of the length); • Presence of offshore export cable protection - up to 25km of cable protection may be required in the unlikely event that offshore export cables cannot be buried (based on 10% of the length); and • Potential for obstacles on the seabed that may represent a fastening risk to fishing gears (i.e., accidentally dropped objects, disturbed seabed). 	<p>gears. In addition, activities associated with construction works such as construction vessel anchoring, jack up legs or cable trenching could produce spoil or mounds onto which fishing gears could fasten.</p> <p>Safety issues for fishing vessels associated with the potential for collision with construction vessels and allision with infrastructure are described and assessed in Chapter 15 Shipping and Navigation (Volume I).</p>
Impact 13: Impacts on commercial fishing as a result of impacts on commercially exploited species	See Chapter 11 Fish and Shellfish Ecology (Volume I)	
Decommissioning		
<p>No decision has yet been made regarding the final decommissioning policy for the offshore project infrastructure. It is also recognised that legislation and industry best practice change over time. However, the following infrastructure is likely be removed, reused or recycled where practicable:</p> <ul style="list-style-type: none"> • WTGs including monopile, steel jacket and GBS foundations; • OSPs including topsides and steel jacket foundations; and • Offshore cables may be removed or left in situ depending on available information at the time of decommissioning. <p>The following infrastructure is likely to be decommissioned in situ depending on available information at the time of decommissioning:</p> <ul style="list-style-type: none"> • Scour protection; • Offshore cables may be removed or left in situ; and • Cable protection. <p>The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. For the purposes of the worst-case scenario, it is anticipated that the impacts will be no greater than those identified for the construction phase.</p>		
Cumulative effects		
<p>There is the potential for other activities occurring in the region surrounding the Project to create cumulative effects. These could include aggregate dredging, oil and gas activity and infrastructure, subsea cabling and conservation measures. The key cumulative effects are expected to result from loss or restricted access to established fishing grounds and displacement of fishing activity.</p>		
Transboundary impacts		
<p>Due to non-United Kingdom (UK) vessels having access rights and quotas to fish the area under consideration, the potential exists for transboundary impacts to occur.</p>		

14.3.3 Summary of mitigation embedded in the design

14. This section outlines the embedded mitigation relevant to the commercial fisheries assessment, which has been incorporated into the design of North Falls (Table 14.4). Where other mitigation measures are proposed, these are detailed in the impact assessment (Section 14.6).

Table 14.4 Embedded mitigation measures

Parameter	Mitigation measures embedded into North Falls design
Accidental pollution	Committed to the use of best practice techniques and due diligence regarding the potential for pollution throughout all construction, operation and maintenance, and decommissioning activities. As a result, an outline Project Environmental Management Plan (PEMP) will be developed to accompany the DCO application. The final PEMP would be agreed with the MMO prior to construction and would include, for example, measures to control accidental release of drilling fluids whilst ensuring that any chemicals used are listed on the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) List of Substances Used and Discharged Offshore which are considered to pose little or no risk to the environment (OSPAR, 2021).
Fisheries Liaison Officer (FLO)	An FLO will be appointed for the construction phase and as required during the operation phase (including maintenance and repair) to provide a Project-specific point of contact to liaise and engage with the fishing industry. The requirements for decommissioning phase will be determined following economic and environmental appraisals.
Fisheries Liaison and Coexistence Plan (FLCP)	The FLCP detailing the scheduling, approach and stakeholders with whom liaison will be conducted and the content and formats of information to be provided and the process of recording and acting upon feedback from stakeholders. The FLCP will detail any additional appropriate evidence-based mitigation measures in line with FLOWW guidance.
Notifications	Timely and efficient distribution of Notice(s) to Mariners' (NtMs), Kingfisher notifications and other navigational warnings of the position and nature of works associated with the Project.
Claims for loss of/damage to fishing gears	Development of a standard procedure for the claim of loss of/or damage to fishing gear to facilitate co-existence and minimise potential adverse interactions between Project vessels and fishing activities.
Code of Good Practice	Development of a Code of Good Practice for contracted vessels facilitates co-existence between vessels undertaking works for the Project and fishing vessels and helps minimise potential adverse interactions. This will be in addition to compliance of all project vessels with international marine regulations as adopted by the Flag State, notably the International Regulations for Preventing Collisions at Sea (COLREG) and the International Convention for the Safety of Life at Sea (SOLAS).
Cable burial	The Applicant is committed to burying offshore export cables where practicable to a minimum burial depth of 0.5m. Cable burial minimises potential interactions between fishing gear and cables. In addition, cable burial minimises the amount of hard substrate which may be required.
Cable Burial Risk Assessment (CBRA)	The Applicant will determine suitable cable burial depths and protection measures via a CBRA process. This will consider the vessel densities, types and sizes across and in the vicinity of the offshore cable corridor and interconnector cable corridor to ensure protection / burial is sufficient.
Cable protection	Following industry best-practice the Applicant will evaluate appropriate cable protection methods available for cables which cannot be buried to the minimum depth of 0.5m.
Cable protection charting and dissemination of information	Information on the areas where cable protection is installed will be distributed to relevant representative organisations and stakeholders in appropriate formats for inclusion in charts and information bulletins.
Rock placement	Where rock placement is used for cable protection, designs that minimise potential gear snagging risk (i.e. use of graded rock and 1:3 profile berms) will be used, where

Parameter	Mitigation measures embedded into North Falls design
	practicable. This will facilitate co-existence and minimise potential damage to and from fishing gear and associated safety risks.
Cable exposures	In the event that cable exposures are identified during the operational phase, the location of these will be published via the standard notices with additional liaison to be undertaken with fisheries stakeholders. Where appropriate, additional temporary measures would also be put in place (e.g., surface marker buoys, use of guard vessels, etc).
Post-lay and cable burial inspection	Undertaking of post-lay and burial inspection surveys and, where appropriate and practicable, undertaking of rectification works. This facilitates co-existence and prevents potential damage to and from fishing gear and minimises potential safety risks.

14.4 Assessment methodology

14.4.1 Legislation, guidance and policy

14.4.1.1 National Policy Statements

15. The assessment of likely significant effects upon commercial fisheries has been made with specific reference to the relevant NPS. These are the principal decision-making documents for Nationally Significant Infrastructure Projects (NSIPs). Those relevant to the Project and commercial fisheries are:
- NPS for Renewable Energy Infrastructure (EN-3) (DECC, 2011b); and
 - Draft NPS for Renewable Energy Infrastructure (EN-3) (BEIS, 2021).
16. The specific assessment requirements for commercial fisheries, as detailed in the NPS, are summarised in Table 14.5 together with an indication of the section of the PEIR chapter where each is addressed.

Table 14.5 NPS assessment requirements

NPS Requirement	NPS Reference	PEIR Reference
NPS for Renewable Energy Infrastructure (EN-3)		
The construction and operation of offshore windfarms can have both positive and negative effects on fish and shellfish stocks.	Paragraph 2.6.122	Consideration is given in this chapter to the potential impact on commercial fisheries resulting from impacts associated with the Project on commercially exploited fish and shellfish species (construction, Section 14.6.1; operation, Section 14.6.2; decommissioning, Section 14.6.3; and cumulative effects, Section 14.7.3). A detailed assessment of the impacts of the project on fish and shellfish species, including those of commercial importance, is provided in Chapter 11 Fish and Shellfish Ecology (Volume I).
Whilst the footprint of the offshore windfarm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity such as trawling and longlining, other fishing activities may be able to take place within operational windfarms without unduly disrupting or compromising navigational safety. Consequently, the establishment of a windfarm can increase the potential for	Paragraph 2.6.123	The likely significant effects of the Project alone and cumulatively with other projects are described in Section 14.6.1 and Section 14.7.3, respectively, including analysis of the disruption and impact to the commercial fishing industry by fishing method.

NPS Requirement	NPS Reference	PEIR Reference
some fishing activities, such as potting, where this would not compromise any safety zone in place. The Planning Inspectorate should consider adverse or beneficial impacts on different types of commercial fishing on a case-by-case basis		
In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore windfarms are sited.	Paragraph 2.6.124	Consideration has been given to the likely significant effects of the Project on both UK and non-UK fleets (construction, Section 14.6.1; operation, Section 14.6.2; decommissioning, Section 14.6.3; and cumulative effects, Section 14.7.3).
Early consultation should be undertaken with statutory advisors and with representatives of the fishing industry which could include discussion of impact assessment methodologies. Where any part of the proposal involves a grid connection to shore, appropriate inshore fisheries groups should be consulted	Paragraph 2.6.127	Section 14.2 describes stakeholder consultation which has been undertaken to inform this chapter. This includes consultation with local (inshore) fleets amongst other stakeholders.
Where a number of offshore windfarms have been proposed within an identified zone, it may be beneficial to undertake such consultation at a zonal, rather than a site specific, level.	Paragraph 2.6.128	Consultation has been undertaken at a scale that seeks to capture fishing activity in the region, including in and around the Project and engaging with transboundary stakeholders (Section 14.5). Stakeholder engagement is summarised in Section 14.2.
The assessment by the applicant should include surveys of the effects on fish stocks of commercial interest and any potential reduction in such stocks, as well as any likely constraints on fishing activity within the project boundaries. Robust baseline data should have been collected and studies conducted as part of the assessment.	Paragraph 2.6.129	A detailed assessment of the impacts of the project on fish and shellfish receptors is provided in Chapter 11 Fish and Shellfish Ecology (Volume I). The likely constraints on fishing associated with the Project are considered in this chapter (construction, Section 14.6.1; operation, Section 14.6.2; and decommissioning, Section 14.6.3).
Where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be included in the assessment on commercial fishing.	Paragraph 2.6.130	Consideration has been given in the assessment presented in Section 14.6.1 to the implications of the implementation of safety zones.
Where the precise extents of potential safety zones are unknown, a realistic worst-case scenario should be assessed. Applicants should consult the Maritime and Coastguard Agency (MCA). Exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment by the Applicant should include surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the windfarm development and of any safety zones.	Paragraph 2.6.131	Consideration has been given to the implementation of safety zones as defined in the worst-case scenario (Table 14.3) and for the assessment of likely significant effects on commercial fisheries (Section 14.6.1). Consideration is given in this chapter to the potential impact on commercial fisheries resulting from likely significant effects associated with the Project on commercially exploited fish and shellfish species. A detailed assessment of the impacts of the project on fish and shellfish species, including those of commercial importance, is provided in Chapter 11 Fish and Shellfish Ecology (Volume I).

NPS Requirement	NPS Reference	PEIR Reference
Draft NPS for Renewable Energy Infrastructure (EN-3)		
<p>Whilst the footprint of an offshore wind farm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity such as trawling and long-lining, other fishing activities may be able to take place within operational wind farms without unduly disrupting or compromising navigational safety. Consequently, the establishment of a wind farm can increase the potential for some fishing activities, such as potting, where this would not compromise any safety zone in place.</p>	Paragraph 2.31.1	<p>The likely constraints on fishing associated with the Project are considered in this chapter (construction, Section 14.6.1; operation, Section 14.6.2; and decommissioning, Section 14.6.3).</p>
<p>In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore windfarms are sited.</p>	Paragraph 2.31.3	<p>Consideration has been given to the likely significant effects of the Project on both UK and non-UK fleets (construction, Section 14.6.1; operation, Section 14.6.2; decommissioning, Section 14.6.3; and cumulative effects, Section 14.7.3).</p>
<p>Where an offshore wind farm could affect a species of fish that is of commercial interest, but is also of ecological value, the Secretary of State should refer to Section 2.26 of this NPS with regard to the latter. The applicant should also speak to Defra and representatives of the fishing industry to explore possible coordination of activities.</p>	Paragraph 2.31.4	<p>Consideration is given in this chapter to the potential impact on commercial fisheries resulting from likely significant effects associated with the Project on commercially exploited fish and shellfish species. A detailed assessment of the impacts of the Project on fish and shellfish species, including those of commercial importance, is provided in Chapter 11 Fish and Shellfish Ecology (Volume I).</p>
<p>In some circumstances, applicants may seek declaration of safety zones around wind turbines and other infrastructure, although these might not be applied until after consent to the wind farm has been granted. The declaration of a safety zone excludes or restricts activities within the defined sea areas including commercial fishing.</p>	Paragraph 2.31.5	<p>Consideration has been given in the assessment presented in Section 14.6.1 to the implications of the implementation of safety zones.</p>
<p>Early consultation should be undertaken with statutory advisors and with representatives of the fishing industry which could include discussion of impact assessment methodologies. Where any part of the proposal involves a grid connection to shore, appropriate inshore fisheries groups should be consulted.</p>	Paragraph 2.31.6	<p>Section 14.2 describes stakeholder consultation which has been undertaken to inform this chapter. This includes consultation with local (inshore) fleets amongst other stakeholders.</p>
<p>The assessment by the applicant should include surveys of the effects on fish stocks of commercial interest and any potential reduction in such stocks, as well as any likely constraints on fishing activity within the project boundaries. Robust baseline data should have been collected and studies conducted as part of the assessment.</p>	Paragraph 2.31.7	<p>A detailed assessment of the impacts of the project on fish and shellfish receptors is provided in Chapter 11 Fish and Shellfish Ecology (Volume I). The likely constraints on fishing associated with the Project are considered in this chapter (construction, Section 14.6.1; operation, Section 14.6.2; and decommissioning, Section 14.6.3).</p>
<p>Where there is a possibility that safety zones will be sought around offshore</p>	Paragraph 2.31.8	<p>Consideration has been given in the assessment presented in Section</p>

NPS Requirement	NPS Reference	PEIR Reference
infrastructure, potential effects should be included in the assessment on commercial fishing.		14.6.1 to the implications of the implementation of safety zones.
Where the precise extents of potential safety zones are unknown, a realistic worst-case scenario should be assessed. Applicants should consult the MCA. Exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment by the applicant should include surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the windfarm development and of any safety zones.	Paragraph 2.31.9	Consideration has been given to the implementation of safety zones as defined in the worst-case scenario (Table 14.3) and for the assessment of likely significant effects on commercial fisheries (Section 14.6.1). Consideration is given in this chapter to the potential impact on commercial fisheries resulting from likely significant effects associated with the Project on commercially exploited fish and shellfish species. A detailed assessment of the impacts of the project on fish and shellfish species, including those of commercial importance, is provided in Chapter 11 Fish and Shellfish Ecology (Volume I).
Any mitigation proposals should result from the applicant having detailed consultation with relevant representatives of the fishing industry, the MMO and the relevant Defra policy team.	Paragraph 2.31.10	Consultation through the CFWG and with UK and transboundary stakeholders from the fishing community is on-going (see Section 14.2 and 14.5). Consideration will also be given to feedback received on the PEIR, in developing the final mitigation proposals which will be presented in the ES.
Mitigation should be designed to enhance where reasonably possible any potential medium and long-term positive benefits to the fishing industry, commercial fish stocks and the marine environment.	Paragraph 2.31.11	Proposed embedded mitigation measures are presented in Table 14.4, including development of a FLCP.

14.4.1.2 Other

17. In addition to the NPS, there are a number of pieces of legislation, policy and guidance applicable to the assessment of commercial fisheries. These include:
- Centre for Environment, Fisheries and Aquaculture Science (Cefas; 2012). Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403, May 2012;
 - Cefas, Marine Consents and Environment Unit (MCEU), Department for Environment, Food and Rural Affairs (DEFRA) and Department of Trade and Industry (DTI; 2004). Offshore Wind Farms - Guidance note for Environmental Impact Assessment In respect of FEPA and CPA requirements, Version 2;
 - Marine Scotland, (2022). Good Practice Guidance for assessing fisheries displacement by other licenced marine activities;
 - RenewableUK, (2013). Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms;

- Sea Fish Industry Authority and UK Fisheries Economic Network (2012). Best practice guidance for fishing industry financial and economic impact assessments;
 - Blyth-Skyrme, R.E. (2010). Options and opportunities for marine fisheries mitigation associated with wind farms. Final report for Collaborative Offshore Wind Research into the Environment contract FISHMITIG09. COWRIE Ltd, London;
 - Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW; 2014). Best Practice Guidance for Offshore Renewables Developments. Recommendations for Fisheries Liaison.;
 - FLOWW (2015). Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds;
 - International Cable Protection Committee (2009). Fishing and Submarine Cables - Working Together
18. Further detail is provided in Chapter 3 Policy and Legislative Context (Volume I).

14.4.2 Data sources

19. The commercial fisheries baseline has been informed through the review and analysis of available fisheries data and information from relevant publications. In addition, extensive consultation with local fisheries stakeholders has been carried out to aid the collection of baseline information.
20. The information collected via the desktop study and consultation with fisheries stakeholders has been compiled into Appendix 14.1 (Volume III) with a summary provided in Section 14.2 within this chapter.
21. In order to provide up to date information on which to base the impact assessment, a site characterisation survey was conducted through a detailed desktop review of existing studies and datasets relevant to the offshore project area as detailed below in Table 14.6.

Table 14.6 Available data and information sources

Dataset	Year	Coverage	Notes/Limitations
UK Landings Data by ICES Rectangle (MMO)	2016 - 2020	Landings statistics data for UK-registered vessels including: landing year; landing month; vessel length category; ICES rectangle; vessel/gear type; species; live weight (tonnes) and live weight (value (£)).	Landings data have been analysed by value (£) and presented as an annual average for the period 2016 – 2020. It should be noted that fishing is normally not equally distributed across the whole area of an ICES rectangle and therefore overall activities identified for a given rectangle may not be necessarily representative of the activity that the specific area where the offshore project area is located supports. As described in the UK Sea Fisheries Statistics 2020 Report (MMO, 2021), the Covid-19 pandemic, where effects were felt from March 2020 onwards, resulted in significant impacts on commercial fishing during 2020. Like all parts of the UK economy, the pandemic had differential impacts on different sectors in the fishing industry. Overall, shellfish fisheries were hit most severely as shellfish species tend to be landed

Dataset	Year	Coverage	Notes/Limitations
			<p>and sold fresh for use in the hospitality sector and demand from this sector in the UK and abroad dropped dramatically as lockdowns were being imposed across the UK and European Union (EU). While data from 2020 has been included in this report, it should be noted that data from 2020 may not be fully representative of normal fishing activity.</p> <p>In some instances, gear categories have been combined to aid visualisation of trends in the data. The following gear categories have been combined into single categories encompassing:</p> <p>Bottom otter trawls (bottom otter trawls; otter trawls (not specified); otter twin trawls; bottom pair trawls);</p> <p>Midwater trawls (midwater trawl; midwater pair trawls);</p> <p>Longlines and other lines (longlines; hooks and lines (not specified); handlines and pole-lines);</p> <p>Driftnets and Trammel Nets (driftnets; trammel nets); and</p> <p>Other (unknown; hand dredges; traps (not specified)).</p>
UK Fisheries Surveillance Sightings (MMO)	2011 - 2020	Surveillance sightings of vessels by gear type (all nationalities) recorded in UK waters by surveillance patrols.	<p>Only sightings of vessels recorded as “fishing” have been included in the analysis.</p> <p>While the data provides a good indication of key methods and nationalities potentially active in a given area, it should be noted that surveillance patrols are not carried out at constant time intervals and that the level of surveillance effort has been reduced in recent years.</p> <p>In some instances, gear categories have been combined to aid visualisation of trends in the data.</p> <p>The following gear categories have been combined into a single “trawlers combined” category, encompassing: trawler (all), demersal stern trawler, stern trawler (pelagic/demersal), demersal side trawler, and side trawler (pelagic/demersal).</p>
Fishing Activity for UK Vessels 15m and over Data layers (MMO)	2016 - 2020	<p>Satellite tracking data (Vessel Monitoring System (VMS) pings recorded in 0.05° by 0.05° grids from UK vessels in UK and European waters.</p> <p>VMS data is combined with log book data with values assigned to each cell in the grid in terms of effort and value (£).</p>	<p>This type of dataset is only available for vessels over 15m in length and therefore is not representative of fishing activity undertaken by smaller local vessels which normally operate in inshore waters. Data has been analysed by value (£) and presented as an annual average for the period 2016 – 2020.</p> <p>Fishing gear categories used in the dataset do not allow to distinguish activity between some fisheries. This dataset is provided by broad gear category and does not differentiate between target species.</p>
Belgian Fishing Activity for vessels over 15m in length (Flanders Research Institute Agricultural, Fisheries and Food Research; ILVO)	2010 - 2014	Belgian VMS data combined with logbook data presented at 1/16th of an ICES rectangle scale.	<p>Includes information for Belgian registered vessels of 15m in length.</p> <p>The data included in this report is presented as an annual average in terms of fishing effort for the period 2010 - 2014.</p> <p>Recent VMS data for Belgian vessels is not publicly available. The data presented in this report is part of BMM in-house historic fisheries data sets for Belgian vessels obtained via data request to ILVO.</p>

Dataset	Year	Coverage	Notes/Limitations
			BMM first requested VMS data up to 2021 in February 2022 but at the time of writing (February 2023) are yet to receive the new data.
Dutch Fishing Activity for vessels over 12m in length (Wageningen University and Research; WUR)	2017 - 2021	Dutch VMS data combined with logbook data presented at 1/16th of an ICES rectangle scale.	Includes information for Dutch registered vessels over 12m in length. The data included in this report is presented as an annual average in terms of fishing value (€) for the period 2017 to 2021.
Dutch Landings by ICES Rectangle (WUR)	2017 - 2021	Landings statistics data for Dutch-registered vessels including: landing year; vessel length category; ICES rectangle; vessel/gear type; species; and landings (€).	Landings data provided by WUR provides the top ten species by ices rectangle for each year. The top ten species are not necessarily consistent across each year. The data is analysed by selecting the species which are in the top ten for each of the years analysed (2017 – 2021), with all other species included in the “other” category.
Belgian and French Landings by ICES rectangle (European Commission’s (EC) Scientific, Economic and Technical Committee on Fishing (STECF))	2012- 2016	Landings statistics data for Belgian and French-registered vessels including: landing year; landing quarter; vessel length category; ICES rectangle; vessel/gear type; species; and landings (tonnes).	Belgian and French landings (tonnes) by ICES rectangle based on data submitted by Belgium and France to the EC’s STECF. The same limitations noted above in relation to UK landings data by ICES rectangle also apply here. In some instances, gear categories have been combined to aid visualisation of trends in the data. The following gear categories have been combined into single categories: Beam trawls (Beam trawls mesh >= 80mm and <120mm; 80mm or missing; >=120mm) Bottom trawls and seines (bottom trawls and seines >=70mm and <100mm; >=100mm; >=16mm and <32mm). For both French and Belgian landings in the study area, the majority of landings recorded in the beam trawl category fall into mesh size between >= 80mm and <120mm, and for bottom trawls mesh size between >=70mm and <100mm.
KEIFCA Surveillance Sightings	2015 - 2020	Kent and Essex IFCA District	Limited to areas within the district and therefore within 6nm. This data set only provides a snap shot in time per sighting. In addition, sightings are skewed towards KEIFCA home ports.
European Fishing Vessels Automatic Identification System (AIS) (EMODnet, 2022)	2020	All European Fishing Vessels, Average MW Fishing Hours	EMODnet Human Activities deals with a diverse set of marine and maritime human activities. As a result, data feeding into the portal comes from a multitude of public and private data sources at EU, international, national, and local level. Each partner of the consortium is in charge of surveying existing data sources for a given activity.

14.4.3 Impact assessment methodology

22. Chapter 6 EIA Methodology (Volume I) explains the general impact assessment methodology applied to North Falls. The following sections confirm the methodology used to assess the potential impacts on commercial fisheries.

14.4.3.1 Definitions

23. For each effect, the assessment identifies receptors sensitive to that effect and implements a systematic approach to understanding the impact pathways and the level of impacts on given receptors. The definitions of sensitivity and magnitude for the purpose of the commercial fisheries assessment are provided in Table 14.7 and Table 14.8.

Table 14.7 Definition of sensitivity for commercial fisheries receptors

Sensitivity	Definition
High	Highly dependent on fishing grounds that overlap with the offshore project area due to very limited operational range and lack of operational versatility (i.e. ability to deploy only one gear type and limited range of target species); and/or high dependence on a single fishing ground; and/or very limited ability to adapt to the potential impact.
Medium	Limited operational range and/or some versatility with regards to fishing gear/target species; and/or dependence upon a limited number of grounds; and/or limited ability to adapt to potential impact.
Low	Extensive operational range and/or versatility with regards to fishing gear/target species; and/or ability to exploit a varied range of fishing grounds; and/or high adaptability to the potential impact.
Negligible	Very extensive operational range and/or versatility with regards to fishing gear/target species; and/or ability to exploit numerous and extensive fishing grounds; and/or fully adaptable to the potential impact

Table 14.8 Definition of magnitude for commercial fisheries receptors

Magnitude	Definition
High	The area affected by the impact sustains very high levels of fishing activity and/or represents a critical fishing ground for a given fishery/fleet; and/or the effect is permanent/very long term; and/or limited fisheries liaison or management measures can be implemented.
Medium	The area affected by the impact sustains high/moderate levels of fishing activity and represents a significant extent of the grounds available to a given fishery/fleet; and/or the effect is long term; and/or some suitable fisheries liaison or management measures can be implemented.
Low	The area affected by the impact sustains low/moderate levels of fishing activity and represents a relatively small extent of the grounds available to a given fishery/fleet; and/or the effect is short to medium term; and/or a range of suitable liaison or management measures can be implemented.
Negligible	The area affected by the impact sustains low/negligible levels of fishing activity and/or affects a small/negligible extent of grounds; and/or the effect is very short term.

14.4.3.2 Significance of effect

24. In basic terms, the potential significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact (see Chapter 6 EIA Methodology (Volume I) for further details). The determination of significance is

guided by the use of an effect significance matrix, as shown in Table 14.9. Definitions of each level of significance are provided in Table 14.10.

25. Likely significant effects identified within the assessment as major or moderate are regarded as significant in terms of the EIA regulations. Appropriate mitigation has been identified, where possible, in consultation with the regulatory authorities and relevant stakeholders. The aim of mitigation measures is to avoid or reduce the overall impact in order to determine a residual impact upon a given receptor.

Table 14.9 Significance of effect matrix

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Negligible	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

Table 14.10 Definition of significance of effect

Significance	Definition
Major	Very large or large change in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision-making process.
Negligible	No discernible change in receptor condition.
No change	No impact, therefore no change in receptor condition.

26. Please note that for the potential impact “Snagging Risk/Loss or Damage to Fishing Gear and Safety Issues” the significance criteria outlined previously are not considered appropriate. In these instances, impacts are assessed in terms of potential risks in line with the parameters used in Chapter 15 Shipping and Navigation (Volume I). Therefore, for this impact only, terminology for significance of effect aligns with assessment terminology as used in Chapter 15 Shipping and Navigation (Volume I). Risk ratings are assigned based on the frequency/probability of occurrence (negligible, extremely unlikely, remote, reasonably probable or frequent) and the severity of the effect (negligible, minor, moderate, serious or major). Following this approach, risks which are defined to be within acceptable limits are not considered significant in EIA terms whilst risks considered to be outside acceptable limits are considered to be significant. Further detail on the risk assessment methodology is provided in Chapter 15 Shipping and Navigation (Volume I).

14.4.4 Cumulative effects assessment methodology

27. The CEA considers other plans, projects and activities that may impact cumulatively with North Falls. Chapter 6 EIA Methodology (Volume I) provides further details of the general framework and approach to the CEA.
28. For commercial fisheries, these activities include other offshore wind farm projects, aggregate dredging, installation of subsea cables and potential closures to fishing as a result of management measures within Marine Protected Areas (MPAs).

14.4.5 Transboundary impact assessment methodology

29. The impact assessment provided within this chapter takes account of the likely significant effects of the project on international fleets which are known to operate in the study area, namely the Belgian, Dutch and French fleets. The assessment of potential transboundary impacts is therefore integrated within the impact assessment undertaken.

14.4.6 Assumptions and limitations

30. The characterisation of the existing environment has been undertaken using the data sources listed in Section 14.4.2. These are subject to a range of sensitivities and limitations which are described in detail in Appendix 14.1 (Volume III).

14.5 Existing environment

14.5.1 Surveillance sightings

31. The commercial fisheries study area supports a range of commercial fishing activities from UK and European fleets. This section outlines the principal nationalities active in the study area and fishing methods deployed based on MMO surveillance sightings and analysis of landings data. An overview of the principal fishing fleets and methods operating in the study area is given in Figures 14.2 and 14.3 (Volume II) and Table 14.11 based on analysis of MMO surveillance sightings from 2011 to 2020 by method and nationality.
32. The majority of sightings within the 6nm limit in ICES rectangle 32F1 (where most of the offshore project area is located) are of UK vessels and are a mix of potters/whelkers, trawlers and netters. Belgian and Dutch vessels have also been recorded in this rectangle in comparatively high densities outside of the 6nm limit along the offshore cable corridor. A small number of French vessels were observed in the study area. It should be noted that with the exception of Belgian and French vessels (which have historic fishing rights to fish between the UK's 6 and 12nm limit in this area), non-UK vessels do not have rights to fish within the 12nm limit (Figure 14.4, Volume II).
33. In the northern ICES rectangle of the study area 33F1 (where a small section of the northern array area is situated), the sightings are mostly UK and Belgian vessels.

34. Further offshore in ICES rectangle 32F2 (where a small section of the southern array area lies) the sightings are mainly Belgian, Dutch and French with few UK vessels, although sightings overall in this rectangle are comparatively low to those nearshore. Belgian and Dutch vessels were predominantly beam trawlers and the French were trawlers, likely to be pelagic trawling.

Table 14.11 Surveillance sightings in ICES rectangles in the study area, nationality and method (2011 – 2020) (Source: MMO, 2021)

ICES Rectangle	Nationality	Vessel Type	Number of Sightings	% of Total Sightings in the ICES Rectangle	% of Total Sightings within the Study Area
32F1	UK	Trawlers combined	201	28.2%	21.8%
		Suction Dredger	66	9.2%	7.2%
		Gill Netter	46	6.4%	5.0%
		Drift Netter	35	4.9%	3.8%
		Potter/Whelker	24	3.4%	2.6%
		Rod And Line	22	3.1%	2.4%
		Beam Trawler	19	2.7%	2.1%
		Unknown	16	2.2%	1.7%
		Other Dredges (Including Mussel)	15	2.1%	1.6%
		Scallop Dredger (French/ Newhaven)	1	0.1%	0.1%
		Long Liner	1	0.1%	0.1%
		United Kingdom Total	446	62.5%	48.3%
	Belgium	Beam Trawler	126	17.6%	13.7%
		Trawlers combined	54	7.6%	5.9%
		Potter/Whelker	1	0.1%	0.1%
		Belgium Total	181	25.4%	19.6%
	Netherlands	Beam Trawler	70	9.8%	7.6%
		Trawlers combined	9	1.3%	1.0%
		Netherlands Total	79	11.1%	8.6%
	France	Trawlers combined	6	0.8%	0.7%
		France Total	6	0.8%	0.7%
	Other	Trawlers combined	1	0.1%	0.1%
		Beam Trawler	1	0.1%	0.1%
Other Total		2	0.3%	0.2%	
32F1 Total			714	100.0%	77.4%
33F1	United Kingdom	Trawlers combined	42	32.1%	4.6%
		Potter/Whelker	26	19.8%	2.8%
		Beam Trawler	13	9.9%	1.4%
		Unknown	9	6.9%	1.0%
		Long Liner	4	3.1%	0.4%
		Drift Netter	4	3.1%	0.4%
		Rod And Line	4	3.1%	0.4%
		Gill Netter	3	2.3%	0.3%

ICES Rectangle	Nationality	Vessel Type	Number of Sightings	% of Total Sightings in the ICES Rectangle	% of Total Sightings within the Study Area
		Scallop Dredger (French/ Newhaven)	1	0.8%	0.1%
		United Kingdom Total	106	80.9%	11.5%
	Belgium	Beam Trawler	16	12.2%	1.7%
		Belgium Total	16	12.2%	1.7%
	France	Trawlers combined	4	3.1%	0.4%
		France Total	4	3.1%	0.4%
	Netherlands	Beam Trawler	3	2.3%	0.3%
		Netherlands Total	3	2.3%	0.3%
	Other	Trawlers combined	1	0.8%	0.1%
		Beam Trawler	1	0.8%	0.1%
		Other Total	2	1.5%	0.2%
33F1 Total			131	100.0%	14.2%
32F2	Netherlands	Beam Trawler	38	48.7%	4.1%
		Bottom Seiner (Anchor/ Danish/ Fly/ Scots)	2	2.6%	0.2%
		Trawlers combined	1	1.3%	0.1%
		Netherlands Total	41	52.6%	4.4%
	Belgium	Beam Trawler	19	24.4%	2.1%
		Potter/Whelker	1	1.3%	0.1%
		Belgium Total	20	25.6%	2.2%
	France	Trawlers combined	11	14.1%	1.2%
		France Total	11	14.1%	1.2%
	United Kingdom	Trawlers combined	2	2.6%	0.2%
		Unknown	1	1.3%	0.1%
		United Kingdom Total	3	3.8%	0.3%
	Other	Gill Netter	2	2.6%	0.2%
		Trawlers combined	1	1.3%	0.1%
		Other Total	3	3.8%	0.3%
	32F2 Total			78	100.0%
Total for the study area			923	-	-

14.5.2 UK fishing activity

35. UK landings data indicate a large cockle fishery in ICES rectangle 32F1, however, while the inshore section of the offshore cable corridor overlaps with

two cockle management areas, it is understood from consultation with KEIFCA that there is no overlap between cockle beds that are being commercially targeted and the offshore cable corridor. Any cockle grounds that do overlap have been closed under the Cockle Fishery Flexible Permit Byelaw for the last 10 years. The active cockle fishery contributing to the landings are in the southwest corner of ICES rectangle in 32F1, and are therefore not considered further.

36. The landings from ICES rectangle 32F1 are worth an approximate £2.78 million per year (average 2016-2020), although around half of this is from the aforementioned cockles. The main species of value are whelks, sole, lobsters, bass, thornback rays and horse mackerel (Figures 14.5 and 14.6, Volume II).
37. Local UK vessels active in the inshore section of the study area (rectangle 34F1) operate mostly from Felixstowe Ferry, West Mersea and Harwich. Given their small size (generally under 10m) and limited operational range, these vessels primarily fish grounds within the UK's 12nm limit and mostly within the 6nm limit (Figure 14.7, Volume II). From consultation it is understood a number of these local vessels are multi-purpose with the ability to switch between gears on a seasonal basis. The main methods employed along the coastline is potting for whelks, lobster and edible crabs, trawling for sole and thornback ray, netting for sole, bass and thornback ray and at lower levels, beam trawling for sole, midwater trawling for horse mackerel, and longlining for sole, bass and thornback ray (Figures 14.8, 14.9, 14.10, 14.11 and 14.12, Volume II).
38. Further offshore (i.e., 32F2), comparatively low landings are recorded in the study area, and of this, beam trawling and potting represent the main fishing methods (Figure 14.5, Volume II). The vessels targeting this area are typically larger in size (over 15m).
39. VMS data indicates low levels of fishing activity by larger vessels (over 15m), especially bottom otter trawling and beam trawling within the offshore project area when compared to areas to the north of the Project in the central and northern North Sea, and to the south in the English Channel (Figure 14.15 and 14.16, Volume II).

14.5.3 Belgian fishing activity

40. The Belgian fleet has historic fishing rights between the UK's 6 and 12nm limit and are therefore recorded in the area of the offshore cable corridor which falls within those limits (Figure 14.17, Volume II). Beam trawling and demersal trawling account for the majority of Belgian activity in the study area, however available data was only up to 2016 (Figure 14.18, Volume II). Annual fleet reports from 2018 to 2020 indicate that beam trawlers account for c.71% of the Belgian fleet landings, otter trawlers contribute c.11% and seine netters c.4% (Landbouw & Visserij 2018, 2019, 2020).
41. The principal species targeted by Belgian vessels are plaice and sole. In rectangles 32F1 and 32F2, other species of importance include thornback ray, cod, small spotted catshark and tub gurnard. In rectangle 33F1, shrimp and prawns are the principal species targeted by Belgian vessels, albeit at lower levels (Figure 14.19, Volume II). During consultation, it was noted that more

recent landings show that squid is also landed from the study area (since around 2015).

42. Fishing activity by the Belgian beam trawl fleet occurs at relatively high levels across a wide section of the southern North Sea and English Channel, including the offshore project area (Figure 14.20, Volume II). The highest levels of activity are recorded along the coasts of the Netherlands and Belgium, and in the Channel. Although at comparatively lower levels, fishing activity is also recorded further north over large areas of the central North Sea.
43. Belgian demersal trawlers show a more constrained spatial distribution of activity, with discrete areas of activity across the North Sea (Figure 14.21, Volume II). The highest landings values are found for the most part within the study area, however, from consultation it was understood that the relevant activity to the study area is beam trawling for sole and plaice, with some demersal trawling.
44. Seine netting activity is recorded throughout the southern North Sea, with the highest landings values reported from the English Channel (Figure 14.22, Volume II). While low levels of fishing activity occur within the study area, VMS data indicates that if there is any overlap with the array areas, it is minimal.
45. Overall, it was understood that the offshore project area is not considered an important fishing ground for Belgian vessels, with landings from the study area reported to be decreasing over the last 10 years.

14.5.4 Dutch fishing activity

46. Beam trawling for flatfish species, particularly sole and plaice, is the principal fishing method used by Dutch vessels in the study area (Figures 14.23, 14.24 and 14.25, Volume II). Activity by Dutch seine netters and demersal trawlers also occurs, however to a much lesser extent. Dutch vessels have no historic rights to fish within the UK's 12nm limit, therefore the potential overlap with the offshore project area is limited to the array area, with no activity recorded in areas relevant to the offshore cable corridor.
47. The Dutch beam trawl fleet fishes over large areas of the North Sea. The highest landings values are reported across the southern North Sea, particularly along the coasts of the Netherlands and Belgium and waters between the Essex coast and mainland Europe. High landings values occur within parts of the study area (32F2) although there is limited overlap with the array areas (Figure 14.26, Volume II).
48. Dutch seine netting occurs at significantly lower levels than beam trawling across the southern and central North Sea and the English Channel. The most valuable fishing grounds are reported from the English Channel and waters between the Essex coast and mainland Europe (Figure 14.27, Volume II). Landings values indicate that no seine netting occurs in 32F1, where the majority of the array areas are located (Figure 14.24, Volume II). The majority of seine netting activity within the study area occurs in ICES rectangle 32F2, which has a minimal overlap with the southern array area.

14.5.5 French fishing activity

49. The available fisheries data indicates that the study area supports low levels of activity by French pelagic and bottom trawlers, with higher densities of vessels recorded in the English Channel. The French fleet has historic fishing rights between the UK's 6 and 12nm limit and low densities of vessel sightings are observed in the offshore cable corridor, however no vessels have been recorded within the array areas (Figure 14.28, Volume II). The landings weights recorded south of the study area demonstrate that key grounds are further south, towards the English Channel, where landings weights are a factor of ten higher (31F1 and 31F2; Figures 14.29 and 14.30, Volume II).
50. Landings in ICES rectangle 32F1 (where the majority of the offshore project area is located) are primarily from pelagic trawls targeting herring, mackerel and horse mackerel. It is understood from consultation that there are three pelagic vessels that operate out of Fécamp that primarily fish grounds off the Kent and French coasts to the south of the Project.
51. The majority of landings in rectangle 32F2 are from bottom trawls and seines targeting whiting, squid, cod and lesser spotted catfish (Figures 14.29 and 14.30, Volume II). While the proportion landed by each demersal fishing method (bottom demersal trawls and by seine nets) is unknown, landings from these methods in 32F1 represent less than a quarter of the total landed weight. During consultation it was understood that the offshore project area is not considered to overlap with important French fishing grounds.

14.5.6 Future trends in baseline conditions

52. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 require that “*an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge*” is included within the ES (EIA Regulations, Schedule 4, Paragraph 3). From the point of assessment, over the course of the development and operational lifetime of the Project (indicative operational lifetime of 30 years), long-term trends mean that the condition of the baseline environment is expected to evolve. This section provides a qualitative description of the evolution of the baseline environment, using available information and scientific knowledge of commercial fisheries.
53. The levels, values and types of commercial fishing occurring within regional, national and international sea areas are subject to a wide range of factors. These include variations in the conditions of the stocks of target species, changes in the quotas of pressure stock species, the imposition of conservation measures such as MPAs, various other spatial restrictions, local byelaws, effort limits and vessel and gear regulations. Economics effects as well as national and international politics have also significantly determined the future of commercial fishing. Similarly, advances in the design of fishing vessels, and their gears and electronics have also resulted in significant changes in the structures of the UK and European fishing fleets, including those operating in the area under consideration. It is also to be expected that the progressive effects of climate change and increasing sea temperatures will result in

significant changes in the commercial fishing. Therefore, regardless of whether the Project is developed, it is to be expected that over the projected lifespan, commercial fishing will change, possibly significantly.

54. The pattern of regulation, the condition of certain stocks and increasing focus on sustainability and conservation, suggest that an overall reduction in effort over the next 30 years in UK waters may be a more likely scenario than an increase. It is also probable that increasing fuel costs and growing international concern about the environmental damage caused by beam trawlers, may result in the current beam trawlers operating in the area not being replaced. This pattern is already taking place in Holland where a new round of decommissioning is providing funds for the buying out and scrapping of a significant proportion of the larger beam trawlers in the Dutch fleet. It is also expected that other fleet restricting will occur over time leading possibly to fewer, more fuel-efficient vessels utilising lighter seabed contact and more selective gears.

14.6 Assessment of significance

55. The potential effects arising from the construction, operation and maintenance, and decommissioning phases of North Falls are listed in Table 14.3, along with the worst-case scenario against which each impact has been assessed. An assessment of the likely significance of the effects of the Project on commercial fisheries receptors caused by each identified impact is given below.

14.6.1 Potential impacts during construction

14.6.1.1 *Impact 1: Temporary loss or restricted access to fishing grounds*

56. During the construction phase of the Project, activities such as foundation installation of WTGs and OSPs as well as array, interconnector and offshore cable installation have the potential to result in a temporary loss or restricted access to traditional fishing grounds by commercial fishing vessels. Similarly, the presence of machinery on the seabed (i.e., jack up vessel legs, vessel anchors) could also result in a temporary loss of access.
57. The worst-case scenario is represented by the installation of up to 72 WTGs and two OSPs, up to 228km of array/interconnector cables and up to four offshore export cables totalling 250.8km, with associated safety zones and/or advisory clearance distance around relevant infrastructure/works, over a period of up to three years.
58. The need to implement safety zones and advisory clearance distances during the construction phase may result in localised loss or restricted access to fishing grounds. Requirements for safety zones and advisory clearance distances are anticipated to include:
 - 500m safety zones around structures undergoing installation; and
 - Advisory clearance distances of up to 500m in radius around construction vessels (including cable lay vessels) and along vulnerable sections of cables (e.g., cables awaiting burial or protection).

59. The temporary loss or restricted access to fishing grounds would occur in the immediate proximity of infrastructure/machinery at any given time as construction works progress and would be temporary and short term.
60. To facilitate co-existence during this period and minimise impacts associated with loss of grounds/restricted access to grounds, the need for safety zones and advisory clearance areas will be minimised where safe and practicable. In addition, information on planned construction works and safety zones/advisory clearance distances will be circulated in a timely and efficient manner through NtMs.
61. The Project FLO will maintain effective communication with the fishing industry through the pre-construction and construction phases. Furthermore, where appropriate, Offshore Fisheries Liaison Officers (OFLO) will be used to ensure good communication is maintained between construction vessels and fishing vessels active in the offshore project area and its proximity.
62. An outline of the approach to co-existence with commercial fisheries by the Project, including reference to the measures of relevance for minimising loss or restricted access to fishing grounds during construction, will be included within the FLCP. In instances where the relocation of static fishing gear may be necessary, measures and procedures set out in the FLCP, in line with FLOWW guidance, will be adhered to.
63. The assessment of temporary loss or restricted access to traditional fishing grounds is discussed below on a fleet-by-fleet basis. Due to data limitations, it is beyond the scope of this assessment to assess the impacts on individual vessels. It is however recognised that the level and distribution of fishing activity and dependence on fishing grounds within the offshore project area will vary between individual vessels within the same fleets.
64. For the majority of vessels deploying towed and static gear it is anticipated that they would be able to operate within the array areas. It is however recognised that some methods such as longlining or netting may need to adapt their operating practices to fish in the array areas and that in the case of seine netting and pelagic trawling, this may not be possible.

14.6.1.1.1 UK Vessels

Local inshore vessels

Magnitude

65. The local inshore fleet are primarily multi-purpose under 10m vessels that operate pots, nets and trawls. As described in Section 14.5.2, local vessels typically target inshore areas, including where the offshore cable corridor is located, with limited activity in the array areas (Figure 14.7, Volume II). Local vessels fishing further offshore are typically potting for whelks, lobster and crab.
66. The extent of grounds affected at any given time will be limited to discrete sections of the nearshore fisheries grounds that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables (for details on the worst-case scenario see paragraph 57 and Table 14.3). Given the area of overlap will be, for the most part, the offshore cable corridor, the impact will occur intermittently over a relatively small extent of the grounds available to the local inshore fleet for the

three-year construction phase. As previously noted (paragraphs 60 to 62), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction.

67. In instances where the relocation of static fishing gear may be necessary, measures and procedures set out in the FLCP, in line with FLOWW guidance, will be adhered to. The magnitude of the impact is therefore considered to be negligible.

Sensitivity

68. Vessels active in the local inshore fisheries are typically small (under 10m in length) and have reduced operational ranges with activity generally concentrated within the 6nm limit, including areas that overlap with the offshore cable corridor. Some vessels, however, are known to target areas further offshore, including within the array areas (Figures 14.8, 14.9, 14.10, 14.11 and 14.12, Volume II). A number of the local vessels are multi-purpose with the ability to switch between potting, netting and trawling, making them less susceptible to pressures on one fishery. Given their typically smaller operational ranges and reliance on local grounds however, the fishing opportunities of vessels engaged in the local inshore fisheries still tend to be more restricted. The sensitivity of local inshore vessels is therefore considered to be high for vessels that are restricted to nearshore areas and static gear fishing methods, and medium for vessels with extended operational ranges.

Significance

69. Taking the high sensitivity for vessels that are restricted to nearshore areas and static gear fishing methods and the negligible impact magnitude, the effect of temporary loss or restricted access to fishing grounds is considered to be of minor significance. For vessels with extended operational ranges, the medium sensitivity and low magnitude result in minor significance.

Mobile towed gear vessels

Magnitude

70. As described in Section 14.5.2, beam trawling and demersal trawling (including seines) by larger (over 15m) vessels fishing further offshore record comparatively low landings in the study area (Figure 14.5, Volume II). VMS data indicate that the fisheries target extensive areas with higher landings values to the north of the Project in the central and northern North Sea, and to the south in the English Channel (Figures 14.15 and 14.16, Volume II).
71. As previously mentioned, while it may not be possible to seine net within the array areas, the available data indicates minimal, if any, overlap of activity within the offshore project area.
72. As such, considering the comparatively low levels of activity by trawling vessels in areas relevant to the Project, the temporary nature of the construction phase and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction (paragraphs 60 to 62) the magnitude of the impact is assessed as low.

Sensitivity

73. Vessels using mobile towed gear methods (e.g., beam trawling and demersal trawling) within the commercial fisheries study area are typically over 15m in length with wide operational ranges, targeting grounds across the North Sea. Whilst these vessels are typically limited to deploying the gear type they have been designed for (e.g. beam trawl) the available information on the distribution of activity suggests that landings within the offshore project area are considerably lower compared to more productive grounds (Figures 14.14 and 14.15). As such, they are considered receptors of low sensitivity to loss or restricted access to fishing grounds.

Significance

74. Taking the above into account, the effect of temporary loss or restricted access to fishing grounds during construction is considered to be of minor significance.

14.6.1.1.2 Belgian Vessels

Beam trawlers

Magnitude

75. Relatively high landings values are recorded for Belgian beam trawlers within the study area and across fishing grounds in the southern North Sea and English Channel (Section 14.5.3). The most valuable grounds are recorded along the coasts of the Netherlands and Belgium, and in the Channel (Figure 14.20, Volume II). The extent of the overall beam trawl grounds affected at any given time will be limited to discrete sections of the grounds that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables. The impact will be for the three-year construction period (i.e., short to medium term) and occur intermittently.
76. Given the small area of the offshore project area in relation to the extent of fishing grounds available, the temporary nature of the construction phase, and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction the magnitude of the impact is assessed as low.

Sensitivity

77. Belgian beam trawlers have a wide operational range and extensive fishing opportunities however, they are constrained by their ability to deploy only one gear type, specifically designed for the capture of demersal flatfish. Given that small to mid-size vessels within the fleet (under 24m) can modify their activities in the short term for targeting specific species or sites and the larger vessel class is even less operationally constrained by weather and distance the sensitivity to loss of fishing grounds is considered to be low.

Significance

78. Taking the low sensitivity of the receptor and magnitude of the impact, the effect of temporary loss or restricted access to fishing grounds for the Belgian beam trawl fleet is assessed to be of minor significance.

Demersal otter trawlers and seine netters

Magnitude

79. As described in Section 14.5.3, demersal trawl landings are highest within the study area. Moderate landings values are recorded over the offshore cable corridor and southern array area, with the highest landings recorded south of the offshore project area. While fishing grounds extend across the North Sea, the spatial distribution of high value grounds are patchy (Figure 14.21, Volume II). It was understood from consultation however, that landings from the study area had been decreasing over the last ten years and that the beam trawl fishery was the most relevant for the area.
80. The proportion of the overall Belgian demersal trawl grounds affected at any given time will be limited to discrete sections of grounds that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables. As previously mentioned, while it may not be possible to seine net within the array areas, the available data shows minimal potential overlap, if any, of fishing grounds with the southern array area. The impact to demersal otter trawlers will therefore be short to medium term in duration (over a three-year construction period) and occur intermittently.
81. While high value demersal trawl grounds are more constrained, the offshore project area still represents a comparatively small area in relation to available demersal trawl fishing grounds and there does not appear to be an overlap of seine net fishing grounds with the array areas. Given the temporary nature of the construction phase, and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction (paragraphs 60 to 62), the magnitude of the impact is assessed as low.

Sensitivity

82. Belgian demersal otter trawlers and seine netters are considered to be receptors of low sensitivity due to their size, spatial adaptability and target species versatility.

Significance

83. Taking the low sensitivity of the receptor and magnitude of the impact, the effect of temporary loss or restricted access to fishing grounds for the Belgian demersal otter trawl and seine net fleet is assessed to be of minor significance.

14.6.1.1.3 Dutch Vessels

Beam trawlers

Magnitude

84. Fishing activity by the Dutch beam trawl fleet occurs at high levels across a wide section of southern North Sea, including the study area and over large areas of the central North Sea (Figure 14.26, Volume II). Dutch vessels, however, have no historic rights to fish within the UK's 12nm limit, therefore the potential overlap with the offshore project area is limited to the array areas. The extent of the overall grounds affected at any given time will be limited to discrete sections within the array areas that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections

of cables. The impact will be short to medium term in duration (over a three-year construction period) and occur intermittently.

85. Recognising the small area of the offshore project area in relation to the extent of fishing grounds available, the temporary nature of the construction phase, and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction the magnitude of the impact is assessed as low.

Sensitivity

86. Beam trawlers have a wide operational range and extensive fishing opportunities. Vessels are designed to deploy only one gear type (beam trawls) for the capture of demersal flatfish, however, smaller class vessels (e.g. under 24m) can modify their activities in the short term for targeting specific species or sites. An example of this is the conversion of some of the mid-sized Dutch beamers to seine netting over the past 10 years. Operating costs have also increased following the recent conversion from pulse trawling back to conventional beam trawling and sumwing trawling resulting in substantially increased fuel costs. Given that the larger class of vessels are not operationally constrained by weather or distance from grounds however, the sensitivity to loss of fishing grounds is considered to be low.

Significance

87. Based on the low magnitude of the impact and receptor sensitivity, the effect significance of temporary loss or restricted access to fishing grounds for the Dutch beam trawl fleet during the construction phase is assessed to be minor.

Demersal otter trawlers and seine netters

Magnitude

88. Demersal trawl activity by seine netters and otter trawlers occurs across the southern North Sea and English Channel, and central North Sea respectively. Low to moderate landings values are reported within the study area, however, as noted previously, Dutch vessels have no historic rights to fish within the UK 12nm limit therefore the potential overlap of fishing grounds with the offshore project area is limited to the array areas.
89. For demersal trawling, the extent of the overall grounds affected at any given time will be limited to discrete sections within the array areas that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables. As previously discussed, while it may not be possible to seine net within the array areas, the available data indicates a minimal to no overlap of activity within the array areas. The impact to demersal trawlers is therefore considered to be short to medium term in duration (over a three-year construction period) and occur intermittently.
90. Considering the comparatively low levels of activity by these vessels in areas relevant to the project, the temporary nature of the construction phase and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction (paragraphs 60 to 62) the magnitude of the impact is assessed as negligible.

Sensitivity

91. Dutch demersal otter trawlers and seine netters are considered to be receptors of low sensitivity due to their size, spatial adaptability and target species versatility.

Significance

92. As a result of the negligible magnitude and low sensitivity, the effect significance of loss or restricted access to fishing grounds on the Dutch seine netting and demersal otter trawling fleet during construction is considered to be negligible.

14.6.1.1.4 French Vessels

Pelagic trawlers and seine netters

Magnitude

93. As discussed in Section 14.5.5, from consultation and the data that has been made available it is understood that activity by French vessels occurs at low levels over the offshore cable corridor with no vessel activity observed within the array areas. Higher value fishing grounds occur to the south and east of the study area off the Kent coast and in the English Channel (Figure 14.29, Volume II). As previously discussed, while it may not be possible to seine net or pelagic trawl within the array areas, the available data indicates minimal potential overlap of activity within the array areas. The extent of the overall grounds affected at any given time will therefore be limited to discrete sections that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables along the offshore cable corridor. The impact will be short to medium term in duration (over a three-year construction period) and occur intermittently.
94. Taking into account the low levels of activity in areas relevant to the project, the temporary nature of the construction phase and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction (paragraphs 60 to 62) the magnitude of the impact is assessed as low.

Sensitivity

95. French pelagic trawlers and seine netters have wide operational ranges and given their size, spatial adaptability and target species versatility, their sensitivity to temporary loss or restricted access to fishing grounds is considered to be low.

Significance

96. As a result of the low magnitude and low sensitivity, the effect significance of loss or restricted access to fishing grounds on the French pelagic trawling and seine netting fleet during construction is considered to be minor.

Bottom trawlers

Magnitude

97. As discussed in Section 14.5.5, it is understood from consultation and the data that has been made available that activity by French vessels occurs at low levels over the offshore cable corridor with no vessel activity observed within the array areas. Higher value fishing grounds occur to the south and east of the

study area off the Kent coast and in the English Channel (Figure 14.29, Volume II). The extent of the overall grounds affected at any given time will therefore be limited to discrete sections that may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables along the offshore cable corridor. The impact will be short to medium term in duration (over a three-year construction period) and occur intermittently.

98. Taking into account the low levels of activity in areas relevant to the Project, the temporary nature of the construction phase and the range of fisheries liaison and management measures that will be implemented to minimise loss of access to fishing grounds during construction (paragraphs 60 to 62) the magnitude of the impact is assessed as negligible.

Sensitivity

99. French bottom trawlers have wide operational ranges and given their size, spatial adaptability and target species versatility, their sensitivity to temporary loss or restricted access to fishing grounds during construction is considered to be low.

Significance

100. Taking the above into account, the effect significance is expected to be negligible.

14.6.1.2 Impact 2: Displacement of fishing activity into other areas

101. During construction, there may be potential for the undertaking of the Project activities and/or the presence of the Project infrastructure to result in a displacement of fishing activity into other areas.
102. For vessels that deploy static gear, there could be potential for conflicts associated with displacement effects to arise whereby gear that has to be temporarily removed, is relocated into grounds where other static gear vessels or mobile gear vessels operate. Similarly, vessels which operate mobile gears may be displaced to grounds where other mobile gear vessels operate, also increasing conflict and competition for fishing grounds.
103. Fishers targeting the local inshore grounds have raised concerns that any loss or restricted access to fishing grounds could result in increased competition for fishing on grounds in other areas. However, the extent of inshore grounds affected at any given time will be limited, for the most part, to the offshore cable corridor. The use of multi-purpose vessels locally in areas relevant to the offshore project area also increases resilience to pressures on one fishery. Whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the extent of temporary loss or restricted access to fishing grounds.
104. Given the social, economic and environmental variations that could influence the outcomes, any attempt to undertake an integrated assessment of supply chains is expected to be complex and unreliable. The information required for the analysis (e.g. the number and diversity of relevant fisheries, their supply chains and resilience to unknown influences) would, if it existed, be widely dispersed and uneven. It is the Applicant's position that any such assessment would require the development of a complex assessment framework to process

the data, and account for unpredictable factors such as human responses to change, environmental variations and external supply chain disruptions.

105. It is therefore considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to the temporary loss of grounds or restricted access to fishing grounds. As such it is considered that the findings of the assessment with regards to loss or restricted access to fishing grounds also apply in relation to displacement of fishing activity.
106. As previously noted (paragraphs 60 to 62), a range of fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during construction and the subsequent potential displacement.

14.6.1.3 *Impact 3: Increased steaming times to fishing grounds*

107. The implementation of safety zones, advisory safety zones and advisory clearance distances during construction, could result in some short-term increases in steaming distances and times to fishing vessels active in the study area.
108. The maximum potential for disruption of established steaming routes is represented by the installation of up to 72 WTG and two OSPs, 500m construction safety zones and 50m pre-commissioning safety zones; and advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing construction activities.
109. As described in Chapter 15 Shipping and Navigation (Volume I), there will be no restrictions on entry into the buoyed construction area other than those associated with construction and pre-commissioning safety zones. In addition, vessels will be able to transit the area of the offshore cable corridor during installation works. Fishing vessels in transit would only be affected by localised areas where safety zones may be in place at a given time and where advisory safe passing distances may be recommended.
110. Appropriate liaison would be undertaken with fisheries stakeholders via the Project's FLO and other appropriate channels (e.g. Kingfisher Information Service, NtMs, etc) to ensure that they are informed of the nature, timing and location of construction activities associated with the Project, including the location and extent of safety zones and advisory clearance distances, in a timely and efficient manner.

14.6.1.3.1 *UK Local Inshore Vessels*

Magnitude

111. The impact is predicted to be small in relation to the spatial overlap of inshore fishing grounds with the offshore cable corridor, being limited to the location of safety zones and/or advisory measures. Impacts would be temporary and intermittent and occur over a short duration. In addition, appropriate fisheries liaison and management measures will be implemented to minimise impacts. The magnitude of impact is therefore considered to be low.

Sensitivity

112. The local inshore vessels active in the study area are predominantly under 10m in length and concentrate their activities in nearshore areas. Some vessels

however have extended operational ranges and target grounds further offshore including the array areas. Smaller vessels which operate in nearshore areas may have limited capability to adapt to changes in steaming routes to/from fishing grounds, whilst vessels that operate in offshore areas would be more adaptable. The sensitivity is considered to be low for smaller vessels that are restricted to nearshore areas, and negligible for vessels that have extended operational ranges.

Significance

113. Taking into consideration the low magnitude of impact and the negligible (vessels with extended operational ranges) to low (vessels restricted to nearshore areas) receptor sensitivity, the significance of the effect is assessed as negligible to minor.

14.6.1.3.2 All Other Fisheries

Magnitude

114. The impact is predicted to be very small in relation to the spatial overlap of fishing grounds with the offshore project area, being limited to the location of safety zones and/or advisory measures. Impacts would be temporary and intermittent and occur over a short duration. In addition, appropriate fisheries liaison and management measures will be implemented to minimise impacts. The magnitude of impact is therefore considered to be negligible.

Sensitivity

145. Larger vessels within the UK and European fleets have capability to adapt to potential small changes in steaming routes to/from fishing grounds given their size and range of operation. The sensitivity of these vessels is therefore considered to be negligible.

Significance

115. Taking the above into account, the effect of increased steaming times is considered to be of negligible significance for all other UK and European fisheries.

14.6.1.4 *Impact 4: Interference with fishing activities*

116. The transiting of vessels associated with the Project has potential to cause interference with fishing activities during construction. Interference in this context makes reference to fishing vessels engaged in fishing potentially having to change their normal operations due to the presence of transiting Project vessels. In addition, for static/passive gear fisheries, it considers interference due to the potential fouling of static gear marker lines by transiting Project vessels.
117. The full assessment of vessel movements related to the construction of North Falls that will add to the existing level of vessel activity in the area is provided in Chapter 15 Shipping and Navigation (Volume I). The maximum potential for navigational conflict with fishing activities is represented by the following:
- A maximum of 35 vessels on site at any one time; and

- Indicative 3,090 construction vessel movements over the three-year offshore construction period (average of 1,030 movements per year; three movements per day).
118. Appropriate liaison will be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of construction activities. This will include provisions for enabling awareness of construction vessel crews of the location of static gears and fishermen's awareness of construction vessel operations.
119. In order to facilitate co-existence between Project vessels and fishing activities and minimise potential adverse interactions a range of embedded mitigation measures have been established (Table 14.4). This includes producing a Code of Good Practice for contracted vessels, an FLCP, and developing a procedure for the claim of loss or damage to fishing gear. In addition, OFLOs and guard vessels would be utilised where appropriate.

14.6.1.4.1 Static / Passive Gear Fisheries

Magnitude

120. For local inshore vessels that use static/passive gear such as potting, long-lining and drift netting, the main potential cause of interference is the fouling of the surface marker buoys and attachment lines by transiting Project vessels or by vessels sheltering or waiting to go into the array areas.
121. As described in paragraphs 118-119, a range of fisheries liaison and management measures will be implemented to minimise potential interference between construction vessels and static gear fisheries. The magnitude of the impact is therefore considered to be low.

Sensitivity

122. The surface markers typically used by local fishers operating gears within the 12nm are usually 5 litre plastic cans or small unmarked buoys that are not visible at all states of visibility, being unlit and without radar reflectors. Given the operational practices of static and passive fisheries, where fishing gear is set in the water for periods of a few hours to several days unattended, these fisheries are considered to have limited capability to avoid interactions between gear and transiting construction vessels and therefore are considered to be of medium sensitivity.

Significance

123. Given the low magnitude of impact and medium sensitivity, interference with static/passive fishing activities is considered to be of minor effect significance.

14.6.1.4.2 Mobile Towed Gear Fisheries

Magnitude

124. For mobile towed gear fisheries, the potential for interactions to occur between vessels using towed gear and Project vessels would be limited. While the impact will be for the construction period, it will occur intermittently at a localised spatial extent. Transiting project vessels will fully comply with the requirements for safe navigation, as required under COLREGs. Such compliance should negate the requirement for fishing vessels engaged in fishing to alter course or

pose any risk to fishing gear being towed. The magnitude of impact is therefore assessed as low.

Sensitivity

125. Vessels fishing with towed gear remain connected to their nets as they drag them along the seabed or within the water column. Given the ability of mobile vessels to avoid interactions and the requirement to adhere to COLREGs the sensitivity of mobile fisheries to interference is considered to be negligible.

Significance

126. Taking the above into account, the effect of interference with fishing activities during construction is considered to be of negligible significance.

14.6.1.5 Impact 5: Snagging risk / safety issues for fishing vessels

127. As construction progresses, the increasing presence of subsea project infrastructure such as WTG and OSP foundations would have potential to represent a snagging risk for fishing gear. Similarly, the potential presence of sections of offshore export cables and array/interconnector cables temporarily awaiting burial or protection as well as seabed obstacles (e.g. dropped objects, sediment berms/mounds, boulders) which may be present as a result of construction works may also pose a snagging risk.
128. The assessment takes into consideration the snagging risk and potential associated damage or loss of fishing gear and safety issues as a result of Project infrastructure and potential seabed obstacles resulting from construction. Safety risks associated with navigation (including for fishing vessels) are assessed in Chapter 15 Shipping and Navigation (Volume I).
129. For assessment of safety issues, a risk assessment approach based on the methodology presented in Chapter 15 Shipping and Navigation (Volume I) has been followed. An overview of the risk assessment methodology is provided in Section 14.4.3 (paragraph 26) with further detail given in Chapter 15 Shipping and Navigation (Volume I).

14.6.1.5.1 All Fisheries

Magnitude and frequency of occurrence

130. The worst-case scenario is represented by the installation of up to 72 WTGs and two OSPs, up to 228km of array/interconnector cables and up to four offshore export cables totalling 250.8km, over a period of up to three years.
131. A number of liaison and management measures will be implemented to ensure that loss or damage to fishing gear and associated safety issues is minimised and mitigated appropriately. This will include the circulation of the required information with regard to construction works, including the location of safety zones and advisory measures. In addition, guard vessels and OFLOs will also be used during construction where appropriate to facilitate communication with fisheries stakeholders. As such, fishing vessels operating in and around the offshore project area would be made aware of applicable safety zones as well as any advisory measures which may apply at a given time.
132. Should the post-lay survey and burial inspection identify the presence of construction-related seabed obstacles such as spoil mounds, relocated boulders or sediment berms that could have the potential to interfere with

fishing, appropriate rectification measures would be undertaken. This will include the provision of relevant information to fisheries stakeholders in appropriate formats to facilitate co-existence and prevents potential damage to and from fishing gear and minimises potential safety risks.

133. All contractors undertaking works will be contractually obliged to ensure compliance with standard offshore safety policies, including those that prohibit the discarding of objects or material overboard and that require the rapid recovery of accidentally dropped objects.
134. Provisions for the measures above will be included in the FLCP which will be produced for the Project.
135. Given that the impact will be localised around the immediate footprint of Project infrastructure and, as described above a range of fisheries liaison and management measures will be implemented the magnitude is therefore considered to be low and the frequency of occurrence of safety issues remote.

Sensitivity of the receptor and severity of consequence

136. In the event that fishing gear snags with Project infrastructure or associated seabed obstacles, there is potential for the fishing gear to be damaged or lost. As such, all fisheries are considered to have limited adaptability to the potential impact. The sensitivity of the receptor is therefore considered to be medium.
137. In the event of fishing gear becoming fast with infrastructure or seabed obstacles associated with the Project, vessel's skippers would be expected to follow standard safety guidance and emergency procedures. As described in KIS-ORCA (KIS-ORCA, 2022) if a fishing vessel snags a cable or finds itself in difficulty within a wind farm, the skipper must not endanger the vessel and crew by attempting to recover gear. Provided the required safety guidance and emergency procedures are followed, the severity of a snagging incident is considered to be moderate.

Significance

138. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The frequency of occurrence is deemed to be remote and the severity of consequence moderate. The effect will, therefore, be of minor significance and tolerable.

14.6.1.6 Impact 6: Impact on commercial fisheries as a result of impacts on exploited fish and shellfish species

139. There is potential for the construction phase of the Project to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.
140. The likely significant effects of the construction of the Project on fish and shellfish species, including those of commercial importance, are assessed in Chapter 11 Fish and Shellfish Ecology (Volume I). The assessment determined that the majority of effects were assessed as minor, therefore any effects associated with the commercial fisheries that target them are also not expected to exceed minor significance. The impact of piling on the Downs herring receptor, however, was considered to be of moderate significance.

Magnitude

141. As described in Section 14.5, herring are typically caught using pelagic trawls and the available fisheries data indicates that the study area supports limited fishing activity by French pelagic trawlers and seine netters with low landings recorded.
142. Overall the level of herring fishing is minimal in the area under consideration in comparison to other important herring fishing areas. Given the area sustains low levels of fishing and represents a small proportion of the fishing grounds available for a short to medium duration, the magnitude of impact on the fishery will be at worst, low.

Sensitivity

143. French pelagic trawlers and seine netters have wide operational ranges and given their size, spatial adaptability and that herring are fished until the Total Allowable Catch is exhausted, their sensitivity to a reduced productivity of the herring fishery in the study area is considered to be low.

Significance

144. As a result of the low magnitude of impact and low sensitivity, the effect significance of reduced productivity of the herring fishery on the French pelagic trawling and seine netting fleet during construction is considered to be minor.

14.6.2 Potential impacts during operation

145. The impacts described below should be considered in the context of the indicative operational life of the North Falls (30 years).
146. The same receptor sensitivities identified for the construction phase apply for assessment of impacts during operation. Therefore, where relevant, reference is made to relevant sections within the impact assessment presented for the construction phase.
147. The likely significant effects of the Project on commercial fisheries receptors during operation are assessed below.

14.6.2.1 Impact 7: Temporary loss or restricted access to fishing grounds

148. During the operational phase of North Falls, cable repairs and reburial, and turbine repairs have the potential to result in temporary loss or restricted access to fishing grounds. Similarly, the presence of machinery on the seabed (i.e. jack up vessel legs, vessel anchors) could also result in temporary loss of access. The area disturbed however, would be comparatively much smaller than during construction (see Table 14.3).
149. The following planned and unplanned maintenance activities are assumed as worst-case scenarios:
 - Reburial of c. 5km of array/interconnector cable is estimated over the life of the Project;
 - Reburial of c. 5km of offshore export cable is estimated over the life of the Project;

- Five array/interconnector cable repairs of c. 600m length are estimated over the Project life;
 - Four offshore export cable repairs of c. 600m length are estimated over the Project life;
 - Advisory safe passing distances as defined by risk assessment, suitably promulgated to maximise awareness of ongoing maintenance works; and
 - Up to 500m advisory exclusion of fishing along vulnerable sections of cables (e.g. cables awaiting burial or protection).
150. The impact on commercial fisheries receptors from planned maintenance and repair works during the operational phase would be temporary, localised and at a considerably smaller magnitude than for construction (see Section 14.6.1.1).
151. To facilitate co-existence during the operational phase and minimise impacts associated with loss of grounds/restricted access to grounds, the need for advisory safety zones and advisory clearance areas will be minimised where safe and practicable. In addition, information on planned maintenance and repair works and advisory safety zones/advisory clearance distances will be circulated in a timely and efficient manner through NtMs. Provisions for these measures will be included in the FLCP.

14.6.2.1.1 UK Vessels

Local inshore vessels

Magnitude

152. As discussed in Section 14.6.1.1.1, the local inshore fleet are primarily multi-purpose under 10m vessels that operate pots, nets and trawls in the nearshore areas, with limited activity in the array areas. Loss of grounds to these vessels during repairs and maintenance works in the operation phase, would be limited, for the most part, to small discrete areas of the offshore cable corridor where it is necessary to implement advisory safety zones or other advisory measures.
153. Localised loss of grounds associated with the advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables would be of short duration, temporary and intermittent over a negligible proportion of the available fishing grounds. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact is therefore considered to be negligible.

Sensitivity

154. The sensitivity of the receptors to the temporary loss of or restricted access to fishing grounds during the operation phase is as previously described for the construction phase (paragraph 68); high for vessels that are restricted to nearshore areas and medium for vessels with extended operational ranges.

Significance

155. The effect of temporary loss or restricted access to fishing grounds for local inshore vessels during operation is considered to be of minor significance,

based on the high and medium sensitivities of the receptors and the negligible magnitude of the impact.

Mobile towed gear vessels

Magnitude

156. As discussed for construction (Section 14.6.1.1) beam trawling and demersal trawling (including seines) by larger (over 15m) vessels record comparatively low landings in the study area in comparison to other areas of the North Sea.
157. The localised loss of grounds for beam and demersal trawlers associated with the advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables would be of short duration, temporary and intermittent over a negligible proportion of the available fishing grounds. As previously discussed, while it may not be possible to seine net within the array areas, the available data indicates minimal, if any, overlap of activity within the array areas.
158. Taking the above into account, and the fisheries liaison and management measures (paragraph 151) that will be implemented to minimise loss of access to fishing grounds during operation, the magnitude of the impact to beam trawling and demersal trawling is therefore considered to be negligible.

Sensitivity

159. As described for construction, mobile towed gear vessels are considered receptors of low sensitivity to temporary loss or restricted access to fishing grounds.

Significance

160. Taking the above into account, the effect of temporary loss or restricted access to fishing grounds during operation is considered to be of negligible significance.

14.6.2.1.2 **Belgian Vessels**

Beam trawlers

Magnitude

161. As discussed for construction (Section 14.6.1.1), relatively high landings values are recorded for Belgian beam trawlers within the study area and across fishing grounds in the southern North Sea and English Channel.
162. Localised loss of grounds within the offshore project area associated with the advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables would be temporary and intermittent over a negligible proportion of the available fishing grounds. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact is therefore considered to be negligible.

Sensitivity

163. As described for construction, Belgian beam trawlers are considered receptors of low sensitivity to temporary loss or restricted access to fishing grounds.

Significance

164. Taking the low sensitivity of the receptor and magnitude of the impact, the effect of temporary loss or restricted access to fishing grounds for the Belgian beam trawl fleet is assessed to be of negligible significance.

Demersal otter trawlers and seine netters

Magnitude

165. As described in Section 14.5.3, moderate landings values are recorded over the offshore cable corridor and southern array area, with the highest landings recorded south of the offshore project area. While fishing grounds extend across the North Sea, the spatial distribution of high value grounds are patchy. It was understood from consultation however, that landings from the study area had been decreasing over the last ten years and that the beam trawl fishery was the most relevant for the area.
166. Localised loss of grounds within the offshore project area associated with the advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables would be temporary and intermittent over a negligible proportion of the available fishing grounds. As previously mentioned, while it may not be possible to seine net within the array areas, the available data shows minimal potential overlap, if any, of fishing grounds with the southern array area.
167. While high value demersal trawl grounds are more constrained, the offshore project area still represents a comparatively small area in relation to available demersal trawling grounds. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact to demersal otter trawling and seine netters is therefore considered to be negligible.

Sensitivity

168. As described for construction, Belgian demersal otter trawlers and seine netters are considered to be receptors of low sensitivity.

Significance

169. Taking the low sensitivity of the receptor and magnitude of the impact, the effect of temporary loss or restricted access to fishing grounds during operation for the Belgian demersal otter trawl and seine net fleet is assessed to be of negligible significance.

14.6.2.1.3 Dutch Vessels

Beam trawlers

Magnitude

170. As described in Section 14.5.4, fishing activity by the Dutch beam trawl fleet occurs at high levels across a wide section of southern North Sea, including the study area and over large areas of the central North Sea. Dutch vessels, however, have no historic rights to fish within the UK's 12nm limit, therefore the potential overlap of fishing grounds with the offshore project area is limited to the array areas.

171. The localised loss of grounds within the array areas during operation, associated with the advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables would be of short duration, temporary and intermittent over a negligible proportion of the available fishing grounds. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact is therefore considered to be negligible.

Sensitivity

172. The sensitivity to temporary loss or restricted access to fishing grounds is as described for construction; low.

Significance

173. Based on the negligible magnitude of the impact and low receptor sensitivity, the effect significance of temporary loss or restricted access to fishing grounds for the Dutch beam trawl fleet during the operation phase is assessed to be negligible.

Demersal otter trawlers and seine netters

Magnitude

174. As described in Section 14.5.4, demersal trawl activity by seine netters and otter trawlers occurs across the southern North Sea and English Channel, and central North Sea respectively with low to moderate landings values reported within the study area. As noted previously however, Dutch vessels have no historic rights to fish within the UK 12nm limit therefore the potential overlap of fishing grounds with the offshore project area is limited to the array areas.
175. The localised loss of grounds within the array areas during operation associated with the advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables would be of short duration, temporary and intermittent over a negligible proportion of the available fishing grounds. As previously discussed, while it may not be possible to seine net within the array areas, the available data indicates minimal, if any, overlap of activity within the array areas. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation. The magnitude of the impact to demersal otter trawlers and seine netters is therefore considered to be negligible.

Sensitivity

176. The sensitivity of Dutch demersal otter trawlers and seine netters is as described for construction; low.

Significance

177. As a result of the negligible magnitude of impact and low sensitivity, the effect significance of loss or restricted access to fishing grounds on the Dutch seine netting and demersal otter trawling fleet during operation is considered to be negligible.

14.6.2.1.4 French Vessels

Pelagic trawlers and seine netters

Magnitude

178. As discussed in Section 14.5.5, from consultation and the data that has been made available it is understood that activity by French vessels occurs at low levels over the offshore cable corridor with no vessel activity observed within the array areas. Higher value fishing grounds occur to the south and east of the study area off the Kent coast and in the English Channel. As previously discussed, while it may not be possible to seine net or pelagic trawl within the array areas, the available data indicates minimal potential overlap of trawl activity within the array areas.
179. The extent of the overall grounds affected at any given time will therefore be limited to discrete sections that may overlap with advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables along the offshore cable corridor. The impact will be temporary, of short duration and will occur intermittently. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact is therefore considered to be negligible.

Sensitivity

180. The sensitivity of this receptor to loss or restricted access to fishing grounds during operation is as described for construction; low.

Significance

181. As a result of the negligible magnitude of impact and low sensitivity, the effect significance of loss or restricted access to fishing grounds on the French pelagic trawling and seine netting fleet during operation is considered to be negligible.

Bottom trawlers

Magnitude

182. As discussed in Section 14.5.5, from consultation and the data that has been made available it is understood that activity by French vessels occurs at low levels over the offshore cable corridor with no vessel activity observed within the array areas. Higher value fishing grounds occur to the south and east of the study area off the Kent coast and in the English Channel.
183. The extent of the overall grounds affected at any given time will therefore be limited to discrete sections that may overlap with advisory safety zones around repairs and maintenance activities and/or the presence of vulnerable sections of cables along the offshore cable corridor. The impact will be temporary, of short duration and occur intermittently. Furthermore, as previously noted (paragraph 151), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and maintenance. The magnitude of the impact is therefore considered to be negligible.

Sensitivity

184. The sensitivity of this receptor to loss or restricted access to fishing grounds during operation is as described for construction; low.

Significance

185. Taking the above into account, the effect significance is expected to be negligible.

14.6.2.2 Impact 8: Long term loss or restricted access to fishing grounds

186. The potential loss of fishing grounds during the operational phase within the array areas will be the footprint of the Project's infrastructure on the seabed (i.e. foundations, scour and cable protection). The presence of advisory safety zones and/or advisory measures during operation and maintenance has been assessed separately under Impact 7: Temporary loss or restricted access to fishing grounds (see Section 14.6.2.1).
187. The worst-case scenario with regard to long-term loss or restricted access to fishing grounds during the operation and maintenance phase is represented by the presence of up to 72 WTGs and two OSPs, up to 228km of array/interconnector cables and up to four offshore export cables totalling 250.8km buried to a minimum depth of 0.5m and protected where cable burial target depths are not met. In order to facilitate co-existence and minimise potential adverse interactions North Falls has set out proposed embedded mitigation in Table 14.4 including provisions such as a Code of Good Practice for contracted vessels, an FLCP, and developing a procedure for the claim of loss or damage to fishing gear.
188. Cable protection of up to 45.6km may be required in the unlikely event that array/interconnector cables cannot be buried (based on 20% of the length), and up to 25km for the cables (based on 10% of the length). In areas where cable protection is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (e.g., use of graded rocks and berms designed with 1:3 gradients). The location, extent and nature of the cable protection used will be shared with fisheries stakeholders, and provisions for these measures will be included in the FLCP.
189. Post-lay and burial inspection surveys will be undertaken to determine cable burial status (including cable protection) and to identify potential changes to seabed conditions. These would be aimed at facilitating co-existence with fishing and minimising snagging risk and associated loss or damage of fishing gear and safety issues. This will be included in the FLCP.
190. Existing legislation does not prevent fishing from occurring within operational wind farm arrays and it is expected that most fishing activities will be able to resume to a certain degree in the array areas. The level of activity which may resume, however, would depend on the perception of individual skippers with regard to risks associated with operating fishing gear within the array areas at a given time. This is influenced by conditions such as minimum turbine spacing, weather and visibility as well as operating patterns and gears specifications all of which may affect vessel manoeuvrability. It is however recognised that some

methods such as longlining or netting may need to adapt their operating practices to fish in the array areas and that in the case of seine netting and pelagic trawling, this may not be possible.

191. Whilst guidance with regard to standard parameters required to facilitate the viability of fishing within offshore wind farms is currently not available, there is evidence of the ability of fishing to continue within operational wind farm arrays from various projects across the UK. This includes both static and towed gear fishing activities.
192. It is well established that potting vessels are able to resume activity within operational wind farms and are less constrained than other fishing methods given the size of the vessels involved and static nature of the gear used. Examples of co-existence at Westernmost Rough are reported in Ørsted (2022) and AIS tracks of a 22m potter fishing within the Hornsea One array is shown in Figure 14.31, Volume II.
193. Given the relatively small and inshore location of the majority of operational offshore wind farms in the UK to date, records of activity by vessels operating towed gear are limited. However, in some of the projects which supported towed gear fisheries prior to construction, there is emerging evidence of mobile fishing methods resuming within the operational arrays. Examples of this are based on recorded AIS tracks of a 30m beam trawler fishing within Walney Extension, a 20m trawler undertaking an over-trawl survey with towed demersal trawls in Beatrice and a 33m scallop dredger fishing within Moray East and Beatrice, shown in Figures 14.32, 14.33 and 14.34 (Volume II) respectively. In this context it is important to note that the minimum spacing between wind turbines at these projects is comparable to that currently considered for North Falls (926m at Hornsea One, 946m at Beatrice, 913m at Walney Extension and 1,119m at Moray East).
194. Given that cables will be buried to a minimum depth of 0.5m where possible and protected where burial is not possible, with post-lay and burial inspection surveys undertaken to determine cable burial status, it is considered that during operation, the presence of buried or protected cables would not result in a material loss of fishing grounds. The assessment of the impact of long-term loss or restricted access to traditional fishing grounds during operation is therefore focused on the array areas.

14.6.2.2.1 UK Vessels

Local inshore vessels

Magnitude

195. As described in Section 14.5.2, the local inshore fleet are primarily multi-purpose under 10m vessels that operate pots, nets and trawls in nearshore areas, with limited activity in the array areas. For vessels targeting inshore areas with static and passive fishing gear, it is not anticipated that there will be a material loss of grounds. For vessels operating demersal towed gear in areas of the cable, loss of grounds will be long-term but would be limited to small discrete areas where offshore cable protection, if required, is located.
196. For local vessels operating static fishing gear further offshore the loss of grounds is long-term but would be limited to small discrete areas of

infrastructure within the array areas. As previously noted (paragraphs 191 and 192), it is anticipated that potting vessels are able to fish within operational wind farms.

197. In the case of vessels deploying long lines and nets that operate further offshore, it is likely that changes to their mode of operation would be required to fish within the array areas. It should be noted, however, that their grounds are for the most part, located in nearshore areas given the small size of these vessels, and that it is understood that activity in offshore areas only occurs on an occasional basis.
198. Whilst the long-term nature of the operation phase is recognised, taking the above into consideration and the implementation of the fisheries liaison and management measures to minimise loss of access to fishing grounds during operation and maintenance (Table 14.4), the magnitude of the impact is assessed to be negligible.

Sensitivity

199. The sensitivity of the receptors to the loss of or restricted access to fishing grounds during the operation phase is as previously described for the construction phase (paragraph 68); high for vessels that are restricted to nearshore areas and medium for vessels with extended operational ranges.

Significance

200. The effect of temporary loss or restricted access to fishing grounds for local inshore vessels during operation is considered to be of minor to negligible significance.

Mobile towed gear vessels

Magnitude

201. As described in Section 14.5.2, beam trawling and demersal trawling (including seines) by larger (over 15m) vessels record comparatively low landings in the study area in comparison to other areas of the North Sea. The presence of Project infrastructure will be long-term however, it is expected that most fishing activities will be able to resume to a certain degree (paragraphs 188 to 194). The loss of grounds for most of these vessels during operation, would therefore be very small being limited to discrete areas of grounds that may overlap with the Project's infrastructure. As previously discussed, while it may not be possible for seine netting to resume within the array areas, the available information indicates minimal, if any, overlap of seine netting within the array areas.
202. As previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be negligible.

Sensitivity

203. As described for construction, they are considered receptors of low sensitivity to loss or restricted access to fishing grounds.

Significance

204. Taking the above into account, the effect of long-term loss or restricted access to fishing grounds during operation is considered to be of negligible significance.

14.6.2.2.2 Belgian Vessels

Beam trawlers

Magnitude

205. As described in Section 14.5.3, high landings values are recorded for Belgian beam trawlers within the study area and across fishing grounds in the southern North Sea and English Channel. While the presence of Project infrastructure will be long-term, it is expected that beam trawling will be able to resume within the array areas to a certain degree (paragraphs 188 to 194). The loss of grounds during operation, would therefore be very small being limited to discrete areas of grounds that may overlap with the Project's infrastructure.
206. As previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be low.

Sensitivity

207. As described for construction, they are considered receptors of low sensitivity to loss or restricted access to fishing grounds.

Significance

208. Taking the sensitivity of the receptor (low) and magnitude of the impact (low), the effect of long-term loss or restricted access to fishing grounds for the Belgian beam trawl fleet is assessed to be of minor significance.

Demersal otter trawlers and seine netters

Magnitude

209. As described in Section 14.5.3, moderate landings values are recorded over the offshore cable corridor and southern array area, with the highest landings recorded south of the offshore project area. While fishing grounds extend across the North Sea, the spatial distribution of high value grounds are patchy. It was understood from consultation however, that landings from the study area had been decreasing over the last ten years and that the beam trawl fishery was the most relevant for the area.
210. While the presence of Project infrastructure will be long-term, it is expected that demersal otter trawling will be able to resume within the array areas to a certain degree (paragraphs 188 to 194). The loss of grounds during operation, would

therefore be very small being limited to discrete areas of grounds that may overlap with the Project's infrastructure within the array areas. It is understood, however, that it may not be possible for seine netting to resume within the array areas. Given the small percentage that seine netting contributes to the total Belgian fleet landings (c.4%) and that the available data shows minimal potential overlap, if any, of fishing grounds with the southern array area it is considered that the presence of offshore project infrastructure in the array areas will not result in a material loss of seine netting grounds.

211. As previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be low.

Sensitivity

212. As described for construction, Belgian demersal otter trawlers and seine netters are considered to be receptors of low sensitivity.

Significance

213. Taking the low sensitivity of the receptor and low magnitude of the impact, the effect of temporary loss or restricted access to fishing grounds during operation for the Belgian demersal otter trawl and seine net fleet is assessed to be of minor significance.

14.6.2.2.3 Dutch Vessels

Beam trawlers

Magnitude

214. As described in Section 14.5.4, fishing activity by the Dutch beam trawl fleet occurs at high levels across a wide section of southern North Sea, including the study area and over large areas of the central North Sea. Dutch vessels, however, have no historic rights to fish within the UK's 12nm limit, therefore the potential overlap of fishing grounds with the offshore project area is limited to the array areas.
215. While the presence of Project infrastructure will be long-term, it is expected that beam trawling will be able to resume within the array areas to a certain degree (paragraphs 188 to 194). The loss of grounds during operation, would therefore be very small being limited to discrete areas of grounds that may overlap with the Project's infrastructure. Furthermore, fisheries liaison and management measures (paragraphs 187 to 189) will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be low.

Sensitivity

216. The sensitivity to loss or restricted access to fishing grounds is as described for construction; low.

Significance

217. Based on the low magnitude of the impact and low receptor sensitivity, the effect of long-term loss or restricted access to fishing grounds for the Dutch beam trawl fleet during the operation phase is assessed to be minor.

Demersal otter trawlers and seine netters

Magnitude

218. As described in Section 14.5.4, demersal fishing activity by seine netters and otter trawlers occurs across the southern North Sea and English Channel, and central North Sea respectively with low to moderate landings values reported within the study area. As noted previously however, Dutch vessels have no historic rights to fish within the UK 12nm limit therefore the potential overlap of fishing grounds with the offshore project area is limited to the array areas.
219. While the presence of Project infrastructure will be long-term, it is expected that demersal otter trawling will be able to resume within the array areas to a certain degree (paragraphs 188 to 194). The loss of grounds during operation, would therefore be very small being limited to discrete areas of grounds that may overlap with the Project's infrastructure within the array areas. As previously discussed, it may not be possible for seine netting to resume within the array areas, however, the available data indicates minimal, if any, overlap of activity within the array areas. It is considered that the presence of Project infrastructure in the array areas will not result in a material loss of seine netting grounds.
220. Furthermore, as previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be low.

Sensitivity

221. The sensitivity of Dutch demersal otter trawlers and seine netters is as described for construction; low.

Significance

222. As a result of the low magnitude of impact and low sensitivity, the effect significance of loss or restricted access to fishing grounds on the Dutch seine netting and demersal otter trawling fleet during operation is considered to be minor.

14.6.2.2.4 French Vessels

Pelagic trawlers and seine netters

Magnitude

223. As discussed in Section 14.5.5, it is understood from consultation and the data that has been made available that activity by French vessels occurs at low levels over the offshore cable corridor with no vessel activity observed within the array areas. Higher value fishing grounds occur to the south and east of the study area off the Kent coast and in the English Channel. As previously discussed, it may not be possible for seine netting or pelagic trawling to resume within the array areas however, the information available indicates minimal potential overlap of fishing activity within the array areas.
224. While the presence of Project infrastructure will be long-term, it is expected that pelagic trawling and seine netting will be able to resume over the offshore cables (paragraphs 188 to 194). The only loss of grounds during operation, would be for seine netting in relation to potential areas of rock protection on the cables, which would be limited to locations where cables cannot be buried. Furthermore, as previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be low.

Sensitivity

225. The sensitivity of this receptor to long-term loss or restricted access to fishing grounds during operation is as described for construction; low.

Significance

226. As a result of the low magnitude of impact and low sensitivity, the effect of loss or restricted access to fishing grounds on the French pelagic trawling and seine netting fleet during operation is considered to be minor.

Bottom trawlers

Magnitude

227. As discussed in Section 14.5.5, from consultation and the data that has been made available it is understood that activity by French vessels occurs at low levels over the offshore cable corridor with no vessel activity observed within the array areas. Higher value fishing grounds occur to the south and east of the study area off the Kent coast and in the English Channel.
228. While the presence of Project infrastructure will be long-term, it is expected that bottom trawling will be able to resume within the array areas to a certain degree (paragraphs 188 to 194). The loss of grounds during operation, would therefore be very small being limited to discrete areas of grounds that may overlap with the Project's infrastructure within the array areas. Furthermore, as previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during

operation, including various measures to facilitate co-existence with mobile fisheries (e.g. consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions). The magnitude of the impact is therefore considered to be low.

Sensitivity

229. The sensitivity of this receptor to long-term loss or restricted access to fishing grounds during operation is as described for construction; low.

Significance

230. As a result of the low magnitude of impact and low sensitivity, the effect significance of long-term loss or restricted access to fishing grounds on the French bottom trawling fleet during is considered to be minor.

14.6.2.3 Impact 9: Displacement of fishing activity into other areas

231. During operation, there may be potential for the presence of North Falls infrastructure to result in a displacement of fishing activity into other areas.

232. As described in Section 14.6.2.2, it is expected that most fishing activities will be able to resume to a certain degree in the offshore project area. The level of activity which may resume, however, would depend on the perception of individual skippers with regard to risks associated with operating fishing gear over cable protection and within the array areas at a given time. It is also recognised that some methods such as longlining or netting may need to adapt their operating practices to fish in the array areas and that in the case of seine netting and pelagic trawling, fishing may not be able to resume with the array areas.

233. As discussed for construction (Section 14.6.1.2), whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the extent of long-term loss or restricted access to fishing grounds. It is therefore considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement during operation would, at worst, be as identified in relation to the long-term loss of grounds or restricted access to fishing grounds (section 14.6.2.2). As such it is considered that the findings of the assessment with regards to loss or restricted access to fishing grounds also apply in relation to displacement of fishing activity.

234. As previously noted (paragraphs 187 to 189), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds during operation and subsequent potential displacement.

14.6.2.4 Impact 10: Increased steaming times to fishing grounds

235. The worst-case scenario with regard to increased steaming times to fishing grounds during the operation and maintenance phase is represented by the presence of up to 72 WTGs and two OSPs, and advisory safety zones and/or advisory clearance distances as required over the operation phase.

236. The implementation of advisory safety zones and/or advisory clearance distances during operation as a result of planned and unplanned maintenance activities, cable repairs and reburial, and turbine repairs could result in some

short-term increases in steaming distances and times to fishing vessels active in the offshore project area. Whilst the impact could occur across the operational lifetime of the Project, fishing vessels would not be restricted from transiting through the array areas and offshore cable corridors, with the exception of areas subject to safety zones at a given time.

237. Furthermore, appropriate liaison would be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of major maintenance activities associated with the Project, including the location and extent of safety zones, in a timely and efficient manner.

14.6.2.4.1 UK Local Inshore Vessels

Magnitude

238. The impact is predicted to be of very small spatial extent localised and intermittent in nature and a range of fisheries liaison and management measures will be implemented to minimise impacts on fishing. The magnitude is therefore considered to be negligible.

Sensitivity

239. The sensitivity of the receptors to increased steaming times during operation is as previously described for construction; low for smaller vessels that are restricted to nearshore areas, and negligible for vessels that have extended operational ranges.

Significance

240. Taking into consideration the negligible magnitude of impact and the negligible (vessels with extended operational ranges) to low (vessels restricted to nearshore areas) receptor sensitivity the significance of the effect is assessed as negligible.

14.6.2.4.2 All Other Fisheries

Magnitude

241. The impact is predicted to be very small in relation to the spatial overlap of fishing grounds with the offshore project area, being limited to the location of advisory safety zones and/or advisory measures. Impacts would be localised, temporary and intermittent and occur over a short duration. In addition, appropriate fisheries liaison and management measures will be implemented to minimise impacts. The magnitude is therefore considered to be negligible.

Sensitivity

145. The sensitivity of the receptors to increased steaming times during operation is as previously described for construction; negligible.

Significance

242. Taking the above into account the effect of increased steaming times is considered to be of negligible significance for all other UK and European fisheries.

14.6.2.5 *Impact 11: Interference with fishing activities*

243. The transiting of vessels associated with the Project has potential to cause interference with fishing activities during operation. Interference in this context makes reference to fishing vessels engaged in fishing potentially having to change their normal operations due to the presence of transiting project vessels. In addition, for static/passive gear fisheries, it considers interference due to the potential fouling of static gear marker lines by transiting project vessels. As discussed in Chapter 15 Shipping and Navigation (Volume I) following the completion of construction works, the numbers of vessels transiting to the Project will be reduced, becoming predominantly crew transfer operation and maintenance vessels.
244. The full assessment of vessel movements related to the construction of North Falls that will add to the existing level of vessel activity in the area is provided in Chapter 15 Shipping and Navigation (Volume I). The maximum potential for navigational conflict with fishing activities is represented by the following:
- A maximum of 22 vessels on site at any one time;
 - Indicative 1,460 round trips of operation and maintenance vessels to port per year; and
 - Indicative 127 round trips of large vessels.
245. Appropriate liaison will be undertaken with fisheries stakeholders to ensure that they are informed of the nature, timing and location of project repair and maintenance activities. This will include provisions for enabling awareness of Project vessel crews of the location of static gears and fishermen's awareness of Project vessel operations.
246. In order to facilitate co-existence between Project vessels and fishing activities and minimise potential adverse interactions the same fisheries liaison and management measures outlined for the construction phase would also apply during operation (paragraph 119).

14.6.2.5.1 *Static Passive gear fisheries*

Magnitude

247. For local inshore vessels that use static/passive gear such as potting, long-lining and drift netting, the main potential cause of interference is the fouling of the surface marker buoys and attachment lines by transiting Project vessels. While the impact will be of long-term duration, it will occur intermittently at a localised spatial extent and a range of fisheries liaison and management measures will be implemented. The magnitude of the impact is therefore, considered to be low.

Sensitivity

248. The sensitivity of the receptors to interference with fishing activities due to the presence of transiting vessels during operation is as previously described for the construction; medium sensitivity.

Significance

249. Given the low magnitude of impact and medium sensitivity, interference with static/passive fishing activities is considered to be of minor significance.

14.6.2.5.2 Mobile towed gear fisheries

Magnitude

250. For mobile towed gear fisheries, the potential for interactions to occur between vessels using towed gear and Project vessels would be limited. While the impact will be of long-term duration, it will occur intermittently at a localised spatial extent. Transiting Project vessels will fully comply with the requirements for safe navigation, as required under COLREGs, in addition to the embedded mitigation measures outlined in Table 14.4 including a Code of Good Practice for contracted vessels. Such compliance should negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to fishing gear being towed. The magnitude is therefore assessed as negligible.

Sensitivity

251. The sensitivity of the receptors to interference with fishing activities due to the presence of transiting vessels during operation is as previously described for the construction; negligible.

Significance

252. Taking the above into account the effect of interference with fishing activities during operation is considered to be of negligible significance.

14.6.2.6 Impact 12: Snagging risk / safety issues for fishing vessels

253. During the operation and maintenance phase of the Project the presence of subsea infrastructure such as WTGs and OSPs, and cable protection (where required) has potential to represent a snagging risk for fishing gear. Similarly, the potential presence of discrete sections of offshore export cables and/or - array/interconnector cables which may become exposed as well as seabed obstacles which may arise as a result of maintenance works (i.e. dropped objects, sediment berms, etc) may also pose a snagging risk.

254. As described for construction (see Section 14.6.1.5), a risk assessment approach based on the methodology presented in Chapter 15 Shipping and Navigation (Volume I) has been followed. The assessment takes into consideration the snagging risk and potential associated damage or loss of fishing gear and safety issues as a result of Project infrastructure and potential seabed obstacles resulting from repairs and maintenance works.

14.6.2.6.1 All commercial fishing vessels

Magnitude and Frequency of Occurrence

255. The worst-case scenario is represented by the presence of up to 72 WTGs and two OSPs, up to 228km of array/interconnector cables and up to four offshore export cables totalling 250.8km, for the lifetime of the Project. Cable protection of up to 45.6km may be required in the unlikely event that array/interconnector cables cannot be buried (based on 20% of the length), and up to 25km for the offshore export cables (based on 10% of the length).

256. A number of liaison and management measures will be implemented to ensure that loss or damage to fishing gear and associated safety issues is minimised and mitigated appropriately. This will include the circulation of the required information with regard to any advisory safety zones and/or advisory measures.

257. The location, extent and nature of the cable protection used will be shared with fisheries stakeholders. In areas where rock placement is required, consideration will be given to designs that reduce potential snagging risk with fishing gear to facilitate co-existence with mobile fisheries, particularly demersal trawling (i.e. use of graded rocks and berms designed with 1:3 gradients). Where post-lay and burial inspections surveys identify obstacles or changes to seabed conditions the relevant information will also be shared with fisheries stakeholders. A procedure for claim of loss or damage to fishing gear will also be established to facilitate co-existence should a snagging incident occur.
258. All contractors undertaking works will be contractually obliged to ensure compliance with standard offshore safety policies, including those that prohibit the discarding of objects or material overboard and that require the rapid recovery of accidentally dropped objects. These measures will be included in the FLCP which will be produced for the Project.
259. Given that the impact will be localised around the immediate footprint of Project infrastructure and, as described above a range of fisheries liaison and management measures will be implemented the magnitude is therefore considered to be low and the frequency of occurrence of safety issues remote.

Sensitivity of the Receptor and Severity of Consequence

260. The sensitivity of the receptors to snagging risk and associated loss or damage to fishing gear and the severity of consequence of safety issues related to this during operation and maintenance is as previously identified for the construction phase; medium sensitivity for loss or damage to fishing gear and moderate severity of safety issues.

Significance

261. Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be medium. The frequency of occurrence is deemed to be remote and the severity of consequence moderate. The effect will, therefore, be of minor significance and tolerable.

14.6.2.7 Impact 13: Impact on commercial fisheries as a result of impacts on exploited fish and shellfish species

262. There is potential for the operation and maintenance phase of the Project to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.
263. The likely significant effects of the operation and maintenance phase of the Project on fish and shellfish species, including those of commercial importance in the commercial fisheries study area are assessed in Chapter 11 Fish and Shellfish Ecology (Volume I). The assessment did not identify any impacts above minor on fish and shellfish species, including those of commercial importance. Consequently, any impacts associated with the commercial fisheries that target them are also not expected to exceed minor significance.

14.6.3 Potential impacts during decommissioning

264. Decommissioning is generally the reverse of the construction sequence and involves similar types and numbers of vessels and equipment. It is recognised

that legislation and industry best practice change over time, however, the following infrastructure is likely to be removed, reused or recycled where practicable:

- WTGs including monopile, steel jacket and GBS foundations;
 - OSPs including topsides and steel jacket foundations; and
 - Offshore cables may be removed or left in situ depending on available information at the time of decommissioning.
265. The following infrastructure is likely to be decommissioned in situ depending on available information at the time of decommissioning:
- Scour protection;
 - Offshore cables may be removed or left in situ; and
 - Cable protection.
266. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and will be agreed with the regulator. For the purposes of the worst-case scenario, it is anticipated that the impacts will be no greater than those identified for construction.
267. The sensitivity of receptors during decommissioning would be as described above for the construction phase. Given the nature of decommissioning activities, the magnitude of impact for each potential effect would be expected to be the same or less, than those predicted for the construction phase. Therefore, it is anticipated that any decommissioning impacts would be no greater, and probably less than those identified in relation to construction.
268. However, decommissioning will be subject to a separate licensing process and EIA before commencement, utilising the latest scientific understanding and available guidance, so this is subject to change.

14.7 Cumulative effects

14.7.1 Identification of potential cumulative effects

269. There may be potential for cumulative effects to occur on the commercial fisheries as a result of the development of other offshore wind farms and projects/activities.
270. The approach to CEA is set out in Chapter 6 EIA Methodology (Volume I). Only projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment have been included in the CEA.

Table 14.12 Potential cumulative effects

Impact	Potential for cumulative effect	Rationale
Impact 1 and Impact 7: Temporary loss or restricted access to fishing grounds	Yes	If the fishing grounds of a category of fishing vessels overlap the boundaries of more than one development measure.
Impact 8: Long term loss of restricted access to fishing grounds	Yes	If the fishing grounds of a category of fishing vessels overlap the boundaries of more than one development measure.
Impact 2 and Impact 9: Displacement of fishing activity into other areas	Yes	If the fishing grounds of a category of fishing vessels overlap the boundaries of more than one development measure.
Impact 3 and Impact 10: Increased steaming distances and times	Yes	If the fishing grounds of a category of fishing vessels overlap the boundaries of more than one development measure.
Impact 4 and Impact 11: Interference with fishing activities	No	Project vessels will fully comply with the requirements for safe navigation, as required under COLREGs. Such compliance should negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to fishing gear being towed.
Impact 5 and Impact 12: Snagging risk / safety issues for fishing vessels	No	It is understood that other developments or licensed activities will have the required policies and controls in place to prevent them being responsible for objects on the seabed constituting a hazard to fishing.
Impact 6 and Impact 13: Impact on commercial fisheries as a result of impacts on exploited fish and shellfish species	Yes	Discussed in Chapter 11 Fish and Shellfish Ecology (Volume I).

14.7.2 Other plans, projects and activities

271. The second step in the cumulative assessment is the identification of the other plans, projects and activities that may result in cumulative effects for inclusion in the CEA (described as ‘project screening’). This information is set out in Table 14.13 below, together with a consideration of the relevant details of each, including current status (e.g. under construction), planned construction period, closest distance to North Falls, status of available data and rationale for including or excluding from the assessment.
272. The project screening has been informed by the development of a CEA project list which forms an exhaustive list of plans, projects and activities in a very large study area relevant to North Falls. The list has been appraised, based on the confidence in being able to undertake an assessment from the information and data available, enabling individual plans, projects and activities to be screened in or out.

Table 14.13 Summary of projects considered for the CEA in relation to North Falls (project screening)

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Offshore wind farms							
Gunfleet Sands I-3	Operational since 2010	N/A	43.3	10.3	High	N	Assessed as part of baseline.
London Array	Operational since 2013	N/A	19.4	15.5	High	N	Assessed as part of baseline.
Kentish Flats and Extension	Operational since 2005	N/A	54.3	37.5	High	N	Assessed as part of baseline.
Thanet	Operational since 2010	N/A	24.5	36.1	High	N	Assessed as part of baseline.
Greater Gabbard	Operational since 2012	N/A	0	5.6	High	N	Assessed as part of baseline.
Galloper	Operational since 2018	N/A	0	8.5	High	N	Assessed as part of baseline.
Five Estuaries	Planning	Unknown	0	14.8	High	Y	Potential for cumulative effects due to the proximity of the project.
East Anglia Hub - TWO	Consented	Unknown	14.8	37.6	High	Y	Potential for cumulative effects due to the proximity of the project.
East Anglia One	Operational Since 2020	N/A	37.6	57.7	High	N	Assessed as part of baseline.
East Anglia One North	Consented	2026-2030	44.7	67.5	High	Y	Potential for cumulative effects due to the proximity of the project.

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Princess Elizabeth Zone	Development Zone	Unknown	32.1	47.5	High	Y	Potential for cumulative effects due to the proximity of the project.
Seamade and other Dutch/Belgian Projects	Operational since 2020	N/A	48.4	60.5	High	N	Assessed as part of baseline.
Aggregate Site Agreements							
Outer OTE aggregate exploration and option area 528/2	Unknown	Unknown	8.4	14	Incomplete	Y	Potential for cumulative effects due to the proximity of the project.
East Orford Ness aggregate exploration and option area 1809	Unknown	Unknown	2	24.8	Incomplete	Y	Potential for cumulative effects due to the proximity of the project.
Thames D aggregates production agreement area 524	Production agreement secured 2022	2022-2036	0	12.5	Incomplete	Y	Potential for cumulative effects due to the proximity of the project.
Southwold East aggregates production agreement area 430	Operational since 2012	N/A	27.3	48.4	High	Y	Potential for cumulative effects due to the proximity of the project.
North Inner Gabbard aggregate	Operational since 2015	N/A	1.7	24	High	Y	Potential for cumulative effects due to the proximity of the project.

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
production area 498							
Shipwash aggregate exploration and option area 507	Operational since 2016	N/A	0.2	9.8	High	Y	Potential for cumulative effects due to the proximity of the project.
Longsand aggregate exploration and option area 508	Operational since 2014	N/A	11.7	5.8	High	Y	Potential for cumulative effects due to the proximity of the project.
Longsand aggregate exploration and option area 509	Operational since 2015	N/A	11.7	2.1	High	Y	Potential for cumulative effects due to the proximity of the project.
Longsand aggregate exploration and option area 510	Operational since 2015	N/A	7.3	3.5	High	Y	Potential for cumulative effects due to the proximity of the project.
North Falls East aggregate exploration and option area 501	Operational since 2017	N/A	13.2	27.5	High	Y	Potential for cumulative effects due to the proximity of the project.
Marine Protected Areas							
Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone (MCZ)	Designated in 2013	N/A	46.3	5.4	High	N	No knowledge of fisheries management measures in place

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Medway Estuary MCZ	Designated in 2013	N/A	77.6	50.5	High	N	No knowledge of fisheries management measures in place
The Swale Estuary MCZ	Designated in 2016	N/A	63.6	47.1	High	N	No knowledge of fisheries management measures in place
Thanet Coast MCZ	Designated in 2013	N/A	37.5	44.4	High	N	No knowledge of fisheries management measures in place
Thanet Coast Special Area of Conservation (SAC)	Designated in 2005	N/A	37.5	44.4	High	N	Assessed as part of baseline.
Goodwin Sands MCZ	Designated in 2019	N/A	33.8	48.5	High	N	No knowledge of fisheries management measures in place
Kentish Knock East MCZ	Designated in 2019	N/A	0	6.5	High	N	No knowledge of fisheries management measures in place
Orford Inshore MCZ	Designated in 2019	N/A	5.4	23.6	High	N	No knowledge of fisheries management measures in place
Essex Estuaries SAC	Designated in 2005	N/A	49.5	9.0	High	N	Assessed as part of baseline.
Margate and Long Sands SAC	Designated in 2017	N/A	9.7	0	High	N	Assessed as part of baseline.

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
Southern North Sea SAC	Designated in 2019	N/A	0	0	High	N	No knowledge of fisheries management measures in place
Haisborough Hammond and Winterton SAC	Designated in 2017	N/A	66.8	84.3	High	N	Assessed as part of baseline.
Outer Thames Estuary Special Protection Area (SPA)	Designated in 2010	N/A	2.5	0	High	N	No knowledge of fisheries management measures in place
Greater Wash SPA	Designated in 2018	N/A	60.3	79.2	High	N	No knowledge of fisheries management measures in place
Dogger Bank SAC	Designated in 2022	N/A	251.2	269.0	High	Y	Associated byelaws prohibiting bottom-towed fishing gear. ¹
Inner Dowsing, Race Bank and North Ridge SAC	Designated in 2022	N/A	139.5	142.1	High	Y	Associated byelaws prohibiting bottom-towed fishing gear ² .
Cables							
Sea Link	Pre-application	2026-2030	Cable route unknown	c. 3.5km	Medium	Y	The emerging preferred and alternative routes

¹ Dogger Bank Special Area of Conservation (Specified Area) Bottom Towed Fishing Gear Byelaw 2022

² Inner Dowsing, Race Bank and North Ridge European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
							for Sea Link intersect with the North Falls offshore cable corridor. Therefore, there is potential for cumulative effects, subject to the final location and programme for the interconnector.
Cronos	Early Planning	Unknown	30.1	46.1	Low	Y (subject to available information)	There is potential for cumulative effects due to proximity.
NeuConnect Interconnector	Pre-construction	2022-2028	0 km	0 km	High	Y	The NeuConnect Interconnector bisects the North Falls offshore cable corridor and interconnector cable corridor and there is potential for temporal overlap of cable installation activities.
Nemo Link	Operational since 2019	N/A	32.8	45.4	High	N	Assessed as part of baseline.
Gridlink	Consent Application Submitted	N/A	34.0	40.3	High	Y	There is potential for cumulative effects due to proximity.
BritNed	Operational since 2009	N/A	0	10.86	High	N	Assessed as part of baseline.
Nautilus Interconnector	Pre-application	2025-2028	Cable route unknown	Cable route unknown	Low	Y	The offshore study area for Nautilus intersects with the

Project	Status	Construction period	Closest distance from the array areas (km)	Distance from the offshore cable corridor (km)	Confidence in data	Included in the CEA (Y/N)	Rationale
							North Falls offshore project area. Therefore, there is potential for cumulative effects, subject to the final location and programme for the interconnector.
EuroLink	Early Planning	N/A	11.0	33.4	Low	Y (subject to available information)	There is potential for cumulative effects due to proximity.
Tarchon Energy Interconnector	Pre-planning	N/A	Cable route unknown	Cable route unknown	N/A	N	Interconnector between UK and Germany

14.7.3 Assessment of cumulative effects

273. There may be potential for cumulative effects to occur on commercial fisheries receptors as a result of the development of other offshore projects/activities. The likely significant effects considered for cumulative assessment are in line with those described above for assessment of the Project alone and include the following:
- Cumulative effect 1: Loss or restricted access to traditional fishing grounds;
 - Cumulative effect 2: Displacement of fishing activity into other areas;
 - Cumulative effect 3: Increased steaming times to fishing grounds; and
 - Cumulative effect 4: Impacts on commercial fishing as a result of impacts on commercially exploited species.
274. The impacts “Interference with fishing activities (navigational conflict)” and “safety issues for fishing vessels” have not been taken forward for cumulative assessment. It is considered that the same factors and obligations discussed for the Project alone would apply to other projects/activities and this would therefore negate the potential for cumulative effects to occur. As such, the potential cumulative effects associated with these impacts are not discussed further within this section.
275. The potential for cumulative effects to occur would largely depend on the operational practices of each particular fleet, the location and extent of their grounds relative to other developments and the timing of construction phases. Given the wide operational range of some of the fleets active in areas relevant to North Falls, consideration has been given to projects/activities over a wide spatial extent, including the North Sea and English Channel.
276. Other projects/activities with potential to result in cumulative effects include offshore wind farm projects, aggregate dredging activity, interconnector cables, and the implementation of restrictions to fishing in marine protected areas (MPAs). For the purposes of this assessment, it is understood that operational offshore wind farms, active licensed activities and implemented measures are part of the existing environment, and any effect they might have had would be reflected in the baseline characterisation used to inform this chapter.
277. The offshore wind farms, aggregate dredging areas, interconnector cables and MPAs considered for the cumulative assessment are illustrated in Figure 14.39 (Volume II) and outlined in Table 14.13.
278. Loss of fishing grounds may occur as a result of planned and approved offshore wind farm projects across the North Sea (Figure 14.40, Volume II). As described for assessment of the impact of North Falls alone, potential overlap of fishing grounds will be over small discrete areas of project infrastructure, safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables and where offshore cable protection, if required, is located. Existing legislation does not prevent fishing from occurring within operational wind farm sites therefore, fishing activity would be expected to resume to some extent in the projects included for cumulative assessment. It is anticipated that measures to facilitate co-existence with mobile fisheries (e.g., consideration of rock placement designs that minimise gear snagging risk and

undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions) would be implemented.

279. In respect of MPAs, only the recent marine conservation designations with associated byelaws prohibiting bottom-towed fishing gear have been considered (Figure 14.41, Volume II). These have the potential to contribute significantly to a cumulative loss of fishing grounds, however, in those instances the additional loss of grounds due to the presence of North Falls infrastructure (6.69km²) could be considered insignificant when considered against the area of the Dogger Bank SAC (12,331km²).
280. Aggregate extraction activities will contribute to the loss of fishing grounds through operational conflicts with dredging vessels and changes in seabed sediments and topography (Figure 14.42, Volume II). It is recognised, however that only a small proportion of the total licensed aggregate extraction areas are typically dredged (e.g., approximately 6% in the Thames estuary region in 2021; Crown Estate, 2021).
281. The primary contribution to loss of fishing grounds by interconnector cables will mainly be during cable installation activities where discrete sections of fishing grounds may overlap with safety zones, areas where advisory safe passing distances are in place and/or around vulnerable sections of cables (Figure 14.43 Volume II). Following installation loss of grounds will be limited to small discrete areas where offshore cable protection, if required, is located. It is anticipated that measures to facilitate co-existence with mobile fisheries (e.g., consideration of rock placement designs that minimise gear snagging risk and undertaking post-lay and burial inspections to determine cable burial status and to identify potential changes to seabed conditions) would be implemented.
282. The same receptor sensitivities identified for assessment of the project alone apply for assessment of cumulative effects. Therefore, where relevant, reference is made to the sensitivity levels identified for the assessment of North Falls alone (section 14.6) throughout the cumulative assessment. The potential cumulative impact of North Falls with other projects/activities on commercial fisheries is given below by individual fleet.

14.7.3.1 *Cumulative effect 1: Loss or restricted access to traditional fishing grounds*

14.7.3.1.1 UK Vessels

Local inshore vessels

Magnitude

283. As described in Section 14.5.2, the local inshore fleet are primarily multi-purpose under 10m vessels that operate pots, nets and trawls in nearshore areas, with limited activity in the array areas. Given the highly localised distribution of their fishing grounds and limited operational range, it is not anticipated that there would be a material loss of grounds to contribute to a cumulative effect in combination with offshore wind farms (OWFs), interconnector cables and aggregate extraction activities that may overlap with local inshore fishing grounds (Figure 14.39, Volume II).
284. It has been assumed that the loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities will be similar in nature

to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure).

285. Taking the above into consideration and the implementation of fisheries liaison and management measures to minimise loss of access to fishing grounds it is considered that the contribution of the Project to the cumulative loss of fishing area for local inshore vessels will be of negligible magnitude.

Sensitivity

286. The sensitivity of the receptors to the loss of or restricted access to fishing grounds in a cumulative context is as previously described for the project alone (e.g., for construction see paragraph 68); high for vessels that are restricted to nearshore areas and medium for vessels with extended operational ranges.

Significance

287. The cumulative effect of loss or restricted access to fishing grounds for local inshore vessels is considered to be of negligible to minor significance.

Mobile towed gear vessels

Magnitude

288. As described in Section 14.5.2, beam trawling and demersal trawling by larger (over 15m) vessels record comparatively low landings in the study area in comparison to other areas of the North Sea. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities, interconnector cables and the presence of MPAs that prohibit bottom towed fishing gear (Figure 14.44, Volume II).
289. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure) and it is considered that most fishing activities will be able to resume to a certain degree.
290. As previously discussed (paragraph 279), MPAs with associated byelaws prohibiting bottom-towed fishing gear have the potential to contribute significantly to a cumulative loss of fishing grounds, and in those instances it is considered that North Fall's contribution to the cumulative loss of grounds is minimal.
291. In addition, fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds, as previously noted in paragraph 291. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

292. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

293. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

14.7.3.1.2 Belgian Vessels

Beam trawlers

Magnitude

294. As described in Section 14.5.3, high landings values are recorded for Belgian beam trawlers within the study area and across fishing grounds in the southern North Sea and English Channel. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities and interconnector cables (Figure 14.45, Volume II).
295. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure) and it is considered that fishing activity will be able to resume to a certain degree.
296. As previously noted (paragraph 291), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

297. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

298. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

Demersal otter trawlers and seine netters

Magnitude

299. As described in Section 14.5.3, while fishing grounds extend across the North Sea available data indicates the spatial distribution of high value grounds are patchy. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities and interconnector cables (Figure 14.46, Volume II).
300. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those

described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure) and it is considered that fishing activity will be able to resume to a certain degree.

301. As previously noted (paragraph 291), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

302. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

303. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

14.7.3.1.3 Dutch Vessels

Beam trawlers

Magnitude

304. As described in Section 14.5.4, fishing activity by the Dutch beam trawl fleet occurs at high levels across a wide section of southern North Sea, Dutch vessels, however, have no historic rights to fish within the UK's 12nm limit. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities and interconnector cables (Figure 14.47, Volume II).
305. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure) and it is considered that most fishing activities will be able to resume to a certain degree.
306. In addition, fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds, as previously noted in paragraph 291. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

307. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

308. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

Demersal otter trawlers and seine netters

Magnitude

309. As described in Section 14.5.4, demersal fishing activity occurs across the southern North Sea and English Channel, and central North Sea. As noted previously however, Dutch vessels have no historic rights to fish within the UK 12nm limit. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities, interconnector cables and the presence of MPAs that prohibit bottom towed fishing gear (Figure 14.48, Volume II).
310. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure) and it is considered that most fishing activities will be able to resume to a certain degree.
311. As previously discussed (paragraph 279), MPAs with associated byelaws prohibiting bottom-towed fishing gear have the potential to contribute significantly to a cumulative loss of fishing grounds, and in those instances, it is considered that North Fall's contribution to the cumulative loss of grounds is minimal.
312. In addition, fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds, as previously noted in paragraph 291. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

313. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

314. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

14.7.3.1.4 French vessels

Pelagic trawlers and seine netters

Magnitude

315. As discussed in Section 14.5.5, from consultation and the data that has been made available it is understood that activity by French vessels occur in the central and southern North Sea and in the English Channel. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities and interconnector cables (Figure 14.49, Volume II).

316. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure). As previously discussed, while it may not be possible for seine netting or pelagic trawling to resume within offshore wind farm arrays, it is considered that fishing activity would be able to resume in relation to the other activities.
317. Fisheries liaison and management measures will also be implemented to minimise loss of access to fishing grounds, as previously noted in paragraph 291. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

318. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

319. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

Bottom trawlers

Magnitude

320. As discussed in Section 14.5.5, from consultation and the data that has been made available it is understood that activity by French vessels in the central and southern North Sea, and in the English Channel. The potential for North Falls to contribute to cumulative effects in respect of loss of fishing grounds would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities and interconnector cables (Figure 14.49, Volume II).
321. The loss of grounds from the presence of OWFs, interconnector cables and aggregate extraction activities are expected to be similar in nature to those described for North Falls alone (e.g., presence of project infrastructure and safety zones and advisory measures where appropriate). As assessed for North Falls, loss of grounds from OWFs, interconnector cables, aggregate extraction sites would occur at localised, discrete locations (i.e., limited to the immediate vicinity of works or project infrastructure) and it is considered that fishing activity will be able to resume to a certain degree.
322. As previously noted (paragraph 291), fisheries liaison and management measures will be implemented to minimise loss of access to fishing grounds. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

323. The sensitivity of this receptor to loss or restricted access to fishing grounds in a cumulative context is as described for construction; low.

Significance

324. The cumulative effect of loss or restricted access to fishing grounds is considered to be of minor significance.

14.7.3.2 Cumulative effect 2: Displacement of fishing activity into other areas

325. As previously described for North Falls alone, whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the extent of loss or restricted access to fishing grounds. It is therefore considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to loss of grounds or restricted access to fishing grounds. This would apply for the Project alone, but also in a cumulative context.

326. As such it is considered that the findings of the cumulative assessment with regards to cumulative effect of loss or restricted access to fishing grounds also apply in relation to cumulative displacement of fishing activity.

14.7.3.3 Cumulative effect 3: Increased steaming times to fishing ground

Magnitude

327. The implementation of safety zones, advisory safety zones and advisory clearance distances during construction, could result in some short-term increases in steaming distances and durations to fishing vessels. The potential for North Falls to contribute to cumulative effects in respect of increased steaming would be as a result of potential overlaps with other offshore wind farms, aggregate extraction activities, and to a lesser extent interconnector cables (Figure 14.39, Volume II).

328. The maximum potential for disruption of established steaming routes is represented by the presence of project infrastructure with potential 500m construction safety zones and 50m pre-commissioning safety zones; and advisory safe passing distances. There are no restrictions to transiting vessels in relation to offshore wind farm arrays or the other activities considered.

329. Fisheries liaison and management measures will also be implemented to minimise loss of access to fishing grounds, as previously noted in paragraph 291. The magnitude of impact considering other projects/activities cumulatively is therefore considered to be low.

Sensitivity

330. As described for the Project alone, the sensitivity in a cumulative context is as described for construction; local vessels restricted to nearshore areas are low, and vessels with extended operational ranges, negligible.

Significance

331. The cumulative effect of increased steaming times to fishing grounds is considered to be of minor significance (vessels restricted to nearshore areas) to negligible significance (vessels with extended ranges).

14.7.3.4 *Cumulative effect 4: Impacts on commercial fishing as a result of impacts on commercially exploited species*

332. There is potential for the construction phase of the Project to contribute to cumulative effects on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that depend on them.
333. The potential cumulative effects on fish and shellfish species, including those of commercial importance, are assessed in Chapter 11 Fish and Shellfish Ecology (Volume I). The assessment determined that the majority of impacts were considered to be minor, therefore any impacts associated with the commercial fisheries that target them are also not expected to exceed minor significance. The impact of piling on the Downs herring receptor, however, was considered to be of moderate significance.
334. As described in the assessment of the impact of North Falls alone the impact of reduced productivity of the herring fishery on the pelagic fleets during construction is considered to be minor. Consequently, the potential for North Falls to contribute to cumulative effects in respect of impacts on commercial fishing are also not expected to exceed minor significance.

14.8 Transboundary impacts

335. This chapter has assessed the likely significant effects incurred by non-UK registered vessels operating within UK waters. This includes the potential effects on Belgian, French and Dutch commercial fishing fleets across all impact categories assessed, including loss or restriction of access to the offshore project area and displacement effects. Transboundary impacts within UK waters have therefore been intrinsically considered throughout the commercial fisheries impact assessment process.

14.9 Inter-relationships

336. The assessment of the impacts arising from construction, operation and decommissioning of the project indicates that impacts on receptors addressed in other chapters may potentially further contribute to the impacts assessed on commercial fisheries and vice versa. A summary of the principal linkages, related chapters and signposts within the chapter is given in Table 14.14.

Table 14.14 Commercial fisheries inter-relationships

Topic and description	Related chapter (Volume I)	Where addressed in this chapter	Rationale
Adverse Effects on Commercially Exploited Fish and Shellfish	Chapter 11 Fish and Shellfish Ecology Chapter 31 Socio-economics	Sections 14.6.1.6, 14.6.2.7, 14.7.3.4	Impacts on fish and shellfish species of commercial importance could indirectly affect the fisheries that target them.
Increased steaming times.	Chapter 15 Shipping and Navigation Chapter 31 Socio-economics	Sections 14.6.1.3, 14.6.2.4, 14.7.3.3	Dependent on the potential for fishing vessels to be able to transit the area of the project during

Topic and description	Related chapter (Volume I)	Where addressed in this chapter	Rationale
			construction and operation.
Interference with fishing activities (navigational conflict)	Chapter 15 Shipping and Navigation Chapter 31 Socio-economics	Sections 14.6.1.4, 14.6.2.5	Project associated vessel activity in and around the offshore project area may interfere with commercial fishing activity.
Safety issues for fishing vessels	Chapter 15 Shipping and Navigation	Sections 14.6.1.5, 14.6.2.6	Fishing vessels would also be affected by safety issues associated with potential for collision or allision with project vessels and infrastructure.

14.10 Interactions

337. The impacts identified and assessed in this chapter have the potential to interact with each other. The areas of potential interaction between impacts are presented in Table 14.15. This provides a screening tool for which impacts have the potential to interact. Table 14.16 provides an assessment for each receptor (or receptor group) as related to these impacts.
338. Within Table 14.16 the impacts are assessed relative to each development phase (Phase assessment, i.e. construction, operation or decommissioning) to see if (for example) multiple construction impacts affecting the same receptor could increase the level of impact upon that receptor. Following this, a lifetime assessment is undertaken which considers the potential for impacts to affect receptors across all development phases.

Table 14.15 Interaction between impacts - screening

Potential interaction between impacts								
Construction								
	Impact 1: Temporary loss or restricted access to fishing grounds	Impact 2: Displacement of fishing activities into other areas	Impact 3: Increased steaming times to fishing grounds	Impact 4: Interference with fishing activities (navigational conflict)	Impact 5: Safety issues for fishing vessels	Impact 6: Impacts on commercial fishing as a result of impacts on commercially exploited species		
Impact 1: Temporary loss or restricted access to fishing grounds	-	Yes	Yes	No	No	No		
Impact 2: Displacement of fishing activities into other areas	Yes	-	Yes	No	No	No		
Impact 3: Increased steaming times to fishing grounds	Yes	Yes	-	No	No	No		
Impact 4: Interference with fishing activities (navigational conflict)	No	No	No	-	Yes	No		
Impact 5: Safety issues for fishing vessels	No	No	No	Yes	-	No		
Impact 6: Impacts on commercial fishing as a result of impacts on commercially exploited species	No	No	No	No	No	-		
Operation								
	Impact 7: Temporary habitat loss/ physical disturbance	Impact 8: Complete loss or restricted access to traditional fishing ground	Impact 9: Displacement of fishing activities into other areas	Impact 10: Increased steaming times to fishing grounds	Impact 11: Interference with fishing activities (navigational conflict)	Impact 12: Safety issues for fishing vessels	Impact 13: Impacts on commercial fishing as a result of impacts on commercially exploited species	
Impact 7: Temporary habitat loss/ physical disturbance	-	No	Yes	Yes	No	No	No	

Potential interaction between impacts							
Impact 8: Complete loss or restricted access to traditional fishing ground	No	-	Yes	Yes	No	No	Yes
Impact 9: Displacement of fishing activities into other areas	Yes	Yes	-	Yes	No	No	No
Impact 10: Increased steaming times to fishing grounds	Yes	Yes	Yes	-	No	No	No
Impact 11: Interference with fishing activities (navigational conflict)	No	No	No	No	-	Yes	No
Impact 12: Safety issues for fishing vessels	No	No	No	No	Yes	-	No
Impact 13: Impacts on commercial fishing as a result of impacts on commercially exploited species	No	No	No	No	No	No	-
Decommissioning							
It is anticipated that the decommissioning impacts will be similar in nature to those of construction							

Table 14.16 Interaction between impacts – phase and lifetime assessment

Receptor	Highest residual significance level			Phase assessment	Lifetime assessment
	Construction	Operation	Decommissioning		
Commercial Fisheries	Minor	Minor	No greater than individually assessed impacts	No greater than individually assessed impacts	Minor

14.11 Potential monitoring requirements

339. Monitoring requirements will be discussed with stakeholders in the preparation of the final ES which will be submitted alongside the DCO application.

14.12 Summary

340. A summary of the impact assessment for commercial fisheries is given in Table 14.17. As shown, the impacts of North Falls on commercial fisheries receptors are not anticipated to exceed minor adverse significance.

Table 14.17 Summary of likely significant effects on commercial fisheries receptors

Potential impact	Receptor	Sensitivity	Magnitude	Pre-mitigation impact	Additional mitigation measures proposed	Residual impact
Construction						
Impact 1: Temporary loss or restricted access to fishing grounds	UK local inshore vessels	High (restricted to nearshore areas; static fishers) Medium (extended operational ranges)	Low	Minor (restricted to nearshore areas; static fishers) Minor (extended operational ranges)	N/A	Minor
	UK other fisheries	Low	Low	Minor	N/A	Minor
	Belgian beam trawlers	Low	Low	Minor	N/A	Minor
	Belgian demersal otter trawlers and seine netters	Low	Low	Minor	N/A	Minor
	Dutch beam trawlers	Low	Low	Minor	N/A	Minor
	Dutch demersal otter trawlers and seine netters	Low	Negligible	Negligible	N/A	Negligible
	French pelagic trawlers and seine netters	Low	Low	Minor	N/A	Minor
	French bottom trawlers	Low	Negligible	Negligible	N/A	Negligible
Impact 2: Displacement of fishing activities into other areas	All commercial fishing vessels	It is considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to loss of grounds or restricted access to fishing grounds. As such it is considered that the findings of the assessment with regards to the temporary loss or restricted access to fishing grounds also apply in relation to displacement of fishing activity.				

Potential impact	Receptor	Sensitivity	Magnitude	Pre-mitigation impact	Additional mitigation measures proposed	Residual impact
Impact 3: Increased steaming times to fishing grounds	UK local inshore vessels	Low (restricted to nearshore areas) Negligible (extended operational ranges)	Low	Minor (restricted to nearshore areas) Negligible (extended operational ranges)	N/A	Minor (restricted to nearshore areas) Negligible (extended operational ranges)
	All other commercial fishing vessels	Negligible	Negligible	Negligible	N/A	Negligible
Impact 4: Interference with fishing activities (navigational conflict)	Static / passive gear fisheries	Medium	Low	Minor	N/A	Minor
	Mobile gear fisheries	Negligible	Low	Negligible	N/A	Negligible
Impact 5: Safety issues for fishing vessels	All commercial fishing vessels	Medium sensitivity / moderate severity	Low magnitude / remote frequency of occurrence	Minor significance and tolerable	N/A	Minor significance and tolerable
Impact 6: Impacts on commercial fishing as a result of impacts on commercially exploited species	Pelagic herring fishery	Low	Low	Minor	N/A	Minor
	All commercial fisheries	See Chapter 11: Fish and Shellfish Ecology		Minor	N/A	Minor
Operation						
Impact 7: Temporary loss or restricted access to traditional fishing ground	UK local inshore vessels	High (restricted to nearshore areas) Medium (extended operational ranges)	Negligible	Minor (restricted to nearshore areas) Negligible (extended)	N/A	Minor (restricted to nearshore areas)

Potential impact	Receptor	Sensitivity	Magnitude	Pre-mitigation impact	Additional mitigation measures proposed	Residual impact
				operational ranges)		Negligible (extended operational ranges)
	UK mobile towed gear vessels	Low	Negligible	Negligible	N/A	Negligible
	Belgian beam trawlers	Low	Negligible	Negligible	N/A	Negligible
	Belgian demersal otter trawlers and seine netters	Low	Negligible	Negligible	N/A	Negligible
	Dutch beam trawlers	Low	Negligible	Negligible	N/A	Negligible
	Dutch demersal otter trawlers and seine netters	Low	Negligible	Negligible	N/A	Negligible
	French pelagic trawlers and seine netters	Low	Negligible	Negligible	N/A	Negligible
	French bottom trawlers	Low	Negligible	Negligible	N/A	Negligible
Impact 8: Long-term loss or restricted access to traditional fishing ground	UK local inshore vessels	High (restricted to nearshore areas) Medium (extended operational ranges)	Negligible	Minor (restricted to nearshore areas) Negligible (extended operational ranges)	N/A	Minor (restricted to nearshore areas) Negligible (extended operational ranges)
	UK mobile towed gear vessels	Low	Negligible	Negligible	N/A	Negligible

Potential impact	Receptor	Sensitivity	Magnitude	Pre-mitigation impact	Additional mitigation measures proposed	Residual impact
	Belgian beam trawlers	Low	Low	Minor	N/A	Minor
	Belgian demersal otter trawlers and seine netters	Low	Low	Minor	N/A	Minor
	Dutch beam trawlers	Low	Low	Minor	N/A	Minor
	Dutch demersal otter trawlers and seine netters	Low	Low	Minor	N/A	Minor
	French pelagic trawlers and seine netters	Low	Low	Minor	N/A	Minor
	French bottom trawlers	Low	Low	Minor	N/A	Minor
Impact 9: Displacement of fishing activities into other areas	All commercial fishing vessels	It is considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to loss of grounds or restricted access to fishing grounds. As such it is considered that the findings of the assessment with regards to the temporary loss or restricted access to fishing grounds also apply in relation to displacement of fishing activity.				
Impact 10: Increased steaming times to fishing grounds	UK local inshore vessels	Low (restricted to nearshore areas) Negligible (extended operational ranges)	Low	Minor (restricted to nearshore areas) Negligible (extended operational ranges)	N/A	Minor (restricted to nearshore areas) Negligible (extended operational ranges)
	All other commercial fishing vessels	Negligible	Negligible	Negligible	N/A	Negligible
	Static / passive gear	Medium	Low	Minor	N/A	Minor

Potential impact	Receptor	Sensitivity	Magnitude	Pre-mitigation impact	Additional mitigation measures proposed	Residual impact
Impact 11: Interference with fishing activities (navigational conflict)	Mobile gear	Negligible	Negligible	Negligible	N/A	Negligible
Impact 12: Safety issues for fishing vessels	All commercial fishing vessels	Medium sensitivity / moderate severity	Low magnitude / remote frequency of occurrence	Minor significance and tolerable	N/A	Minor significance and tolerable
Impact 13: Impacts on commercial fishing as a result of impacts on commercially exploited species	All commercial fisheries	See Chapter 11: Fish and Shellfish Ecology		Minor	N/A	Minor
Decommissioning						
The sensitivity of the receptors is considered to be the same to that identified for the construction phase. The magnitude of impact is considered to be no greater, and in all probability less, than in the construction phase. Therefore, it is anticipated that any decommissioning impacts would be no greater, and probably less than that assessed for the construction phase.						
Cumulative						
Impact 1: Complete loss or restricted access to traditional fishing ground	UK local inshore vessels	High (restricted to nearshore areas) Medium (extended operational ranges)	Negligible	Minor (restricted to nearshore areas) Negligible (extended operational ranges)	N/A	Minor (restricted to nearshore areas) Negligible (extended operational ranges)
	UK mobile towed gear vessels	Low	Low	Minor	N/A	Minor
	Belgian beam trawlers	Low	Low	Minor	N/A	Minor

Potential impact	Receptor	Sensitivity	Magnitude	Pre-mitigation impact	Additional mitigation measures proposed	Residual impact
	Belgian demersal otter trawlers and seine netters	Low	Low	Minor	N/A	Minor
	Dutch beam trawlers	Low	Low	Minor	N/A	Minor
	Dutch demersal otter trawlers and seine netters	Low	Low	Minor	N/A	Minor
	French demersal and pelagic trawlers	Low	Low	Minor	N/A	Minor
Impact 2: Displacement of fishing activities into other areas	All commercial fishing vessels	It is considered that the magnitude of impact, sensitivity of the receptor and resulting significance of effect in respect of displacement would, at worst, be as identified in relation to loss of grounds or restricted access to fishing grounds. As such it is considered that the findings of the assessment with regards to the loss or restricted access to fishing grounds also apply in relation to displacement of fishing activity.				
Impact 3: Increased steaming times to fishing grounds	All commercial fishing vessels	Low	Negligible	Negligible	N/A	Negligible
Impact 4: Impacts on commercial fishing as a result of impacts on commercially exploited species	Pelagic herring fishery	Low	Low	Minor	N/A	Minor
	All commercial fisheries	See Chapter 11 Fish and Shellfish Ecology (Volume I)		Minor	N/A	Minor

14.13 References

Blythe-Skyrme, R. E. (2010). Options and opportunities for marine fisheries mitigation associated with windfarms. London: Final report for COWRIE. Env contract FISHMITIG09.
Cefas (2012). Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403, May 2012.
Cefas Marine Consents and Environment Unit, DEFRA, Department of Trade and Industry (2004). Offshore Wind Farms – Guidance note for Environmental Impact Assessment In respect of FEPA and CPA requirements, Version 2. Available at: https://www.cefas.co.uk/publications/files/windfarm-guidance.pdf . Accessed on: 01/12/2022
Crown Estate (2021) The area involved – 24th annual report. Marine Aggregate Extraction 2021. Available from: https://www.thecrownestate.co.uk/media/4242/the-area-involved-24th-annual-report.pdf [Accessed 12 December 2022].
EMODnet (2022) European Fishing Vessels AIS.
FLOWW (2014). Best Practice Guidance for Offshore Renewable Developments: Recommendations for Fisheries Liaison
FLOWW (2015). Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds.
ILVO (2015) Belgian Fishing Activity for vessels over 15m in length (Flanders Research Institute Agricultural, Fisheries and Food Research; ILVO).
International Cable Protection Committee (2009). Fishing and Submarine Cables – Working Together
KEIFCA (2022) Surveillance Sightings.
KIS-ORCA (2022) Emergency Procedures. Available at: https://kis-orca.org/safety/emergency-procedures/ . Accessed on: 01/12/2022.
MMO (2013). Haisborough, Hammond and Winterton European Marine Site (specified areas) bottom towed gear byelaw impact assessment. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/308569/ia-hhw.pdf . Accessed on: 19/04/2023
Marine Scotland Science (2022). Assessing fisheries displacement by other licensed marine activities: good practice guidance, by Xodus for the Scottish Government. Available at: https://www.gov.scot/publications/good-practice-guidance-assessing-fisheries-displacement-licensed-marine-activities/ . Accessed on: 01/12/2022.
MMO (2021) UK fisheries statistics data (surveillance sightings, landings, fishing activity).
Ørsted (2022). Caring for crustacean habitats. Available online at: https://orsted.co.uk/about-us/corporate-responsibility/environment/caring-for-crustacean-habitats . Accessed on: 01/12/2022.

Landbouw & Visserij. (2018). Annual Fleet Report 2018 – Belgium. ‘Sustainable balance between fishing capacity and fishing opportunities’. Department of Agriculture and Fisheries Knowledge, Quality and Fisheries Division. Departement Landbouw & Visserij. Available at: <https://www.vliz.be/imisdocs/publications/341760.pdf> Accessed on: 01/12/2022.

Landbouw & Visserij. (2019). Annual Fleet Report 2019 – Belgium. ‘Sustainable balance between fishing capacity and fishing opportunities’. Department of Agriculture and Fisheries Knowledge, Quality and Fisheries Division. Departement Landbouw & Visserij. Available at: <https://www.vliz.be/imisdocs/publications/359900.pdf>. Accessed on: 01/12/2022.

Landbouw & Visserij. (2020). Annual Fleet Report 2020 – Belgium. ‘Sustainable balance between fishing capacity and fishing opportunities’. Department of Agriculture and Fisheries Knowledge, Quality and Fisheries Division. Departement Landbouw & Visserij. Available at: https://oceans-and-fisheries.ec.europa.eu/system/files/2021-09/2020-fleet-capacity-report-belgium_en.pdf. Accessed on: 01/12/2022.

Marine Scotland, (2022). Good Practice Guidance for assessing fisheries displacement by other licenced marine activities

RenewableUK, (2013). Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms

Sea Fish Industry Authority and UK Fisheries Economic Network (2012). Best practice guidance for fishing industry financial and economic impact assessments

STECF (2017) Belgian and French Landings by ICES rectangle (European Commission’s (EC) Scientific, Economic and Technical Committee on Fishing (STECF)).

WUR (2022) Dutch fisheries statistics (Wageningen University and Research; WUR).