Morecambe Offshore Windfarm: Generation Assets

Development Consent Order Documents

Volume 5

Schedule of Mitigation

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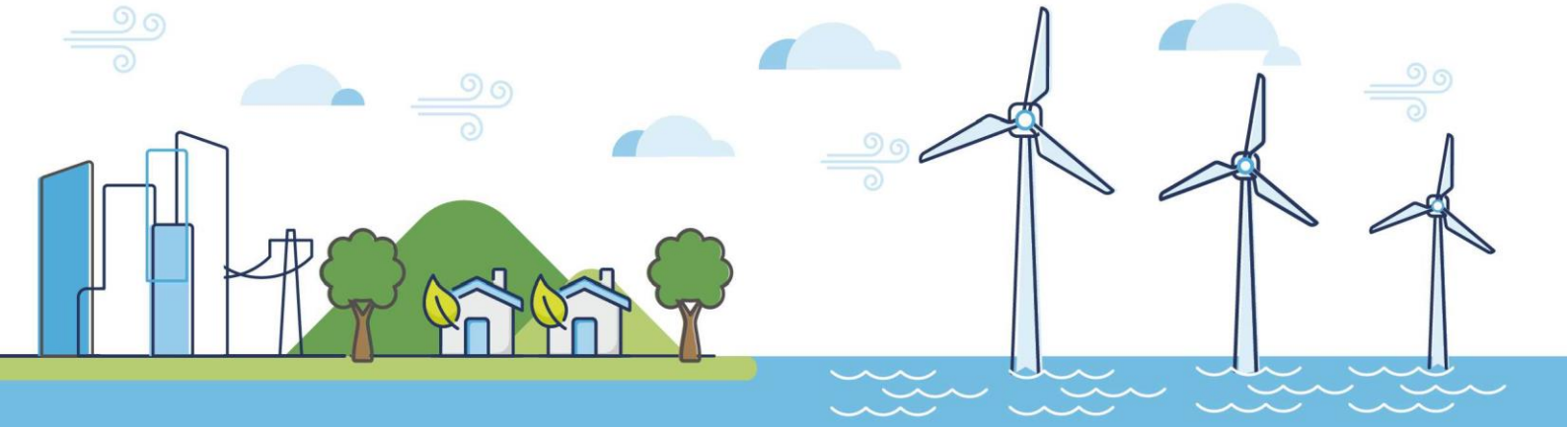
Rev 03



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Glossary of Acronyms

ADD	Acoustic Deterrent Device
AEZs	Archaeological Exclusion Zones
AfL	Agreement for Lease
AIP	Aeronautical Information Publication
AIS	Automatic Identification System
AtoN	Aids to Navigation
ATS	Air Traffic Service
BWM	Ballast Water and Sediments
CAA	Civil Aviation Authority
CAP	Civil Aviation Publications
CBRA	Cable Burial Risk Assessment
CGOC	Coast Guard Operations Centre
CMS	Construction Method Statements
COLREGS	International Convention for the Prevention of Collision at Sea
CTV	Crew Transfer Vessel
DCO	Development Consent Order
DGC	Defence Geographic Centre
DML	Deemed Marine Licence
DSC	Digital Selective Calling
EIA	Environmental Impact Assessment
EMF	Electromagnetic fields
ERCoP	Emergency Response and Cooperation Plan
ES	Environmental Statement
FLCP	Fisheries Liaison and Co-existence Plan
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
GBS	Gravity Base Structures
HAT	Highest Astronomical Tide
HSE	Health, Safety and Environment
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IEC	International Electrotechnical Commission
IFP	Instrument Flight Procedures
IHO	International Hydrographic Organisation
IMO	International Maritime Association

INNS	Invasive Non-Native Species
LAT	Lowest Astronomical Tide
MAIB	Marine Accident Investigation Branch
MARPOL	International Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency
MGN	Marine Guidance Note
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
MOD	Ministry of Defence
MPCP	Marine Pollution Contingency Plan
NATS	National Air Traffic Services
NERL	NATS (En Route) plc
NOTAM	Notice to Airmen
NSIP	Nationally Significant Infrastructure Project
NtM	Notice to Mariners
OOMP	Offshore Operation and Maintenance Plan
OSP	Offshore substation platform
OWSI	Offshore Written Scheme of Investigation
PAD	Protocol For Archaeological Discoveries
PATP	Port Access and Transport Plan
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
PLB	Personal Locator Beacons
PPE	Personal Protective Equipment
PSR	Primary Surveillance Radar
PTS	Permanent Threshold Shift
QHSE	Quality, Health, Safety and Environment
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
SAR	Search and Rescue
SLVIA	Seascape, Landscape and Visual Impact Assessment
SNCB	Statutory Nature Conservation Body
SOLAS	International Convention for the Safety of Life at Sea
TCE	The Crown Estate
TEZ	Archaeological Exclusion Zones
TH	Trinity House

UKHO	UK Hydrographic Office
UXO	Unexploded Ordnance
VHF	Very High Frequency
VTMP	Vessel Traffic Management Plan
WSI	Written Scheme of Investigation
WTG	Wind turbine generator

Glossary of Unit Terms

km	kilometre
kV	kilovolt
m	metre
MW	Megawatt

Glossary of Terminology

Applicant	Morecambe Offshore Windfarm Ltd
Agreement for Lease (AfL)	Agreements under which seabed rights are awarded following the completion of The Crown Estate tender process.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
Inter-array cables	Cables which link the WTGs to each other and the OSP(s).
Landfall	Where the offshore export cables would come ashore.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the offshore substation platforms (OSPs)[1], interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV cables and associated grid connection infrastructure such as circuit breaker infrastructure. Also referred to in this document as the Transmission Assets, for ease of reading.
Offshore export cables	The cables which would bring electricity from the OSP(s) to the landfall.
Offshore substation platform(s) (OSP(s))	A fixed structure located within the windfarm site, containing electrical equipment to aggregate the power from the WTGs and convert it into a more suitable form for export to shore.
Platform link cable	An electrical cable which links one or more OSP(s).
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations as a result of the flow of water.
Technical stakeholders	Technical consultees are considered to be organisations with detailed knowledge or experience of the area within which the Project is located and/or receptors which are considered in the Environmental Impact Assessment (EIA) and HRA. Examples of technical stakeholders include Historic England, Marine Management Organisation (MMO), local authorities, Natural England (NE) and Royal Society for the Protection of Birds (RSPB).
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables would be present.

[1] At the time of writing the Environmental Statement (ES), a decision had been taken that the offshore substation platforms (OSPs) would remain solely within the Generation Assets application and would not be included within the Development Consent Order application for the Transmission Assets. This decision post-dated the Preliminary Environmental Information Report (PEIR) that was prepared for the Transmission Assets. The OSPs are still included in the description of the Transmission Assets for the purposes of this ES as the cumulative effects assessment carried out in respect of the Generation/Transmission Assets is based on the information available in the Transmission Assets PEIR.

Wind turbine generator (WTG)	A fixed structure located within the windfarm site that converts the kinetic energy of wind into electrical energy.

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1 Introduction

1.1 Purpose of the schedule of mitigation

1. This Schedule of Mitigation forms part of a set of documents that supports the Development Consent Order (DCO) application submitted by Morecambe Offshore Windfarm Ltd (the Applicant) for the Morecambe Offshore Windfarm Generation Assets (the Project). This document lists all the mitigation and commitments proposed in the Environmental Statement (ES) for the Project. The following schedule lists all measures proposed through the Environmental Impact Assessment (EIA) on a topic by topic basis and signposts where each is secured in the draft DCO and/or contained in the deemed Marine Licence (DML) and/or associated documents, as well as those delivered through the design of the Project.

2. The relevant topics and/or receptor groups discussed in this schedule are as follows:

   - Marine geology, oceanography and physical processes – **Chapter 7 Marine Geology, Oceanography & Physical Processes** (Document Reference 5.1.7) of the ES
   - Marine sediment and water quality – **Chapter 8 Marine Sediment and Water Quality** (Document Reference 5.1.8) of the ES
   - Benthic ecology – **Chapter 9 Benthic Ecology** (Document Reference 5.1.9) of the ES
   - Fish and shellfish ecology – **Chapter 10 Fish and Shellfish Ecology** (Document Reference 5.1.10) of the ES
   - Marine mammal ecology – **Chapter 11 Marine Mammals** (Document Reference 5.1.11) of the ES
   - Offshore ornithology – **Chapter 12 Offshore Ornithology** (Document Reference 5.1.12) of the ES
   - Commercial fishing – **Chapter 13 Commercial Fisheries** (Document Reference 5.1.13) of the ES
   - Shipping and navigation – **Chapter 14 Shipping and Navigation** (Document Reference 5.1.14) of the ES
   - Offshore archaeology and cultural heritage – **Chapter 15 Marine Archaeology and Cultural Heritage** (Document Reference 5.1.15) of the ES
   - Civil and military aviation and radar – **Chapter 16 Civil and Military Aviation and Radar** (Document Reference 5.1.16) of the ES
   - Infrastructure and other marine users – **Chapter 17 Infrastructure and Other Users** (Document Reference 5.1.17) of the ES

- Seascape, Landscape and Visual Impact Assessment (SLVIA) – **Chapter 18 SLVIA** (Document Reference 5.1.18) of the ES
- Human health – **Chapter 19 Human Health** (Document Reference 5.1.19) of the ES
- Socio-economics, tourism and recreation – **Chapter 20 Socio-economics, Tourism and Recreation** (Document Reference 5.1.20) of the ES
- Climate change – **Chapter 21 Climate Change** (Document Reference 5.1.21) of the ES
- Traffic and transport – **Chapter 22 Traffic & Transport** (Document Reference 5.1.22) of the ES

1.2 Background

3. The Applicant is seeking a DCO for the Morecambe Offshore Windfarm Generation Assets, a proposed offshore windfarm located in the Eastern Irish Sea, approximately 30km off the Lancashire coast, with an expected nominal capacity of 480 megawatts (MW). It is being developed by Morecambe Offshore Windfarm Ltd (the Applicant).

4. As the windfarm is an offshore generating station of over 100MW, it is defined under the Planning Act 2008 as a Nationally Significant Infrastructure Project (NSIP) and, as such, it requires a DCO.

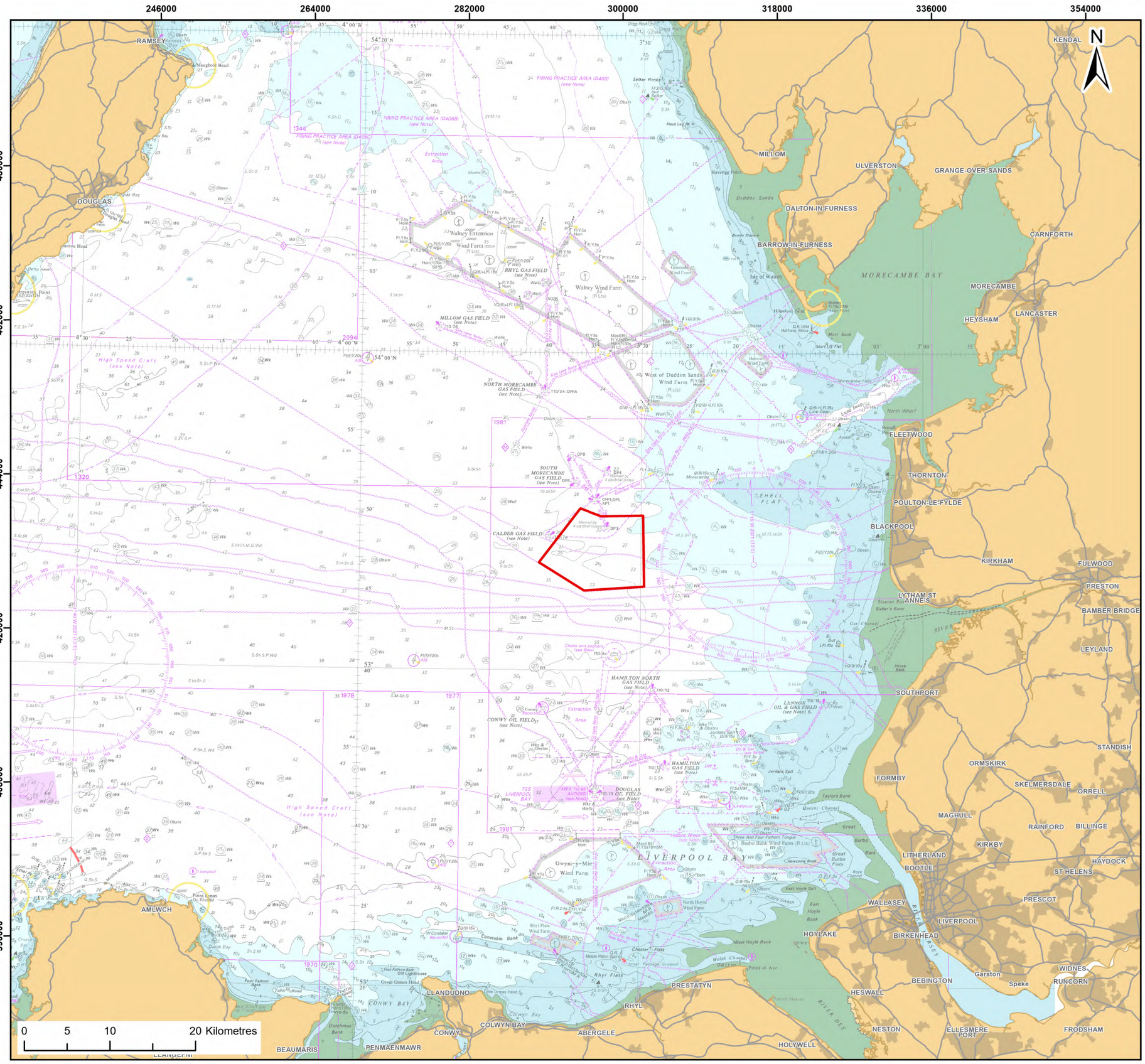
5. A Government initiated review of offshore windfarm transmission connections has concluded that the Morecambe Offshore Windfarm would share a grid connection location at Penwortham in Lancashire with the Morgan Offshore Wind Project, another windfarm also located in the east Irish Sea. Given this, the Applicant intends to deliver a coordinated grid connection with the Morgan Offshore Wind Project and is, together with the Applicant for the Morgan Offshore Wind Project, submitting a separate DCO application for the Transmission Assets for both projects.

6. For the purposes of this document the “Project” refers to the Morecambe Offshore Windfarm Generation Assets. The Project consists of infrastructure to be located within the offshore windfarm site, namely fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSPs. WTGs and OSP(s) would be fixed to the seabed with foundation structures.

7. The Project Design Envelope (PDE) includes a range of WTGs with varying parameters and capacity, to accommodate the ongoing rapid development in WTG technology. Accounting for this range, there could be up to 30 ‘larger’ or up to 35 ‘smaller’ WTGs installed within the windfarm site, with the Generation Assets comprising:

   - WTGs
   - OSP(s)
   - Inter-array cables
   - Platform link cables

8. The Project windfarm site, containing the Generation Asset infrastructure, is located in the eastern portion of the Irish Sea. The windfarm Agreement for Lease (AfL) area awarded by The Crown Estate (TCE), spans 125km^2. Following consultation on the Preliminary Environmental Information Report (PEIR), the proposed windfarm site development area was reduced to approximately 87km^2, as shown in **Figure 1.1** and presented in the ES and DCO Application documents.



Legend:

Morecambe Offshore Windfarm Site

Report:
Morecambe Offshore Windfarm: Generation Assets
Schedule of Mitigation

Title:
Morecambe Offshore Windfarm location

Figure: 1.1	Drawing No: PC1165-RHD-ES-OF-DG-Z-0156				
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	23/05/2024	SB	AS	A3	1:450,000

Co-ordinate system: WGS 1984 UTM Zone 30N

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9. The detailed design of the Project (e.g. numbers of WTGs, layout configuration, foundation type and requirement for scour protection) would not be determined until post-consent. Therefore, realistic worst-case scenarios in terms of potential impacts/effects have been adopted to undertake a precautionary and robust impact assessment, as presented in the ES.

10. A detailed construction programme for the Project has not yet been developed, however, construction and installation are anticipated to last for 2.5 years. **Chapter 5 Project Description** of the ES provides an indicative construction programme.

1.2.1 Key relevant Project parameters

11. **Chapter 5 Project Description** of the ES provides details of the PDE with key paramerters outlined in **Table 1.1.**

Table 1.1 Key relevant Project parameters

Parameter	Details	
Approximate offshore construction duration	2.5 years	
Windfarm site area (km^2)	87	
Windfarm site water depth range (m)	18 – 40	
Distance from windfarm site to coast (approximately) (km)	30	
Number of WTGs	Up to 35 smaller WTGs	Up to 30 larger WTGs
Maximum number of OSP(s)	2	
WTG and OSP foundation type options	▪ Gravity Base Structures (GBS) ▪ Multi-legged pin-piled jacket (3 or 4 legged) ▪ Monopiles ▪ Multi-legged suction bucket jacket (3 legged)	
Number of piles per WTG/OSP foundation	Monopile = 1 Jacket pin-piles = 4	
Maximum number of piles for all WTGs	Monopile = 35 Jacket pin-piles = 140	
Maximum number of piles for all OSPs	Monopile = 2 Jacket pin-piles = 8	
Maximum hammer energy (kilojoules) (kJ)	Monopiles: 6,600kJ Jacket pin-piles: 2,500kJ	
Maximum pile diameter (m)	Monopiles: 12m Jacket pin-piles: 3m per leg	

2 Schedule of mitigation

12. **Table 2.1** and **Table 2.2** lists measures proposed through the EIA process on a topic by topic basis, as well as key design measures, and signposts where each is secured in the draft DCO, and/or contained DML, and/or associated documents, as well as those delivered through the design of the Project. In addition, the Design Statement (Document Reference 4.3) have been produced to summarise, in one place, the core mitigation commitments relevant to good design and help support good design in approval of DCO requirements and DML conditions.

Table 2.1 Key design measures

Reference	Cross reference to ES	Type of design measure	Impact	Details of design measure	Effect of design measure	Measures secured/considered
5.1	Chapter 5 Chapter 7 (Section 7.3.3) Chapter 9 (Section 9.3.3)	WTG spacing	Physical processes and subsequent indirect effects on benthic ecology	A minimum separation distance of 1,060m has been defined between adjacent WTGs within the same row and 1,410m between each row (inter-row spacing, which is the distance between the main rows)	Consideration of environmental effects, and reduction where possible, has been incorporated into the Project design decisions to date, relating to a number of impacts, which are incorporated in DCO Application assessments.	DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6 Part 2 Condition 1 - Design Parameters DCO Schedule 6 Part 2 Condition 9(1)(a) - Design Plan
5.2	Chapter 5 Chapter 14 (Section 14.3.3) Chapter 17 (Section 17.3.3) Chapter 18 (Section 18.3.3) Chapter 11 (Section 11.3.3) Chapter 12	Project area	Visual effects Interactions with designated sites for ornithology (noting designated sites for all receptors have been avoided) Effects on Shipping and navigation	The Project location was selected as part of the Round Four leasing process undertaken by TCE. Site selection by the Applicant ensured it was located outside of any site designated for nature conservation. The spatial extent of the windfarm site has been reduced eastward between the PEIR and ES, such that the windfarm site now occupies 87km^2, compared to the 125km^2 (area awarded through the TCE leasing) assessed in the PEIR. The reduction in area was informed with stakeholder feedback on the PEIR and has reduced a number of effects including visual effects, impacts to		Incorporated in DCO order limits

Reference	Cross reference to ES	Type of design measure	Impact	Details of design measure	Effect of design measure	Measures secured/considered
	(Section 12.3.3)		and other marine users	shipping and navigation and other marine users.		
5.3	Chapter 5 Chapter 18 (Section 18.3.3)	WTG height	Visual effects	The maximum WTG blade tip height is 310m above Highest Astronomical Tide (HAT) and the maximum rotor diameter is 280m. The tip height has been reduced from 345m above HAT assessed at PEIR due to the design decision to reduce the size of the largest turbine being considered. This is reflected in the reduction in visual effects as assessed in the ES and as part of aviation considerations.		DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6 Part 2 Condition 1 - Design parameters
5.4	Chapter 5 Chapter 12 (Section 12.3.3)	Air gap	Collision risk (ornithology)	The Project design has an air gap (minimum rotor clearance above sea level) of 25m above HAT (approximately 35m above Lowest Astronomical Tide (LAT)). At PEIR the air gap was 22m above HAT which was set at a value greater than the minimum required for shipping and navigation safety to reduce the potential collision risk for offshore ornithology receptors. Between PEIR and the production of the ES, the air gap has been further increased to 25m above		DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6, Part 2 Condition 1 - Design parameters

Reference	Cross reference to ES	Type of design measure	Impact	Details of design measure	Effect of design measure	Measures secured/considered
				HAT in response to consultation feedback, providing further reduction of potential collision risk for offshore ornithology receptors.		
5.5	Chapter 5 Chapter 21 Section 21.3.3	Climate resilience	Damage to infrastructure	The WTGs, OSP(s) and associated foundations would be designed with sufficient safety margins to account for extreme weather events such as storm surges and high winds. The OSP(s), WTGs, foundations, inter-array and platform link cables would all be designed using metocean hindcast data as the basis for all loadcases. Hindcast models synthesise long-term time series of wind, waves and current data and are correlated with satellite observations and real-time measurements. Based on the models, wind, wave and current parameters for 10-year, 50-year and 100-year extreme weather events were extrapolated and would be accounted for in the Project design.		Considered as part of the Project Design Principles DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6 Part 2 Condition 1 - Design parameters

Table 2.2 Schedule of mitigation

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
Marine Geology, Oceanography and Physical Processes						
7.1	Chapter 7 (Section 7.3.3)	Embedded (design)	Parameter – Foundations Impact – Changes to physical processes	The selection of appropriate foundation designs and sizes at each WTG and OSP location would be made following pre-construction surveys within the windfarm site.	While different options (foundation concepts) may have varying effects on physical processes, and opportunities would be explored to reduce effects as the design develops (alongside the balance of other impacts and site conditions), all foundation concepts are included within the PDE and assessed within the DCO Application, with parameters defined in DCO Schedule 2 - Design parameters.	
7.2	Chapter 7 (Section 7.3.3)	Embedded mitigation	Parameter - Foundation installation Impact – Seabed disturbance	For piled foundation types, such as monopiles and jackets with pin piles, pile-driving would be used in preference to drilling, where it is practicable to do so (i.e. where ground conditions allow).	Minimises the quantity of sub-surface sediment released into the water column from the installation process.	DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6,Part 2 Condition 9(1)(d) - Construction Method Statement
7.3	Chapter 7 (Section 7.3.3)	Embedded (design)	Parameter - Seabed preparation Impact – Seabed disturbance	Micro-siting (for foundations and cable installation) would be used where possible to minimise the requirements for seabed preparation	While micro-siting may reduce seabed disturbance, and opportunities would be explored as the design develops (alongside the balance of other impacts and site conditions), all options (and worst case for seabed	

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				prior to foundation and cable installation.	preparation) are included within the PDE and assessed within the DCO Application, with parameters defined in DCO Schedule 2 (para 2) - Design Parameters.	
7.4	Chapter 7 (Section 7.3.3)	Embedded mitigation	Parameter - Cable burial and protection Impact – Changes to physical processes	Cables would be buried where possible. The cable burial range would be between 0.5m and 3.0m below the seabed (with a target depth of 1.5m where ground conditions allow). A Cable Burial Risk Assessment (CBRA) would also be required to confirm the extent to which cable burial can be achieved. Where it is not reasonably practicable to achieve cable burial, additional cable protection may be required. Following industry best-practice the Applicant would seek to minimise the use of cable protection.	Minimises the requirement for cable protection measures and thus effects on sediment transport.	DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement, including: cable specification and installation plan and scour protection management and cable protection management DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
7.5	Chapter 7 (Section 7.3.3)	Embedded mitigation	Parameter – foundation scour protection Impact – Changes to physical processes	Scour protection is built into the design for each foundation type in consideration and, where installed after the foundation, it would be installed as early as practicable (typically within the same season) after the foundation installation.	Minimises effects of scour surrounding structures on the seabed	DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6 Part 2 Condition 1 - Design parameters DCO Schedule 6 Part 2 Condition 9(1)(d) - Scour protection management and cable protection management DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection
7.6	Chapter 7 (Section 7.3.3)	Embedded mitigation	Parameter - Sediment disposal Impact – Sediment supply	Excavated sediments would be disposed within the windfarm site so there is no net loss of material from the physical processes system.	No net loss of material from the physical processes system the windfarm site is located in	Incorporated in DCO order limits DCO Schedule 6 Part 1 - Licenced marine activities DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement DCO Schedule 6 Part 2 Condition 7 -

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
						Chemicals, drilling and debris
Marine Sediment and Water Quality						
8.1	Chapter 8 (Section 8.3.3)	Embedded mitigation	Parameter – Pollution prevention Impact – Reduction in water and sediment quality	The Applicant is 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 through the preparation of a Project Environmental Management Plan (PEMP) including Marine Pollution Contingency Plan (MPCP) and chemical risk assessment in line with international and national regulations and guidance.	Minimises the potential impacts any Project activities would have on marine water and sediment quality.	DCO Schedule 6, Part 2 Condition 9(1)(e) - PEMP including MPCP and chemical risk assessment
8.2	Chapter 8 (Section 8.3.3)	Embedded (design)	Parameter - Seabed disturbance Impact – Reduction in water and sediment quality	Application of foundation installation techniques using methods and equipment most suitable for seabed conditions and where possible to minimise sediment suspension.	While different options may reduce sediment disturbance, and opportunities would be explored as the design develops (alongside the balance of other impacts and site conditions), all options (and worst case for seabed disturbance) are included within the PDE and assessed within the DCO Application, with parameters defined in DCO Schedule 2, Design parameters.	

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
8.3	Chapter 8 (Section 8.3.3)	Embedded (design)	Parameter - Seabed disturbance Impact – Reduction in water and sediment quality	Selection of cable installation methods and equipment most suitable for seabed conditions and where possible to minimise sediment suspension.	While different options may reduce sediment disturbance, and opportunities would be explored as the design develops (alongside the balance of other impacts and site conditions), all options (and worst case for seabed disturbance) are included within the PDE and assessed within the DCO Application, with parameters defined in DCO Schedule 2 - Design parameters.	
8.4	Chapter 8 (Section 8.3.3)	Embedded mitigation	Parameter - Seabed disturbance Impact – Reduction in water and sediment quality	Preparation of Construction Method Statements (CMS), post-consent and pre-construction, setting out detailed WTG/OSP foundation and cable installation methods and techniques (based on final Project design). For the decommissioning phase, an Offshore Decommissioning Programme would be developed and implemented before any decommissioning activity takes place. This would include consideration of options to minimise sediment suspension.	Minimises the potential impacts any offshore activities would have on marine water and sediment quality, noting some options may have lesser impacts which would be considered as appropriate while balancing other needs and impacts.	All options and worst case are included within the PDE and assessed within the DCO Application DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement DCO Schedule 2 Requirement 8 - Decommissioning

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
8.5	Chapter 8 (Section 8.3.3)	Embedded (design)	Parameter - Seabed disturbance Impact – Reduction in water and sediment quality	Micro-siting would be used (for foundations and cable installation) where possible to minimise the requirements for seabed preparation.	While micro-siting may reduce seabed disturbance, and opportunities would be explored as the design develops (alongside the balance of other impacts and site conditions), all options (and worst case for seabed preparation) are included within the PDE and assessed within the DCO Application, with parameters defined in DCO Schedule 2, Design parameters.	
8.6	Chapter 8 (Section 8.3.3)	Embedded mitigation	Parameter - Seabed disturbance Impact – Reduction in water and sediment quality	For piled foundation types, such as monopiles and jackets with pin piles, pile-driving would be used in preference to drilling where it is practicable to do so (i.e. where ground conditions allow).	Minimises the quantity of sub-surface sediment released into the water column from the installation process.	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement DCO Schedule 2 (para 2) - Design Parameters
Benthic Ecology						
9.1	Chapter 9 (Section 9.3.3)	Embedded (design)	Parameter – Seabed preparation Impact – Disturbance to benthic ecology	Micro-siting (for foundations and cable installation) would be used where possible to minimise the requirements for seabed preparation.	While micro-siting may reduce seabed disturbance, and opportunities would be explored as the design develops (alongside the balance of other impacts and site conditions), the worst case within the PDE is assessed with parameters defined in DCO Schedule 2, Design parameters.	

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
9.2	Chapter 9 Section 9.3.3	Embedded mitigation	Parameter - Scour and cable protection Impact – Disturbance to benthic ecology	Scour protection is built into the design for each foundation type in consideration and, where installed after the foundation, it would be installed as early as practicable (typically within the same season) after the foundation installation.	Minimises habitat loss impacts on benthic ecology receptors.	DCO Schedule 2 (para 2) - Design Parameters DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement including scour protection management and cable protection management, and programme DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection
9.3	Chapter 9 (Section 9.3.3)	Embedded mitigation	Parameter - Cable burial Impact – Disturbance to benthic ecology	Cables would be buried where possible. The cable burial range would be between 0.5m and 3.0m below the seabed (with a target depth of 1.5m where ground conditions allow (recognised industry good practice which would reduce effects of electromagnetic fields (EMF)). A detailed CBRA would also be required to confirm the extent to which cable burial can be achieved.	Reduces impacts on benthic ecology receptors and also reduces the need for surface cable protection (reduces the introduction of hard substrate	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement including cable specification and installation plan and scour protection management and

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				Where it is not reasonably practicable to achieve cable burial, additional cable protection may be required. Following industry best-practice the Applicant would seek to minimise the use of cable protection. Cables would be specified to reduce EMF and thermal emissions as per industry standards and best practice, such as the relevant International Electrotechnical Commission (IEC) specifications. To minimise the extent of any unnecessary habitat disturbance, material displaced as a result of cable burial activities would be back-filled, where practicable, in order to promote recovery.	and modification of habitat).	cable protection management DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring
9.4	Chapter 9 (Section 9.3.3)	Embedded (design)	Parameter – Foundations Impact – Disturbance to benthic ecology	The selection of appropriate foundation designs and sizes at each WTG and OSP location would be made following pre-construction surveys within the windfarm site.	While different options may reduce effects to benthic ecology, and opportunities would be explored to reduce effects as the design develops (alongside the balance of other impacts and site conditions), all foundation concepts are included within the PDE and assessed within the DCO Application, with parameters defined in DCO Schedule 2 - Design parameters.	

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
9.5	Chapter 9 (Section 9.3.3)	Embedded mitigation	Parameter - Foundation installation Impact – Disturbance to benthic ecology	For piled foundation types, such as monopiles and jackets with pin piles, pile-driving would be used in preference to drilling, where it is practicable to do so (i.e. where ground conditions allow). This would minimise the quantity of sub-surface sediment released into the water column from the installation process.	Minimises the quantity of sub-surface sediment released into the water column from the installation process, and indirect effects on benthic ecology.	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement DCO Schedule 2 (para 2) - Design Parameters
9.6	Chapter 9 (Section 9.3.3)	Embedded mitigation	Parameter - Construction hours Impact – Disturbance to benthic ecology	During construction, overnight working practices would be employed offshore so that construction activities could continue 24/7, thereby reducing the overall programme for offshore works and the period in which potential construction related impacts may occur.	Reduces impacts on benthic ecology receptors.	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement
9.7	Chapter 9 (Section 9.3.3)	Embedded mitigation	Parameter – Biosecurity Impact – Risks to benthic ecology	Implementation of biosecurity measures in line with international and national regulations and guidance, namely: ▪ International Convention for the Prevention of Pollution from Ships (MARPOL), which sets out requirements, including appropriate vessel maintenance	Reduces impacts on benthic ecology receptors.	DCO Schedule 6 Part 2 Condition 9(e) - PEMP, including: MPCP and measures to minimise Invasive Non Native Species (INNS) DCO Schedule 6, Part 2, Condition 7 -

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				▪ The Environmental Damage (Prevention and Remediation) (England) Regulations 2015, which set out a 'polluter pays' principle whereby operators who cause a risk of significant damage to water and biodiversity receptors are responsible for i) preventing damage from occurring; and ii) bearing the costs for full reinstation of the environment (to original condition) in the event of damage occurring ▪ The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention), which provides an international framework for the control of transfer of potentially invasive species from ballast water		Chemicals, drilling and debris
9.8	Chapter 9 (Section 9.3.3)	Embedded mitigation	Parameter – Decommissioning plans Impact – Disturbance to benthic ecology	An Offshore Decommissioning Programme would be developed post-consent and implemented at the time of decommissioning.	Reduces impacts on benthic ecology receptors, as, for example, considerations would be given to removal (or	DCO Schedule 2 Requirement 8 - Decommissioning

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
					not) of hard substrate.	
Fish and Shellfish Ecology						
10.1	Chapter 10 (Section 10.3.3)	Embedded mitigation	Parameter – Cables and cable burial Impact – Disturbance to fish and shellfish ecology	Cables would be buried where possible. The cable burial range would be between 0.5m and 3.0m below the seabed (with a target depth of 1.5m where ground conditions allow (recognised industry good practice which would reduce effects of EMF)). A detailed CBRA would also be required to confirm the extent to which cable burial can be achieved. Where it is not reasonably practicable to achieve cable burial, additional cable protection may be required. Cables would be specified to reduce EMF emissions, as per industry standards and best practice, such as the relevant IEC specifications. To minimise the extent of any unnecessary habitat disturbance, material displaced as a result of cable burial activities would be back filled, where necessary, in order to promote recovery.	Cable burial where possible reduces the effects of EMF on fish and shellfish receptors and also reduces the need for surface cable protection (reduces the introduction of hard substrate and modification of habitat).	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement including cable specification and installation plan and scour protection management and cable protection management DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring
10.2	Chapter 10	Embedded mitigation	Parameter – Foundation installation	The selection of appropriate foundation designs and sizes at each WTG and OSP location would be	Minimises underwater noise effects on	DCO Schedule 6 Part 2 Condition 9(1)(d) -

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
	(Section 10.3.3)		Impact – Disturbance to fish and shellfish ecology	made following pre-construction surveys within the windfarm site. A soft start and ramp up protocol for pile driving (if piled foundations are selected) may also allow mobile species to move away from the area before the maximum hammer energy with the greatest noise impact area is reached.	fish and shellfish receptors.	Construction Method and Statement and 9(1)(i) – Marine Mammal Mitigation Protocol (MMMP) (for piling procedures)
10.3	Chapter 10 (Section 10.3.3)	Embedded mitigation	Parameter – Construction practices Impact – Disturbance to fish and shellfish ecology	During construction, overnight working practices would be employed offshore, so that construction activities could be 24 hours, thus reducing the overall period for potential impacts to fish communities in proximity. Vessels would avoid deliberate approaching when basking sharks are sighted. Further, vessel management protocols for marine mammals are outlined below (reference 11.6 below).	Minimises potential impacts to sensitive fish and shellfish species and habitats.	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement and 9(1)(i) MMMP DCO Schedule 6, Part 2, Condition 9(1)(e) - PEMP DCO Schedule 6 Part 2 Condition 9(1)(j) - Vessel Traffic Management Plan (VTMP)
10.4	Chapter 10 (Section 10.3.3)	Embedded mitigation	Parameter – Decommissioning works Impact – Disturbance to fish	An Offshore Decommissioning Programme would be developed post-consent and implemented at the time of decommissioning.	Minimises habitat loss impacts on fish and shellfish receptors as, for example, considerations	DCO Schedule 2 Requirement 8 - Decommissioning

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
			and shellfish ecology		would be given to removal (or not) of hard substrate.	
10.5	Chapter 11	Additional Mitigation	Underwater noise	An underwater sound management strategy that provides a strategy to reduce the magnitude of impacts from elevated underwater sound from the Project and consequently contributes to reducing the contribution to potential cumulative impacts.	Reduces residual underwater noise effects	DCO Schedule 6 Part 2 Condition 20(1) - Underwater sound management strategy
Marine Mammals						
11.1	Chapter 11 (Section 11.3.3)	Embedded mitigation	Parameter – Piling schedule Impact – Disturbance to marine mammals	No Project concurrent piling is to be undertaken.	Minimises the impact of underwater noise on marine mammals.	PDE as described in ES Project description (Chapter 5) DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement and 19(i) MMMP
11.2	Chapter 11 (Section 11.3.3)	Embedded mitigation	Parameter – Piling soft-start and ramp-up Impact – Injury to marine mammals	Each piling event would commence with a soft-start at a lower hammer energy followed, by a gradual ramp-up to the maximum hammer energy required.	Minimises the impact of underwater noise on marine mammals. The soft-start and	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement and 9(1)(i) MMMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
					ramp-up allows mobile species to move away from the area before the maximum hammer energy with the greatest noise impact area is reached.	
11.3	Chapter 11 (Section 11.3.3)	Embedded mitigation and in accordance with industry regulations	Parameter – Pollution prevention Impact – Disturbance to marine mammals	The Applicant is 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 through the preparation of a PEMP including MPCP and chemical risk assessment in line with international and national regulations and guidance.	Minimises the potential impacts any offshore maintenance activities would have on marine water and sediment quality, with indirect effects to marine mammals.	DCO Schedule 6 Part 2 Condition 9(1)(e) - PEMP including MPCP and chemical risk assessment DCO Schedule 6 Part 2 Condition 7 - Chemicals, drilling and debris. DCO Schedule 2 Requirement 8 - Decommissioning
11.4	Chapter 11 (Section 11.3.3)	Embedded mitigation	Parameter – Cables and cable burial	Cables would be buried where possible. The cable burial range would be between 0.5m and 3.0m below the seabed (with a target depth of 1.5m where ground conditions allow (recognised industry good	Reduces the effects of EMF on marine mammal prey species.	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement including: cable

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
			Impact – Impacts to marine mammal prey species	practice which would reduce effects of EMF)). A detailed CBRA would also be required to confirm the extent to which cable burial can be achieved. Where it is not reasonably practicable to achieve cable burial, additional cable protection may be required. Cables would be specified to reduce EMF emissions as per industry standards and best practice such as the relevant IEC specifications.		specification and installation plan and scour protection management and cable protection management DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring
11.5	Chapter 11 (Section 11.3.3)	Additional mitigation	Parameter – MMMP for piling Impact – Injury to marine mammals	The MMMP for piling would be developed in the pre-construction period and would be based upon best available information, methodologies, industry best practice, latest scientific understanding, current guidance and detailed Project design. The MMMP for piling would be developed in consultation with the relevant Statutory Nature Conservation Bodies (SNCBs) and the MMO, detailing the proposed mitigation measures to reduce the risk of any physical or permanent auditory injury (Permanent	Minimises the impact of underwater noise on marine mammals.	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement, 9(1)(i) - MMMP and 9(1)(e) - PEMP DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				Threshold Shift (PTS)) to marine mammals during all piling operations. This would include details of the embedded mitigation, for the soft-start and ramp-up, as well as details of the proposed mitigation zone and any potential additional mitigation measures required in order to minimise potential impacts of any physical or PTS, for example, the activation of an acoustic deterrent device (ADD) prior to the soft-start.		
11.6	Chapter 11 (Section 11.3.3)	Additional mitigation	Parameter – Vessel movements Impact – Collision risk with marine mammals	Implement best practice to reduce vessel collision risk: Where reasonably practicable, vessel movements would follow set routes (and hence areas where marine mammals (and basking sharks) are accustomed to vessels) to reduce collision risk. In line with efficient programming of tasks and utilisation of vessels, all vessel movements associated with the Project would be kept to a minimum, as required to service the Project. Additionally, vessel operators would use good practice to reduce any risk of collisions with marine mammals. A code of conduct would be produced	Minimises the risk of vessel collisions with marine mammals	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement and 9(1)(i) - MMMP and 9(1)(e) - PEMP DCO Schedule 6, Part 2, Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				and issued to all contractors including: ▪ Avoid deliberately approaching marine mammals when sighted ▪ Avoid abrupt changes to course or speed should marine mammals approach the vessel or bow-ride ▪ Where possible, vessels would maintain a steady speed, and direction, to allow any marine mammal to predict where the vessel may be headed and to move out of the way or avoid surfacing in the path of the vessel ▪ Implement protocol to report any collisions. Although no mitigation is identified as being required, upon the selection of the Port(s) to service the Project consideration would also be given to minimum operating distances from seal haul-out sites, outside main shipping channels, particularly during sensitive periods for breeding and moulting.		
11.7	Chapter 11	Additional Mitigation	Underwater noise	An underwater sound management strategy that provides a strategy to reduce the magnitude of impacts from	Reduces residual	DCO Schedule 6 Part 2 Condition 20(1) - Underwater

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				elevated underwater sound from the Project and consequently contributes to reducing the contribution to potential cumulative impacts.	underwater noise effects	sound management strategy
Offshore Ornithology						
12.1	Chapter 12 (Section 12.3.3)	Embedded mitigation	Parameter – Vessel movements Impact – Disturbance to ornithological receptors	Vessel management: ▪ Restricting vessel movements where possible to existing navigation routes (where the densities of red-throated diver and common scoter are typically relatively low) ▪ As far as possible maintaining direct transit routes (to minimise transit distances through areas used by red-throated diver) ▪ Where it is necessary to go outside of established navigational routes, avoid rafting birds either en-route to the windfarm site from port and/or within the windfarm site (dependent on location) and where possible avoid disturbance to areas with consistently high bird densities ▪ Avoidance of over-revving of engines (to minimise noise	Reduces red-throated diver (and other loafing bird) disturbance.	DCO Schedule 6 Part 2 Condition 9(1)(e) - PEMP and 9(1)(i) - MMMP DCO Schedule 6, Part 2, Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				disturbance) ▪ Briefing of vessel crew on the purpose and implications of these vessel management practices (through, for example, toolbox talks) The Project Team would make construction and operation and maintenance vessel operators aware of the importance of these species and the associated mitigation measures through toolbox talks.		
Commercial Fisheries						
13.1	Chapter 13 (Section 13.3.3)	Embedded mitigation	Parameter – Communication Impact – Disruption to fishers	The Applicant is committed to ongoing liaison with the fishing industry throughout all stages of the Project, based upon Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) (2014, 2015) guidance and the following: ▪ Appointment of a company Fisheries Liaison Officer (FLO) to maintain effective communications between the Project and fishers ▪ Appropriate liaison with relevant fishing interests, to ensure that they are fully informed of	Minimises displacement risk and snagging of fishing gear.	DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections DCO Schedule 6, Part 2, Condition 5 - Aids to Navigation (AtoN) DCO Schedule 6, Part 2, Condition 9(1)(k) - Pre-construction plans and documents - FLCP including FLO

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				development planning and any offshore activities and works ▪ Timely issue of notifications, including Notice to Mariners (NtMs), Kingfisher Bulletin notifications and other navigational warnings to the fishing community, to provide advance warning of Project activities and associated Safety Zones and advisory safety distances Development, prior to construction, of an Fisheries Liaison and Co-existence Plan (FLCP), setting out in detail the planned approach to fisheries liaison and means of delivering any other relevant mitigation measures.		
13.2	Chapter 13 (Section 13.3.3)	Embedded mitigation	Parameter – Marking and lighting Impact – Disruption to fishers	The Applicant is committed to marking and lighting the Project in accordance with relevant industry guidance and as advised by relevant stakeholders, including the Maritime and Coastguard Agency (MCA), Civil Aviation Authority (CAA) and Trinity House (TH). The Applicant would also ensure the Project is adequately marked on nautical charts.	Minimises risk of navigational hazards and snagging of fishing gear.	DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6 Part 2 Condition 9(1)(k) - Pre-

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
						construction plans and documents - FLCP
13.3	Chapter 13 (Section 13.3.3)	Embedded mitigation	Parameter – Dropped objects Impact – Disruption to fishers	The Applicant would ensure that any objects dropped (which may reasonably be expected to cause a hazard in the marine environment) on the seabed during works associated with the Project are reported and that objects are recovered where they pose a hazard to other marine users, where recovery is possible	Minimises risk to fishing gear	DCO Schedule 6 Part 2 Condition 7(10) - Dropped objects
13.4	Chapter 13 (Section 13.3.3)	Embedded mitigation	Parameter – Cable burial Impact – Displacement and disruption to fishers	Cables would be buried where possible. The cable burial range would be between 0.5m and 3.0m below the seabed (with a target depth of 1.5m where ground conditions allow). A detailed CBRA would also be required to confirm the extent to which cable burial can be achieved. Where it is not reasonably practicable to achieve cable burial, additional cable protection may be required. Following industry best-practice the Applicant would seek to minimise the use of cable protection. In the instance that snagging does occur, the Applicant would work to the protocols laid out within the guidance by the FLOWW group and	Minimise displacement and disruption to fishers	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement including cable specification and installation plan and scour protection management and cable protection management DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection DCO Schedule 6 Part 2 Condition 16 -

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				'Recommendations For Fisheries Liaison: Best Practice' guidance for offshore renewable developers, in particular section 9: Dealing with claims for loss or damage of gear (FLOWW, 2014; BERR, 2008)		Post construction monitoring
13.5	Chapter 13 (Section 13.3.3)	Additional Mitigation	Parameter – Justifiable disturbance payments Impact – Economic losses to fishers	Justifiable disturbance payments during constriction (UK Potting Fleet) between the Applicant would be established as required following the procedures as outlined in the FLOWW guidance documents (2014 and 2015), and further defined within the FLCP.	Minimise displacement and disruption to fishers	DCO Schedule 6, Part 2, Condition 9(1)(k) - Pre-construction plans and documents - FLCP
Shipping and Navigation						
14.1	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – NtM Impact - Risk to navigation, Safety	NtM issued to ensure that the appropriate authorities and stakeholders are informed of works being carried out in waters surrounding the Project.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections
14.2	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Site Marking and Charting Impact - Risk to navigation, Safety	The windfarm site would be marked on nautical charts including an appropriate chart note. Structures would be coloured in line with TH requirements.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections DCO Schedule 6 Part 2 Condition 9(1)

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
						- Pre-construction plans and documents - Design plan DCO Schedule 6 Part 2 Condition 18 - Completion of construction DCO Schedule 6 Part 2 Condition 6 - Colouring of structures
14.3	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Safety zones Impact - Risk to navigation, Safety	Application and use of safety zones of up to 500m from the outer extremity of structures above or below water during construction, major maintenance and decommissioning phases. 50m safety zones would be applied for around partially completed Project structures or complete Project structures undergoing commissioning.	Minimises navigation risk and snagging	Application under the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007 DCO Schedule 6 Part 2 Condition 11 - Safety Zones
14.4	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Site Marking and Charting Impact - Risk to navigation, Safety	Provision of detailed Project information to the fishing industry, such as site location or construction works, dropped objects, for upload into chart plotters.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 6 - Chemicals, drilling and debris

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
						DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections DCO Schedule 6 Part 2 Condition 5 - AtoN
14.5	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Communications Impact - Risk to navigation, Safety and stakeholder operations	Maintain Navigation Engagement Forum (as established regionally during pre-application) to facilitate information sharing with stakeholders that interact with the Project and identification of additional risk controls: ▪ Record any concerns and provide a means of continual improvement so any identified safeguards can be implemented. ▪ Identify near misses and investigate incidents, disseminating learnings. ▪ Coordinate construction activities.	Minimises navigation risk	DCO Schedule 6 Part 2 Requirement 4 - Notifications and Inspections DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP DCO Schedule 6, Part 2, Condition 15 - Construction monitoring DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring
14.6	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Recreational/ Fishing Liaison	Ensure nominated persons are able to coordinate and communicate Project activities to recreational and	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
			Impact – Disruption to other marine users	fishing user groups. This includes during specific events (e.g. regattas).		DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6, Part 2, Condition 9(1) Pre-construction plans and documents – (k) FLCP
14.7	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Emergency Response and Cooperation Plan (ERCoP) Impact – Effects on safety	Production of an ERCoP with agreement of MCA to be completed in the required format and structure at the time of writing, and to be updated and agreed on a live basis in liaison with the MCA.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 12 - Offshore safety management
14.8	Chapter 14 (Section 14.3.3)	Embedded mitigation and inline with industry standards	Parameter – Pollution prevention Impact – Environmental risk	Measures would be adopted to ensure that the potential for release of pollutants from construction, operation and maintenance activities is minimised, which would include planning for accidental spills and responding to all potential contaminant releases.	Minimises pollution risk	DCO Schedule 6 Part 2 Condition 9(1)(e) - Pre-construction plans and documents - PEMP including MPCP DCO Schedule 6 Part 2 Condition 7 - Chemicals, drilling and debris
14.9	Chapter 14	Embedded mitigation	Parameter – Periodic Exercises	Periodic emergency management and response exercises would be run	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 12 -

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
	(Section 14.3.3)		Impact – Effects on Search and Rescue (SAR) operations	by the Applicant, in conjunction with Coast Guard Operations Centre (CGOC)/SAR.		Offshore safety management
14.10	Chapter 14 (Section 14.3.3)	Embedded mitigation and in line with industry standards	Parameter – Incident Investigation and Reporting Impact - Risk to navigation, Safety	Compliance with statutory incident reporting requirements and expectations including: ▪ Marine Accident Investigation Branch (MAIB) (Merchant Shipping Act) ▪ Health, Safety and Environment (HSE) Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) ▪ Harbour Authority under Port Marine Safety Code Risk assessments to be reviewed following incidents, and additional risk controls identified if appropriate.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 12 - Offshore safety management DCO Schedule 6 Part 2 Condition 9(1)(e) - Pre-construction plans and documents – PEMP DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
14.11	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – AtoN Impact - Risk to navigation, Safety	Suitable AtoN lighting and marking the windfarm site shall be undertaken complying with International Association of Marine AtoN and Lighthouse Authorities (IALA) recommendations G1162 (IALA, 2021) to be finalised and approved by the MMO in consultation with MCA and TH through an AtoN Management Plan. Review use of fog horns to alert vessels to the position of structures when visibility is poor. Note planned update to O-139 to include painting reference from waterline (not HAT). WTG informal naming/associated markings shall not interfere with formal AtoN. Automatic identification system (AIS) transponders to be placed on periphery corner of WTGs.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(h) - Pre-construction plans and documents - AtoN Management Plan DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections
14.12	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Buoyed Construction Area Impact - Risk to navigation, Safety	Buoys deployed around construction work in the windfarm site in line with TH requirements and may include a combination of cardinal and/or safe water marks. To be finalised and approved in consultation with MCA and TH through an AtoN Management Plan.	Minimises navigation risk	DCO Schedule 6, Part 2, Condition 9(1)(h) - Pre-construction plans and documents - AtoN Management Plan

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
						DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6, Part 2, Condition 4 - Notifications and Inspections
14.13	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Hydrographic Surveys Impact - Risk to navigation, Safety	Marine Guidance Note (MGN) 654 (MCA, 2021) requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager and the UK Hydrographic Office (UKHO).	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 14 - Pre construction monitoring and surveys
14.14	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter –CBRA and periodic validation surveys Impact – Snagging risk	CBRA to be undertaken pre-construction, including consideration of under keel clearance. All subsea cables would be either fully buried (where ground conditions permit and burial tool performance allows), partially buried with rock protection, or surface laid with rock protection. Selected methods would be based on the risk assessment and the protection would be periodically	Reduction of snagging risk	DCO Schedule 6 Part 2 Condition 9(1)(d) -Construction Method Statement including: cable specification and installation plan and scour protection management and cable protection management DCO Schedule 6 Part 1 - Details of

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				monitored and maintained as practicable. No more than 5% reduction in water depth (referenced to Chart Datum) would occur at any point on the cable route without prior written approval from the Licensing Authority.		licensed marine activities DCO Schedule 6 Part 2 Condition 1 - Design parameters DCO Schedule 6 Part 2 Condition 2 - Maintenance of the authorised project DCO Schedule 6, Part 2, Condition 4, Notification and inspections DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection
14.15	Chapter 14 (Section 14.3.3)	Embedded in layout	Parameter – Layout Plan and Lines of Orientation Impact - Risk to navigation, Safety	WTG layout plan to be agreed with the MMO in consultation with MCA and TH prior to construction and maintain at least two lines of orientation unless justified and agreed with the MCA.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 12 - Offshore safety management
14.16	Chapter 14			WTGs and OSP(s) would be separated (using a 1.5nm radius	Minimises navigation risk	DCO Schedule 3 Protective

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
	(Section 14.3.3)			buffer zone) from operational oil and gas platforms with a helicopter deck, unless agreed otherwise.		Provisions Part 2 and Part 3 -Harbour Energy and Spirit Energy
14.17	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Electromagnetic interference minimisation Impact – Effects to communications	A Cable Specification and Installation Plan would be prepared. This would include the technical specification of offshore electrical circuits, and a desk-based assessment of attenuation of electro-magnetic field strengths, shielding and cable burial depth in accordance with industry good practice.	Minimises electromagnetic interference risk	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement including: cable specification and installation plan and scour protection management and cable protection management DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring DCO Schedule 6 Part 2 Condition 17 - Reporting of scour and cable protection
14.18	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Construction Programme Impact - Risk to navigation, Safety	Construction programme and plan to be submitted to the MMO for approval in consultation with the relevant SNCB, MCA and TH. Where possible, construction to follow linear progression avoiding disparate	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction Method Statement DCO Schedule 6 Part 2 Condition

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				construction sites across the windfarm site.		9(1)(b) - Construction programme
14.19	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Marine Operating Guidelines Impact - Risk to navigation, Safety	Project vessels to follow Marine Operating Guidelines during construction and operation and maintenance activities to ensure Project vessels do not present unacceptable risks to each other or third parties. Project marine traffic coordination plans to be made available to all maritime users. Information and warnings would be distributed via NtMs and other appropriate media (e.g. Admiralty Charts and fishers' awareness charts) to enable vessels and operators to effectively and safely navigate around the windfarm site and activities during the offshore cable corridor construction.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6 Part 2 Condition 9(1)(k) - Pre-construction plans and documents - FLCP DCO Schedule 6, Part 2, Condition 4, Notifications and Inspections – NtM
14.20	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Vessel Standards Impact - Risk to navigation, Safety	All work vessels operating on behalf of the Project would have: ▪ MCA Vessel Coding ▪ Appropriate Insurance ▪ Crewed by suitably trained/qualified personnel ▪ AIS (Class A/B)	Minimises navigation risk	DCO Schedule 6, Part 2, Condition 9(1)(j), VTMP and in line with industry standards

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				▪ Very High Frequency (VHF) (Ch16) ▪ Appropriate mooring arrangements.		
14.21	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Personal Protective Equipment (PPE) Impact - Risk to navigation, Safety and personnel	Personnel would wear the correct PPE suitable for the location and role at all times, as defined by the relevant Quality, Health, Safety and Environment (QHSE) documentation. This would include the use of Personal Locator Beacons (PLBs).	Minimises risk of incidents	DCO Schedule 6, Part 2, Condition 9(1)(e), Pre-construction plans and documents – PEMP DCO Schedule 6, Part 2, Condition 9(1)(j), VTMP and in line with legal safety requirements
14.22	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Guard Vessels Impact - Risk to navigation, Safety	Provision of a guard vessel in vicinity of windfarm site during construction or major maintenance to monitor third party vessel traffic and intervene with warnings as necessary.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP
14.23	Chapter 14 (Section 14.3.3)	Embedded in operating procedures	Parameter – Inspection and Maintenance Programme Impact - Risk to navigation, Safety	Regular maintenance regime by the Applicant to check the Project infrastructure, its fittings and any signs of wear and tear. This should identify any issues which might result in a failure.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 14 - Post construction monitoring DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
14.24	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Training Impact - Risk to navigation, Safety and personnel	The Applicant would be responsible for ensuring that all staff engaged on operations are competent to carry out the allocated work.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(e) - Pre-construction plans and documents - PEMP DCO Schedule 6 Part 2 Condition 9(1)(j) – VTMP and in line with industry standards and legal safety requirements
14.25	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Compliance with International, UK and Flag State Regulations inc. International Maritime Organisation (IMO) conventions Impact - Risk to navigation, Safety and personnel	Compliance from all vessels associated with the Project with international maritime regulations as adopted by the relevant flag state (e.g. International Convention for the Prevention of Collision at Sea (COLREGS) (IMO, 1972) and International Convention for the Safety of Life at Sea (SOLAS) (IMO, 1974).	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(j) – VTMP and in line with industry standards and legal safety requirements
14.26	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Vessel health and safety requirements	As industry standard mitigation, the Applicant would ensure that all Project related vessels meet both International Maritime Association (IMO) conventions for safe operation as well as HSE requirements, where	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(e) - Pre-construction plans

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
			Impact - Risk to navigation, Safety and personnel	applicable. This shall include the following good practice: ▪ Windfarm associated vessels would comply with International Maritime Regulations ▪ All vessels, regardless of size, would be required to carry AIS equipment on board ▪ All vessels engaged in activities would comply with relevant regulations for their size and class of operation and would be assessed by the Project on whether they are 'fit for purpose' for activities they are required to carry out ▪ All marine operations would be governed by operational limits, metocean conditions and vessel traffic information ▪ Walk to work (access) solutions would be utilised where practical		and documents – PEMP DCO Schedule 6 Part 2 Condition 9(1)(k) – VTMP and in line with industry standards and legal safety requirements DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction method statement
14.27	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Continuous watch Impact - Risk to navigation, Safety and stakeholder operations	Continuous watch by multi-channel VHF, including Digital Selective Calling (DSC).	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
14.28	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Vessel traffic monitoring Impact - Risk to navigation, Safety and stakeholder operations	Continuous vessel monitoring during construction and immediate period post construction to MCA approval.	Minimises navigation risk	DCO Schedule 6, Part 2, Condition 9(1)(j) - VTMP DCO Schedule 6 Part 2 Condition 15 - construction monitoring DCO Schedule 6 Part 2 Condition 16 - Post construction monitoring
14.29	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – VTMP Impact - Risk to navigation, Safety and stakeholder operations	Development of a VTMP covering aspects of vessel management during the construction phase to set out the measures required to mitigate traffic and transport-related effects resulting from the construction.	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP
14.30	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Crew Transfer Vessel (CTV) passage planning Impact - Risk to navigation, Safety and stakeholder operations	Develop coordinated passage plans for CTVs that minimises impact on other traffic, could include: ▪ Specified passage plans ▪ Agreed passing protocols/Closest Point of Approach for interactions with commercial shipping (e.g. no crossing within 5nm ahead of commercial vessel underway)	Minimises navigation risk	DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				▪ Reporting protocols to be established prior to crossing corridors ▪ Dissemination of passage plans and operations to regular runners and ferry services ▪ Restricted visibility protocols.		
14.31	Chapter 14 (Section 14.3.3)	Embedded mitigation	Parameter – Site layout and communication/ engagement Impact - Risk to navigation, Safety and stakeholder operations	▪ Layout design: Realignment of the Project's western boundary to Realignment of Morecambe Array Area west boundary extent to minimise course changes (and deviation distance) for vessels navigating north-south through route between Mona and Morecambe Array Areas and then route between Morgan Array Area and Walney Offshore Wind Farm. ▪ Continued engagement: facilitation of information sharing via a Navigation Engagement Forum	Minimises navigation risk	Project area (including the realignment of the western boundary) has been adopted and now forms the windfarm site (Order limits) boundary DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
Offshore Archaeology and Cultural Heritage						
15.1	Chapter 15 (Section 15.3.3)	Embedded mitigation	Parameter - Archaeological Exclusion Zones (AEZs) Impact – Interaction with heritage assets	For archaeological significant anomalies that are clearly identifiable in the survey data and where the extents are largely known, AEZs would be employed. AEZs would remain for the life of the Project or until ground truthing or higher resolution data determines a reduction in potential, significance, or extents.	Reduces risk of damaging heritage assets	DCO Schedule 6, Part 2, Condition 9(1)(f) Written Scheme of Investigation (WSI)
15.2	Chapter 15 (Section 15.3.3)	Embedded mitigation	Parameter - Temporary Archaeological Exclusion Zones (TEZs) Impact – Interaction with heritage assets	Where an anomaly is not visible in the survey data but likely to exist on the seabed at a known position or where the extents of an anomaly are not fully identifiable, TEZs would be employed. TEZs have been identified as highly likely to be altered following higher resolution or full coverage data assessment, however, they would remain in place until alterations have been formally agreed.	Reduces risk of damaging heritage assets	DCO Schedule 6 Part 2 Condition 9(1)(f) - WSI
15.3	Chapter 15 (Section 15.3.3)	Embedded mitigation	Parameter - TEZs Impact – Interaction with heritage assets	Avoidance where possible of identified anomalies and further investigation of any identified anomalies and previously recorded sites that cannot be avoided by micro-siting.	Reduces risk of damaging potential heritage assets	DCO Schedule 6 Part 2 Condition 9(1)(f) - WSI

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
15.4	Chapter 15 (Section 15.3.3)	Additional/ adaptive mitigation	Parameter - WSI Impact – Interaction with heritage assets	The proposed approach to the delivery of embedded mitigation, undertaken post-consent, and how the outcomes of additional investigation would influence the final design of the Project, is set out in an Outline Offshore WSI (OWSI) in accordance with industry good practice guidance on archaeological WSIs (TCE, 2021). This includes further archaeological assessment, archaeological assessment of further data obtained post-consent, further investigation where avoidance is not possible and additional mitigation to reduce or offset impacts should impacts be unavoidable. In order to account for unexpected discoveries of archaeological material during construction, operation and decommissioning a protocol for archaeological discoveries (PAD) (set out in the OWSI) would be used.	Reduces risk of damaging heritage assets	DCO Schedule 6 Part 2 Condition 9(1)(f) - WSI DCO Schedule 6 Part 2 Condition 9(1)(f) - WSI (including PAD)
Civil and Military Aviation and Radar						
16.1	Chapter 16 (Section 16.3.3)	Embedded mitigation	Parameter - Layout Impact - Risk to navigation and safety	Compliance as necessary and applicable with MGN 654 Safety of Navigation Offshore Renewable Energy Installations - Guidance on UK Navigational Practice, Safety and Emergency Response.	Minimised risk to aviation navigation and safety	DCO Schedule 6 Part 2 Condition 12 - Offshore safety management DCO Schedule 3 Protective

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				WTGs and OSPs would be separated (using a 1.5nm radius buffer zone) from operating oil and gas platforms with a helicopter deck, unless agreed otherwise.		Provisions Part 2 and Part 3 -Harbour Energy and Spirit Energy
16.2	Chapter 16 (Section 16.3.3)	Embedded mitigation	Parameter - Information, notifications and charting Impact - Risk to navigation and safety	The Project would create an obstacle environment which can be partially mitigated by compliance with appropriate international and national requirements for the promulgation of the obstacle locations on charts and in aeronautical documentation, together with the permanent marking and lighting of obstacles. Aviation stakeholders would be made aware of the Project via Notice to Airmen (NOTAMs) and obstacle details would be passed to the CAA at least eight weeks before construction commences. CAA would forward the information to Ministry of Defence (MOD) Defence Geographic Centre (DGC) and National Air Traffic Services (NATS) AIS for inclusion in the Aeronautical Information Publication (AIP) and on relevant civil and military aeronautical charts. Aviation stakeholders would adhere to all relevant CAA and MOD safety guidance to ensure safe operations	Minimised risk to navigation and safety	DCO Schedule 2 Requirement 3 - Aviation Safety DCO Schedule 6, Part 2, Condition 9(1)(h) - Pre-construction plans and documents - AtoN Management Plan. DCO Schedule 6 Part 2 Condition 18 - Completion of construction

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				for all users of the airspace above the windfarm site.		
16.3	Chapter 16 (Section 16.3.3)	Embedded mitigation	Parameter - Emergency response Impact - Risk to navigation and safety	An ERCoP would be agreed and implemented for all phases of the Project. The SAR requirements would be agreed with the MMO in consultation with the MCA post-consent in line with regulatory requirements.	Minimised risk to navigation and safety	DCO Schedule 6 Part 2 Condition 12 - Offshore safety management
16.4	Chapter 16 (Section 16.3.3)	Embedded mitigation	Parameter – Lighting and marking Impact - Risk to navigation and safety	Marking and lighting of obstacles would be deployed in accordance with the latest relevant available standard industry guidance and as advised by CAA, MOD, TH and MCA, as appropriate.	Minimised risk to navigation and safety	DCO Schedule 6, Part 2, Condition 9(1)(h) Pre-construction plans and documents - AtoN Management Plan.
16.5	Chapter 16 (Section 16.3.3)	Additional mitigation	Parameter – Ongoing engagement with Spirit Energy and Harbour Energy Impact – Disruption to helicopters transiting to/from offshore oil and gas platform helidecks	Engagement with Harbour Energy and Spirit Energy on the terms of suitable cooperation and coexistence agreements, with protective provisions which make provision for additional costs if required included in the draft DCO for completeness	Minimised impact on oil and gas operations.	DCO Schedule 3 Protective Provisions Part 2 and Part 3 - Harbour Energy and Spirit Energy

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
16.6	Chapter 16 (Section 16.3.3)	Additional mitigation	Parameter – Ongoing consultation with operators Impact – Risk to aviation safety and provision of Air Traffic Services (ATS)	Consultation and revisions to Instrument Flight Procedures (IFPs) as required (Blackpool Airport, Walney Aerodrome and Warton Aerodrome). Consultation has commenced and would continue to reach agreement on the best detailed solution to mitigate the impact created by the final design of the Project.	Minimised risk to aviation safety and provision of ATS	DCO Schedule 2 Requirement 5 - Blackpool Airport Instrument Flight Procedures DCO Schedule 2 Requirement 6 - Barrow / Walney Airport Instrument Flight Procedures DCO Schedule 2 Requirement 7 - Warton Aerodrome Instrument Flight Procedures
16.7	Chapter 16 (Section 16.3.3)	Additional mitigation	Parameter – Technical radar mitigation Impact – Risk to aviation safety and communications	Technical mitigation solutions applied to impacted radars to be agreed with operators: ▪ NATS (En Route) plc (NERL) (Great Dun Fell, Lowther Hill and St Annes Primary Surveillance Radar (PSRs)) ▪ Ministry of Defence (Warton Aerodrome)	Minimised risk to aviation safety and provision of ATS.	DCO Schedule 2 Requirement 4 - Great Dun Fell, Lowther Hill and St Annes PSRs DCO Schedule 2 Requirement 8 - Warton Aerodrome

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
Infrastructure and Other Marine Users						
17.1	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Promulgation of information Impact – Limitations to operations	Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated safety zones and advisory passing distances would be given via NtMs and Kingfisher Bulletins and other appropriate media, including charting. Construction, operation and maintenance, and decommissioning activity would be communicated using NtM and via ongoing engagement, as appropriate.	Minimise impact to stakeholder operations.	DCO Schedule 6 Part 2 Condition 4 - Notifications
17.2	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Lighting and marking Impact - Risk to navigation and safety	Consultation with CAA, TH and the MCA to agree appropriate lighting and marking taking into consideration existing oil and assets.	Minimised risk to navigation and safety	DCO Schedule 6 Part 2 Condition 5 - AtoN
17.3	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Layout Impact - Risk to SAR	Alignment of WTGs as required under MGN 654 (MCA, 2021) to provide obstruction free SAR access, including two lines of orientation unless otherwise agreed. An ERCoP would be agreed and implemented for all phases of the Project. The SAR requirements would be agreed with the MMO in	Minimised risk to navigation and safety	DCO Schedule 6 Part 2 Condition 9 (1)(a) - Design Plan DCO Schedule 6 Part 2 Condition 12 - Offshore safety management

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				consultation with the MCA post-consent in line with regulatory requirements.		
17.4	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Access Impact – Disruption to helicopters transiting to/from offshore oil and gas platform helidecks	WTGs and OSP(s) would be separated (by a 1.5nm radius buffer zone) from operational oil and gas platforms with a helicopter deck (and 500m from oil and gas platforms without a helideck).	Minimised risk to navigation and safety (WTG/OSP separation from oil and gas platforms)	DCO Schedule 3 Protective Provisions Part 2 and Part 3 - Harbour Energy and Spirit Energy
17.5	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Layout Impact – Damage to infrastructure	European Subsea Cables Association Guideline No. 6 recommends that clearance to telecoms cables is to be agreed between the windfarm developer and the existing subsea infrastructure owner. WTGs and OSP(s) would not be placed within 500m of cables, unless agreed otherwise.	Minimised risk of damage to third party infrastructure (WTG/OSP separation from cables and pipelines)	DCO Schedule 3 Protective Provisions Part 1
17.6	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Layout Impact – Damage to infrastructure	WTGs and OSP(s) would not be placed within 500m of pipelines, cables and umbilicals associated with oil and gas infrastructure.	Minimised risk of damage to third party infrastructure (WTG/OSP separation from cables and pipelines)	DCO Schedule 3 Protective Provisions Part 2 and Part 3 -Harbour Energy and Spirit Energy

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
17.7	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Layout Impact – Damage to infrastructure	Where practical the layout would minimise the number of crossings of existing third-party infrastructure. All cables would be installed and maintained in line with standard industry guidance and good practice. Subsea Cables UK Guidelines and International Cable Protection Committee Recommendations provide guidance on proximity of cables to existing assets and coordination with other operators. Crossing and proximity agreements would be agreed post-consent with the relevant asset owners in accordance with relevant guidance.	Minimised risk of damage to third party infrastructure	Crossing and proximity agreements will be agreed post-consent with the relevant asset owners. DCO Schedule 3 Protective Provisions Part 2 and Part 3 -Harbour Energy and Spirit Energy
17.8	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Hazards Impact – Damage to infrastructure	Pre-construction surveys would be implemented by the Applicant in order to identify any potential hazards within the windfarm site. These would include geophysical surveys to identify seabed hazards such as discarded fishing gear, wrecks or unidentified objects and magnetometer surveys to identify for the presence of Unexploded Ordnance (UXO) devices. Any identified UXO devices would be avoided through micrositing or require a subsequent UXO clearance	Minimised risk of damage to third party infrastructure	DCO Schedule 6 Part 2 Condition 16 - Pre-construction plans and documents DCO Schedule 6 Part 2 Condition 14 - Pre-construction monitoring and survey

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				campaign which would be subject to separate consent.		
17.9	Chapter 17 (Section 17.3.3)	Embedded mitigation	Parameter – Hazards Impact – Damage to infrastructure	The following Safety Zones would be applied for by the Project following consultation: ▪ 500m safety zones around any structure where construction or decommissioning work is underwater, as indicated by the presence of large construction vessel(s) ▪ 50m safety zones around any partially completed structure during the construction phase where work is not underway ▪ 500m safety zones around any structures undergoing major maintenance during the operational phase, defined as work requiring a large or Restricted in the Ability to Manoeuvre vessel	Minimised risk of damage to third party infrastructure	Application under the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007 DCO Schedule 6 Part 2 Condition 11 - Safety Zones
17.10	Chapter 17 (Section 17.3.3)	Additional mitigation	Parameter – Stakeholder engagement Impact – Limitations to operations	Engagement is ongoing with Harbour Energy and Spirit Energy on the terms of suitable cooperation and coexistence agreements, with protective provisions which make provision for additional costs if	Minimised impact on oil and gas operations.	DCO Schedule 3 Protective Provisions Part 2 and Part 3 Harbour Energy and Spirit Energy

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				required included in the draft DCO for completeness		DCO Schedule 6 Part 2 Condition 9(1)(j) - VTMP
SLVIA						
18.1	Chapter 18 (Section 18.3.3)	Embedded in design process	Parameter - Foundation substructures Impact – Visual effects	The selection of the foundation type would primarily be based upon the site conditions, combined with the WTG that is selected.	While the visuals of foundations may differ, all foundation design options are included within the PDE with the worst case assessed within the DCO Application, with parameters defined in DCO Schedule 2 (para 2) - Design Parameters	
18.2	Chapter 18 (Section 18.3.3)	Embedded in design process	Parameter – OSPs Impact – Visual effects	There would be up to two OSPs installed. The exact locations, design and visual appearance would be subject to a structural study and electrical design, which is expected to be completed post-consent.	While the visuals of OSPs would differ, worst case assessed within the DCO Application, with parameters defined in DCO Schedule 2 (para 2) - Design Parameters	
18.3	Chapter 18 (Section 18.3.3)	Embedded mitigation	Parameter – Lighting Impact – Visual effects	The Project would comply with legal requirements with regards to shipping, navigation and aviation marking and lighting. Marking and lighting of the Project would be undertaken in accordance with relevant industry guidance and as advised by relevant stakeholders.	Ensures compliance with lighting and marking requirements but also sets the relevant parameters for the SLVIA of the Project in relation to night-	DCO Schedule 2 Requirement 3 - Aviation Safety DCO Schedule 6 Part 2 Condition 5 - AtoN DCO Schedule 6 Part 2 Condition 6 - Colouring of structures

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
					time effects assessment.	
18.4	Chapter 18 (Section 18.3.3)	Embedded mitigation	Parameter – Lighting Impact – Visual effects	Marine navigational lights would be fitted at the platform level on significant peripheral structures, synchronised to display IALA 'special mark' characteristic, flashing yellow, with a range not less than 5nm. A lighting scheme would be agreed for the aviation lighting of structures (WTGs and OSP(s)) with relevant authorities.	Minimising lighting impacts as far practicable, whilst ensuring compliance with legal requirements for lighting and marking the Project.	DCO Schedule 2 Requirement 3 - Aviation Safety DCO Schedule 6 Part 2 Condition 5 - AtoN
Human Health						
19.1 (Chapter 19) - The need for a standalone health assessment, including assessment associated with road traffic, air quality and noise, would be reviewed upon selection of the port(s) post-consent in the event that the chosen port does not have sufficient extant permissions to supply the Project, see item 22.1 below. Further, the Applicant has developed an Outline Skills and Employment Plan to explore where benefits can be maximised through its procurement process. No further mitigation measures proposed, noting measures are incorporated in other chapters.						
Socio-economics, Tourism And Recreation						
20.1 (Chapter 20) - While no mitigation is required the Applicant has developed an Outline Skills and Employment Plan (with the final plan secured in the DCO Schedule 2 Requirement 10 - Skills and Employment Plan) to explore where benefits can be maximised through its procurement process. No further measures proposed, noting measures are incorporated in other chapters.						
Climate Change						
21.1	Chapter 21	Embedded mitigation	Parameter - Climate resilience	Based on standard industry practice and occupational health and safety regulations and standards, construction management plans,	Reduced risk of infrastructure damage from extreme	DCO Schedule 6 Part 2 Condition 9(1)(e) - Pre-construction plans

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
	(Section 21.3.3)		Impact - Risk of infrastructure damage	developed post-consent, such as the PEMP and Method Statements would include risk assessments and health and safety protocols, which would be prepared prior to the commencement of construction and operation and maintenance works.	weather events and health and safety risks	and documents – PEMP DCO Schedule 6 Part 2 Condition 9(1)(d) - Construction method statement
21.3	Chapter 21 (Section 21.3.3)	Embedded mitigation	Parameter - Climate resilience Impact - Risk of infrastructure damage	At wind speeds above the design operational load limit, the WTGs would shut down and remain in idle configuration to prevent structural damage during gusts or sustained high winds.	Reduced risk of infrastructure damage from extreme weather events	As part of operating procedures
21.4	Chapter 21 (Section 21.3.3)	Embedded mitigation	Parameter - Climate resilience Impact - Risk of infrastructure damage and health and safety	Regular inspections and maintenance of offshore infrastructure would be carried out over the Project's operational lifetime to identify and remediate any damage and maintain good working conditions.	Reduced risk of infrastructure damage from extreme weather events and health and safety risks	DCO Schedule 6 Part 2 Condition 9(1)(g) - Offshore operation and maintenance plan (OOMP) DCO Schedule 6 Part 2 Condition 4 - Notifications and Inspections
21.5	Chapter 21 (Section 21.3.3)	Embedded mitigation	Parameter - Climate resilience Impact - Risk of infrastructure damage and health and safety	Prior to the commencement of decommissioning activities, as part of health and safety protocols, a review of recent climate hazards and up-to-date climate projection data would be undertaken to develop suitable	Reduced risk of infrastructure damage from extreme weather events	DCO Schedule 2 Requirement 9 - Decommissioning

Reference	Cross reference to ES	Type of mitigation/ measure	Parameter/impact	Mitigation measure or commitment	Effect of mitigation or commitment	Means of implementation
				mitigation and management measures, which would be secured in management plans for this stage of works.	and health and safety risks	
Traffic and Transport						
22.1	Chapter 22 (Section 22.6)	Embedded mitigation	Parameter - Onshore traffic Impact - Potential terrestrial traffic and transport impacts	The Applicant has committed to developing a Port Access and Transport Plan (PATP), if agreed to be required, post-consent in line with the Outline PATP (submitted with the DCO submission application) in the event that the chosen port(s) does not have sufficient extant permissions to supply the Project.	To secure the future assessment (and mitigation) of any potential terrestrial traffic and transport impacts	DCO Schedule 2 Requirement 10 - PATP

3 References

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