AQUIND Limited

PEIR CHAPTER 13

Shipping, Navigation and Other Marine Users

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13 SHIPPING, NAVIGATION AND OTHER MARINE USERS

13.1 SCOPE OF THE ASSESSMENT

13.1.1 INTRODUCTION

13.1.1.1 This chapter provides the preliminary information regarding environmental impacts on shipping, navigation and other marine users as a result of the Proposed Development.

13.1.1.2 This chapter outlines the potential impacts on shipping, navigation and other marine user's activities in proximity to the Proposed Development during construction, operation (including repair and maintenance) and decommissioning. The full assessment has been undertaken in the Navigational Risk Assessment ('NRA') which can be found in Appendix 13.1. The activities include:

- Shipping;
- Anchoring;
- Fishing; and
- Any other third-party activity.

13.1.2 STUDY AREA

13.1.2.1 The Entire Marine Cable Corridor extends from the Landfall at Eastney, near Portsmouth to Pourville in Normandy, France.

13.1.2.2 For the purposes of assessment, this chapter focuses on the Landfall and Marine Cable Corridor within the UK marine area (as this comprises the Proposed Development). Where impacts arise as a result of the combination of the impacts of the Proposed Development and the impacts of projects in the UK marine area and/or other EEA states, these will also be identified and assessed.

Marine Cable Corridor

13.1.2.3 The Marine Cable Corridor encompasses the location of the Landfall and extends from Eastney, from MHWS, out to the UK/France EEZ boundary line (see Figure 3.1).

13.1.2.4 The study area for the assessment of baseline data is defined as a five nmi area around the Marine Cable Corridor. This is considered sufficient to provide an overview of shipping, navigation and marine users activity in proximity to the Marine Cable Corridor. It should also be noted that any navigational features within 10 nmi have been considered in the baseline environment.

Landfall

13.1.2.5 The Landfall of the marine cables will be located at Eastney and will be constructed using HDD methods (Figure 3.3 in Chapter 3 Description of the Proposed Development). TJBs and associated equipment will be located above the MHWS while the HDD exit/entry point within the marine environment is anticipated to be located between KP 1 and 1.6 (approximately 0.5 nmi and 0.9 nmi from the start of the Marine Cable Corridor). The onshore works above MHWS are not included within this assessment. However, shipping, navigation and marine activities taking place in the coastal waters off the coast at Eastney will be assessed (see Chapter 3 Description of the Proposed Development).

13.1.2.6 HDD is now also proposed to be undertaken at Langstone Harbour to enable the cables to cross underneath Langstone Harbour from Portsea Island to the mainland (see Figure 3.9 of Chapter 3 Description of the Proposed Development). It is anticipated that no HDD works will occur within the marine environment of Langstone Harbour as the drilling will be underneath seabed of the harbour area. The entry/exit points of the drill will be located above the MHWS mark and will not be assessed within this chapter.

13.1.2.7 Chapter 3 Description of the Proposed Development provides further information on the HDD methodology at Langstone Harbour.

13.2 LEGISLATION, POLICY AND GUIDANCE

13.2.1.1 This assessment has taken into account the current legislation, policy and guidance relevant to shipping and navigation. These are listed below.

13.2.2 LEGISLATION

- United Nations Convention on the Law of the Sea ('UNCLOS') (1982).
- IMO International Regulations for Preventing Collisions at Sea ('COLREGS' 1972/78), as implemented in the United Kingdom ('UK') through Marine Shipping Notices (IMO, 1972/78).
- Submarine Telegraph Act (1885).

13.2.3 PLANNING POLICY

National Policy

- EN-1 Overarching National Policy Statement ('NPS') for Energy (2011):
  - The EN-1 Overarching NPS for energy sets out the Government's policy for major energy infrastructure. Within this policy, the impact of offshore developments on military activities due to the presence of danger and exercise areas located across the UK Continental Shelf ('UKCS') is considered. This impact is assessed in this chapter following review of the baseline data which identifies military defence exercise areas in proximity to the Proposed Development.

- UK MPS (2011):
  - The UK MPS is a framework for preparing marine plans and taking decisions affecting the marine environment. Any decisions made should minimise any negative impacts on shipping activity, freedom of navigation and navigational safety. The Proposed Development has been designed to minimise the impact on shipping and other marine users with impacts fully assessed in this chapter.

Regional Policy

- South Inshore and South Offshore Marine Plan (2018):
  - The South Marine Plan introduces a strategic approach to planning within the inshore and offshore waters between Folkestone in Kent and the River Dart in Devon. Any proposals for this area must put in place measures to minimise significant adverse impacts on the marine area, particularly within the Dover Strait Traffic Separation Scheme ('TSS'), and should not restrict current port / harbour activities and future growth

Local Policy

- Southampton Vessel Traffic Service ('VTS'):
  - All vessels transiting to or within Port of Southampton's waters are under the control of the Harbour Authority to efficiently and effectively maintain navigational safety. The Proposed Development passes through this area and thus shipping in this area will be monitored via the VTS.
- Dover Strait TSS:
  - TSS's are used to separate traffic travelling in opposite directions in busy (or sensitive) areas of shipping. Rule 10 of COLREGS applies to TSS's. Inshore traffic zones of the TSS are not to be used under normal circumstances for through traffic if the lane in the TSS is safe to use. However, vessels which are less than 20 m in length and all sailing vessels may, under all circumstances, use inshore traffic zones.
- Channel Navigation Information Service (CNIS):
  - The CNIS helps in the supervising of the maritime traffic crossing through the Dover Strait by way of a full-day, 24-hour radio and radar safety system. It is jointly operated by the UK and French administrations from the Dover Maritime Rescue Coordination Centre ('MRCC') and CROSS Gris-Nez. They are assigned to keep the Dover Strait TSS under observation in addition to monitoring the flow of traffic. In the case of any vessel not following the stipulated guidelines whilst crossing the Strait, the CNIS are authorised to report this and undertake any corrective measures required.
- Dover Strait – Mandatory Reporting Area:

- The Dover Strait is a mandatory reporting area, meaning all vessels over 300 gross tonnes ('GT') transiting through the area are required to report to either the Dover Strait MRCC (south-west lane) or CROSS Gris Nez (north-east lane).

13.2.4 GUIDANCE

13.2.4.1 This assessment was carried out in a manner consistent with available guidance;

- IMO Guidelines for Formal Safety Assessment ('FSA') – Maritime Safety Council ('MSC')/Circ. 1023/MEPC/Circular 392 (IMO, 2002).
- Maritime and Coastguard Agency ('MCA') Marine Guidance Note ('MGN') 543: Safety of Navigation Offshore Renewable Energy Installations ('OREIs') – Guidance on UK Navigational Practice, Safety and Emergency Response (MCA, 2016). Although this guidance is mainly for renewable energy installations it does include guidance on marine cable protection and burial within UK waters.
- International Association of Marine Aids to Navigation ('AtoN') and Lighthouse Authorities ('IALA'), Recommendation O-129 on the marking of man-made offshore structures, Edition 2 (IALA, 2013).

13.3 SCOPING OPINION AND CONSULTATION

13.3.1 SCOPING OPINION

13.3.1.1 As detailed within Chapter 1 Introduction, a Scoping Opinion was received by the Applicant from PINS on 7 December 2018. The Scoping Opinion comments from PINS in relation to shipping, navigation and other marine users and how comments have been addressed are set out below in Table 13.1.

Table 13.1 – Scoping Opinion responses

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
PINS	4.8.2	The ES should clearly justify the selected study area of 2 nautical miles around the Proposed Development.	Study area of 5 nmi has been chosen for the shipping and navigation baseline. This is deemed appropriate to ensure all activities that may be affected by the Proposed Development are assessed.
PINS	4.8.3	A wider anchoring assessment will be included in the NRA to determine the risk of emergency anchoring over the cable. ES should identify and assess impacts of additional cable protection methods, i.e. rock placement, where this would result in a likely significant effect. Assumptions applied such as locations and quantity of material should be explained in ES. Where uncertainty exists, this should be taken into account and explained.	Emergency anchoring has been qualitatively assessed in the impact assessment. Embedded mitigation measures assume that the cable is suitably protected by burial where feasible. In addition, where cable protection methods, e.g. rock placement, are required, these should not reduce water depths by more than 5%. A more detailed assessment should be carried out if any required rock protection is considered to present a hazard to shipping and navigation. The Cable Burial Risk Assessment ('CBRA') will be used to identify suitable protection measures.
PINS	4.8.4	Inspectorate acknowledges a baseline assessment will be presented in the NRA to identify the potential impacts relevant to shipping and navigation. ES should clearly state the impact assessment	The impact assessment methodology is clearly defined within the NRA as well as being included within Section 13.4 of this chapter. The

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
		methodology applied to this chapter as it differs from the approach presented in the overarching assessment methodology.	methodology will also be presented in the ES / NRA as part of the DCO application.
PINS	4.11.2	Scoping Report does not define study area or likely Zone of Influence ('ZoI') for effects on other marine users. This should be clearly stated in the ES.	Study area of 5 nmi has been chosen for the baseline. This is deemed appropriate to ensure all relevant marine activities that may be affected by the Proposed Development are assessed. A ZoI of 5 nmi will be used for cumulative effects assessment ('CEA') (Section 13.6).
PINS	4.11.3	Scoping Report identifies Rampion Wind Farm being located within 5 nmi but it is not clear whether effects on this wind farm are to be considered in ES and what these are likely to comprise.	No significant effects associated with the Proposed Development are anticipated. Rampion Wind Farm has been considered within the CEA (Appendix 13.2 Cumulative Assessment Matrix).
PINS	4.11.4	Inspectorate notes baseline information and potential impacts/mitigation within Chapter 13 of Scoping Report includes recreational vessel data, with potential impacts and mitigation measures similar to that contained within Chapter 16 for recreational vessels. ES should avoid duplication but include appropriate cross-referencing between aspects.	Chapters 16 (Other Marine Users and 13 (Shipping and Navigation) of the Scoping Report have been combined within this PEIR chapter. This will reduce duplication of information.

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
PINS	4.12.2	Inspectorate notes that assumptions have been made regarding potential impacts and mitigation measures to conclude that there is unlikely to be significant transboundary effects; however, such effects are stated as yet to be explored in the corresponding aspect chapter. Limited information has also been provided with regard to location of potential sensitive receptors in other European Economic Area ('EEA') States. ES should include description of significant effects as a result of the Proposed Development, including transboundary effects.	Transboundary effects have been considered within this chapter. No significant transboundary effects have yet been identified.
PINS	4.12.3	ES should consider potential for cumulative impacts with proposals to redevelop the Fraser Range site at Eastney and the North Portsea Coastal Defence schemes.	North Portsea Coastal Defence has been considered within the CEA matrix (Appendix 13.2) and not considered significant within this chapter. Consultation is ongoing with the ESCP. Applications in relation to defence schemes in this area will be monitored and included within the committed developments list where appropriate. The status of the redevelopment of the Fraser Range site is not yet available. The only reference of this site available was in an officer report for an application Ref. 16/01438/FUL for a new access at Fraser Range that was refused. No Scoping request

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
			has been submitted and no Screening Opinion has been provided for either the refused application or the wider site. On this basis, the redevelopment of the Fraser Range site at Eastney has not been included in the list of projects/plans and therefore not included within the CEA. The plans and projects to be considered as part of the cumulative effects assessment will be kept under review and updated for the ES where required.
MCA	Page 1	A detailed and current NRA is required before consent can be granted. This NRA should include appropriate risk mitigation measures and a detailed methodology to ensure the risk remains reduced to As Low As Reasonably Practicable ('ALARP'). This should also include assessments on collision risk and emergency response taking into account marking and lighting during the works and promulgation of Notices to Mariners.	Appendix 13.1 presents the detailed NRA for this chapter. A FSA has been carried out in line with the IMO FSA process within the NRA. The assessment considers collision risk, emergency response, marking and lighting and appropriate mitigation. The assessment uses baseline data, consultation, and expert opinion to identify the level of significance of each impact, taking embedded mitigation into account. Additional mitigation measures have been identified as necessary to reduce risks to ALARP levels.
MCA	Page 2	The NRA must include considerations for the effects on vessel navigation and communication equipment, as well as any electromagnetic deviation on ships compasses. The MCA will accept	The impact on vessel navigation and communication equipment is assessed in the NRA, taking into consideration the requirements stated by the MCA. Deviation of less than 5 degrees has

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
		a 3^0 deviation for 95% of the cable route. For the remaining 5% of the route no more than five degrees will be attained. The MCA would however expect a deviation survey post the cable being laid; this will confirm conformity with the consent condition (if given). The data must also be provided to the UKHO via a hydrographic note (H102), as they may want a precautionary notation on the appropriate Admiralty Charts.	been included as embedded mitigation whilst the requirement for post-construction surveys has also been considered.
MCA	Page 2	Particular attention must be paid to cabling routes and burial depth for which a Burial Protection Index study must be completed and, subject to the traffic volumes, an anchor penetration study may be necessary. Any consented cable protection works must ensure existing and future safe navigation is not compromised, accepting a maximum of 5% reduction in surrounding depth referenced to Chart Datum.	A CBRA will be undertaken to determine suitable protection for the cable. Burial or other protection of marine cables (e.g. rock placement) will not reduce the surrounding water depth by more than 5%. This is included as embedded mitigation within the NRA.
MCA	Page 2	Noting that part of the cable route will transit through the South-Western end of the Dover TSS, a specific NRA for the area to be laid within the TSS must be provided in the ES. This will need to include a specific methodology with regards to the	This section of Proposed Development is considered a high-risk area within the NRA. Specific quantitative assessment has been carried out for the section of the Marine Cable Corridor which passes through the TSS.

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
		cable laying operation, and must be compliant with the COLREGs.	
MCA	Page 2	The MCA notes that the current proposal seeks to lay a section of the pipe through a Separation Area. Under COLREGS Rule 10(e), this area is provisioned for vessels transiting in/out of a TSS, and for vessels in emergency distress, plus also fishing vessels. The use of trawlers and anchors also increases the risk of a cable strike before burial is complete.	Risk of cable strike from anchors and fishing gears is addressed within the impact assessment presented within this chapter.
MCA	Page 2	Rule 10(l) allows for an exemption for a "vessel restricted in her ability to manoeuvre" (defined in Rule 3 to include a cable laying vessel) during a specific cable laying operation. However, this exemption may not extend to guard vessels, unless an exemption under Rule 10(k) (vessels engaged in the maintenance of the safety of navigation) can also be sought. Full consultation with MCA Dover CNIS will be requested, so that operations can be safely managed.	Initial consultation, via attendance of the MCA Dover CNIS Working User Group (October 2018) was undertaken as part of the NRA process. Further details of the consultation undertaken to date is included in Appendix 13.1.
MCA	Page 2	The COLREGs are an internationally-accepted treaty and enshrined under UK law. Contraventions of the COLREGs may also constitute an offence	Compliance with COLREGs and International Regulations for the Safety of Life at Sea ('SOLAS') has been included as embedded mitigation during

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
		and may be liable to prosecution by the MCA Enforcement Unit. Implications of these rules must also be considered within the ES for any future survey or maintenance works both prior and after completion.	construction, operational (including repair and maintenance) and decommissioning stages.
MCA	Page 3	Cable laying operations are likely to impact traffic routes into the Solent area, and so the MCA-chaired NAB VTS area User Group must be fully consulted with at an early stage. The User Group includes other local stakeholders including ferries, dredging operators, harbour authorities, fishing associations and the Royal Yachting Association ('RYA').	Consultation with the NAB User Group (via attendance at the User Group meeting in September 2018), has been undertaken as part of the NRA process. Further details of the consultation undertaken to date is included in Appendix 13.1.
MCA	Page 3	Particular emphasis must also be placed on considering any impacts to local military operations out of Portsmouth.	This impact has been considered within the NRA and assessed using the FSA in line with the IMO FSA process. Consultation with QHM Portsmouth has also been undertaken as part of the NRA process (further details are provided in Appendix 13.1). Furthermore, the response from the Ministry of Defence ('MoD') to the Scoping Opinion has been considered below, and further engagement will be undertaken with MoD as appropriate.

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
MCA	Page 3	The MCA notes that the cable route through the English Channel will have a high probability of encountering unexploded ordnance (UXO) during laying operations. Appropriate safeguards should be put in place by the Proposer for safe disposal and mitigation where needed.	A separate standalone marine licence application will be made for safe disposal of UXO.
MoD	Page 1	The extent of maritime military practice and exercise areas within the vicinity of the Proposed Development has been identified in Scoping Report. The cable route will intersect Danger Area D037, the MoD has no concerns with the cable route passing through this area.	Military practice areas have been identified within baseline assessment in NRA. Potential impacts on military activities have been assessed.
MoD	Pages 1-2	The potential for the offshore development area to contain historic disposal sites for explosive munitions has been identified and considered. In addition, the potential presence of unexploded ordnance has also been considered as a relevant consideration with respect to the installation of the cables and geophysical surveys.	A separate standalone marine licence application will be made for safe disposal of UXO.
Associated British Ports ('ABP')		ABP have no comment or suggestions on the proposed scope of environmental assessment work. However, continued engagement on the progress	Continued engagement with ABP to be undertaken.

Consultee	Scoping Opinion ID/page	Summary of Comment Received	How this has been addressed by the Applicant
		and conclusions of the NRA is to be undertaken through the Nab VTS User Group.	
Langstone Harbour Board ('LHB')		LHB had no further comments at this time on the Scoping Report relating to the Proposed Development.	N/A
Marine Management Organisation ('MMO')		The MMO had no comments on the Scoping Report with regards to shipping and navigation.	N/A
Trinity House ('TH')		TH is content with the Scoping Report and have no further comments at this stage.	N/A

13.3.2 CONSULTATION

13.3.2.1 Consultation is a key part of the DCO application process. Further consultation will be undertaken after views have been sought on the PEIR, including as part of further pre-application engagement and following submission of the DCO application.

13.3.2.2 A summary of the consultation undertaken for the shipping, navigation and other marine users' assessment to date is detailed in Appendix 13.1 Navigation Risk Assessment.

13.3.2.3 Full details of consultation undertaken to date and planned future consultation for all disciplines is presented within Chapter 5 Consultation.

13.4 METHODS OF ASSESSMENT

13.4.1.1 The assessment methodology used in this PEIR is based on the IMO FSA (IMO, 2002) process. The full methodology is detailed in Appendix 13.1.

13.4.1.2 The FSA assigns each impact a "severity of consequence" and a "frequency of occurrence" to evaluate the significance of each impact, during the construction, operation (including repair and maintenance), and decommissioning stages of the Proposed Development. The definitions used in the FSA to evaluate the consequence and frequency of impacts are presented in Table 13.2 and Table 13.3, respectively. This follows the FSA process used within NRAs throughout the industry.

Table 13.2 – Severity of consequence

Severity	Definition
Catastrophic	Total loss of a vessel or crew Extensive environmental damage
Serious	Loss of a crew member, or multiple serious injuries Major damage to infrastructure or vessel Major environmental damage Major national business, operation or reputation impacts
Moderate	Serious injury to person Notable damage to infrastructure or vessel Significant environmental damage Considerable business, operation, or reputation impact
Minor	Slight injury(s) to person Minor damage to infrastructure or vessel Minor environmental damage Minor business, operation, or reputation impact
Negligible	No injury to persons No significant damage to infrastructure or vessel No environmental damage No significant operational impacts

Table 13.3 – Frequency of occurrence

Frequency	Definition
Frequent	Will occur on a regular basis during the project
Reasonably Probable	Extremely likely to happen during the project span
Remote	Likely to happen during the project span
Extremely Unlikely	Unlikely to happen but not exceptional
Negligible	Only like to happen in exceptional circumstances

13.4.2 SIGNIFICANCE CRITERIA

13.4.2.1 The severity of consequence and frequency of occurrence rankings are then used to determine the level of significance for each impact during each of the three stages of the Proposed Development, being construction, operation (including repair and maintenance) and decommissioning. The overall significance of impacts will be assessed as "Unacceptable", "Tolerable", or "Broadly Acceptable" using the matrix shown in Table 13.4.

13.4.2.2 The definitions of these are given in Table 13.5.

Table 13.4 – Risk Matrix

Frequency	Frequent	Tolerable	Tolerable	Unacceptable	Unacceptable	Unacceptable
	Reasonably Probable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	Unacceptable
	Remote	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable
	Extremely Unlikely	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable
	Negligible	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable
		Negligible	Minor	Moderate	Serious	Catastrophic
		Severity				

Table 13.5 – Significance definitions

Significance	Definition
Unacceptable (High Risk)	Generally regarded as unacceptable whether the level of benefit associated with the activity. Significant risk mitigation or design modification required to reduce to tolerable ('ALARP').
Tolerable (Moderate Risk)	Typical of the risks from activities which people are prepared to tolerate to secure benefits. There is however an expectation that such risks are properly assessed, appropriate control measures are in place, residual risks are ALARP and that risks are periodically reviewed to monitor if further controls are appropriate
Broadly Acceptable (Low Risk)	Generally regarded as acceptable and adequately controlled. At these risk levels the opportunity for further reduction is limited.

13.4.3 LIMITATIONS

13.4.3.1 This chapter of the PEIR provides preliminary information as it relates to the Proposed Development to date and to data currently available and gathered at this point of the assessment process.

13.4.3.2 The information contained herein is intended to inform consultation responses at this stage. A more detailed assessment of potential significant impacts as a result of the Proposed Development on identified sensitive receptors will be undertaken at subsequent stages to inform the ES.

13.4.3.3 The information in respect of construction installation methods presented within Chapter 3 Description of the Proposed Development is the most recent emerging information on the most likely construction methods for the Proposed Development. As the design and construction methods for the Proposed Development are still evolving at the time of writing of this chapter, not all of the proposed construction methods have been assessed. Accordingly, assessments within this chapter do not give consideration to the following construction methods described in Chapter 3 Description of the Proposed Development:

- Use of flotation pits to enable installation vessels to approach closer to shore;
- Grounding of installation vessels on the seabed at low tide; and
- Use of a TSHD vessel to create the trench for pre-lay installation.

13.4.3.4 Any gaps in information identified at this stage will be considered and addressed along with specific mitigation measures as part of the assessments for the production of the ES.

13.4.3.5 Automatic Identification System ('AIS') equipment is not mandatory for all vessels. Military vessels and smaller craft such as fishing vessels below 15 m in length and recreational craft are not required to carry AIS, and therefore are likely to be under-represented within the analysis.

13.4.3.6 Trials carried out by Anatec in the North Sea found that a minority of fishing vessels do not broadcast on AIS at all times, especially when engaged in fishing, thus coverage of fishing vessels may also be under-represented.

13.5 BASELINE ENVIRONMENT

13.5.1.1 This section details the baseline environment by identifying navigational features and shipping and marine activity using various data sources which are considered relevant to the Proposed Development (outlined in Table 13.6).

13.5.2 DATA SOURCES

13.5.2.1 The main data sets used in this assessment are given below in Table 13.6.

Table 13.6 – Data sources

Organisation	Data Type	Details of Data available and data limitations
Anatec	AIS data	Six months of AIS data from the following periods to cover seasonal variation: 1 December 2017 – 28 February 2018 (winter) 1 May – 31 July 2018 (summer) The main limitations are outlined below: AIS equipment carriage is not mandatory for all vessels. Military vessels and smaller craft such as fishing vessels below 15 m in length and recreational craft are not required to carry AIS, and therefore will be under-represented within the analysis. It is also noted that the coverage may be limited in periods where atmospheric pressure is low, where the range and pick up of AIS transmissions are reduced. Trials carried out by Anatec in the North Sea found that a minority of fishing vessels do not broadcast on AIS at all times (i.e. switch off their AIS), especially when engaged in fishing, thus coverage of fishing vessels may be under-represented.
MMO	Satellite Vessel Monitoring	Two years of VMS data, provided in a density-based grid.

Organisation	Data Type	Details of Data available and data limitations
	System ('VMS') Fishing Activity data	The main limitations of this data set are outlined below: Only covers fishing vessels of 15 m in length and above.
Royal National Lifeboat Institution ('RNLI')	Maritime Incident data	RNLI data logs details of incidents it responds to, including the cause of incident. Data were available from 2005 to 2014.
Marine Accident Investigation Branch ('MAIB')	Maritime Incident data	MAIB data were available from 2005 to 2014. All UK commercial vessels and non-UK vessels within a UK port or the UK 12 nmi territorial waters & carrying passengers to a UK port, are required to report accidents to the MAIB. Limitations include non-commercial recreational craft are not required to report accidents to the MAIB.
UKHO	UK Admiralty Charts	Admiralty charts are nautical charts issued by the UKHO. Charts used for the assessment include: 1652: Selsey Hill to Beachy Head 2036: The Solent and Southampton Water 2037: Eastern Approaches to the Solent 2045: Outer Approaches to the Solent 2450: Anvil Point to Beachy Head 2451: Newhaven to Dover and Cap d'Antifer to Cap Gris-Nez 2625: Approaches to Portsmouth 3418: Langstone and Chichester Harbours
UKHO	Admiralty Sailing Directions	Admiralty Sailing Directions – Channel Pilot, NP27, 10th Edition, 2014
TCE	Aggregate Dredging Areas	The Crown Estate: Mineral and Aggregate Dredging Areas (dated 12 April 2018)

Organisation	Data Type	Details of Data available and data limitations
TCE	Offshore Wind Farms	The Crown Estate: Offshore Wind (dated 21 August 2018)
RYA	RYA Coastal Atlas UK	RYA UK Coastal Atlas of Recreational Boating 2.0 data including intensity grid, general boating areas and offshore routes, as well as locations of clubs, training centres and marinas.

13.5.3 MARINE CABLE CORRIDOR

Navigational Features

13.5.3.1 There are various ports and small harbours located within close proximity to the Marine Cable Corridor (see Figure 13.1). The Port of Portsmouth is the closest port which is a major naval base. In addition, the port accommodates commercial vessels such as passenger ferries. Langstone Harbour is located north of the Landfall and is mainly utilised by fishing and recreational vessels. Following consultation, it was noted that dredgers also frequent this harbour.

13.5.3.2 The Marine Cable Corridor passes within the Langstone Harbour Board ('LHB') area of pilotage jurisdiction as well as Portsmouth and Southampton Competent Harbour Authority ('CHA') areas. The Nab Channel is located approximately 0.8 nmi south of the Marine Cable Corridor and is intended for deeply-laden inward-bound tankers, larger container vessels and other vessels constrained by draught.

13.5.3.3 Figure 13.3 provides a general overview of navigational features in the area. Nine charted anchorages were identified within proximity of the Marine Cable Corridor (UKHO, 2013). The closest anchorage is for small vessels within Langstone Harbour. The Man-of-War and Spithead anchorages are located approximately 2-3 nmi west of the Marine Cable Corridor. The Man-of-War includes both a designated anchorage area as well as several charted berths to the west. In addition, the areas associated with the Nab Anchorage are located approximately 5-10 nmi south-west of the Marine Cable Corridor (see Appendix 13.1 for descriptions of all identified anchorages).

13.5.3.4 The Marine Cable Corridor passes through the Dover Strait TSS. This is a busy area of commercial traffic, with lanes used to separate traffic travelling in opposite directions.

13.5.3.5 All aggregate dredging areas identified within proximity of the Marine Cable Corridor are currently in production. The two closest areas lie approximately 1.3 nmi west of the Marine Cable Corridor.

13.5.3.6 One subsea telecom cable, operated by Atlantic Crossing, intersects the Marine Cable Corridor. This cable connects from the United States of America ('USA') to three European countries.

13.5.3.7 Two military firing practice areas intersect the Marine Cable Corridor. It is noted there are no restrictions placed on the right to transit these areas at any time, and exercises and firing only take place when the areas are considered to be clear of all shipping.

13.5.3.8 The Rampion Offshore Wind Farm ('OWF') is located approximately 6.5 nmi east of the Marine Cable Corridor. This wind farm is currently generating power although is still in its testing and commissioning phase and is expected to be fully operational by the end of 2018.

Maritime Incidents

13.5.3.9 Incident data recorded by the MAIB and the RNLI between 2005 and 2014 was reviewed. There were 361 unique incidents recorded by the MAIB and 1,636 recorded by the RNLI within 5 nmi of the Marine Cable Corridor.

13.5.3.10 In the MAIB data set (see Figure 13.3), accidents to person were the most frequently recorded incident, followed by machinery failure. Vessels in the "Other (commercial)" category were involved in the largest number of incidents, seconded by passenger vessels. Example vessels included in the Other (commercial) category include local port vessels, aggregate dredgers, naval support and small commercial sailing vessels.

13.5.3.11 Four incidents recorded by the MAIB were within the Marine Cable Corridor. These included two accidents to person, one machinery failure and one fire/explosion. All four incidents occurred within 5 nmi of the coast.

13.5.3.12 In the RNLI data set (see Figure 13.4), machinery failure was the most common incident followed by person in danger. Recreational craft were involved in over half (62%) of all incidents recorded.

13.5.3.13 A total of 48 incidents were recorded within the Marine Cable Corridor in the RNLI data set. Over half of these incidents (52%) were due to machinery failures.

13.5.3.14 Incident types that have the potential to impact marine cabling include foundering, grounding and machinery failure that may lead to a vessel dropping anchor in an emergency. In addition, collisions or contacts may also cause a vessel to founder over the cable. As noted above, machinery failure was one of the most common incident types in both data sets.

Marine Traffic

13.5.3.15 A total of six months of AIS data was used to inform the baseline shipping analysis (full analysis provided in Appendix 13.1). The following time periods were chosen to provide up-to-date coverage and account for any seasonal trends:

- 1 December 2017 – 28 February 2018 (winter period); and
- 1 May 2018 – 31 July 2018 (summer period)

13.5.3.16 A study area was defined as a 5 nmi buffer around the Marine Cable Corridor.

13.5.3.17 Throughout the summer study period (see Figure 13.5), there was an average of 444 unique vessels recorded per day within the study area. Throughout the winter study period (see Figure 13.6), there was an average of 299 unique vessels recorded per day in the study area.

13.5.3.18 The most frequently recorded vessel types were recreational vessels in summer and cargo vessels in winter (see Plate 13.1). Other frequently recorded vessel types include tankers, fishing vessels and passenger vessels. It is noted recreational activity was significantly lower in the winter period than the summer.

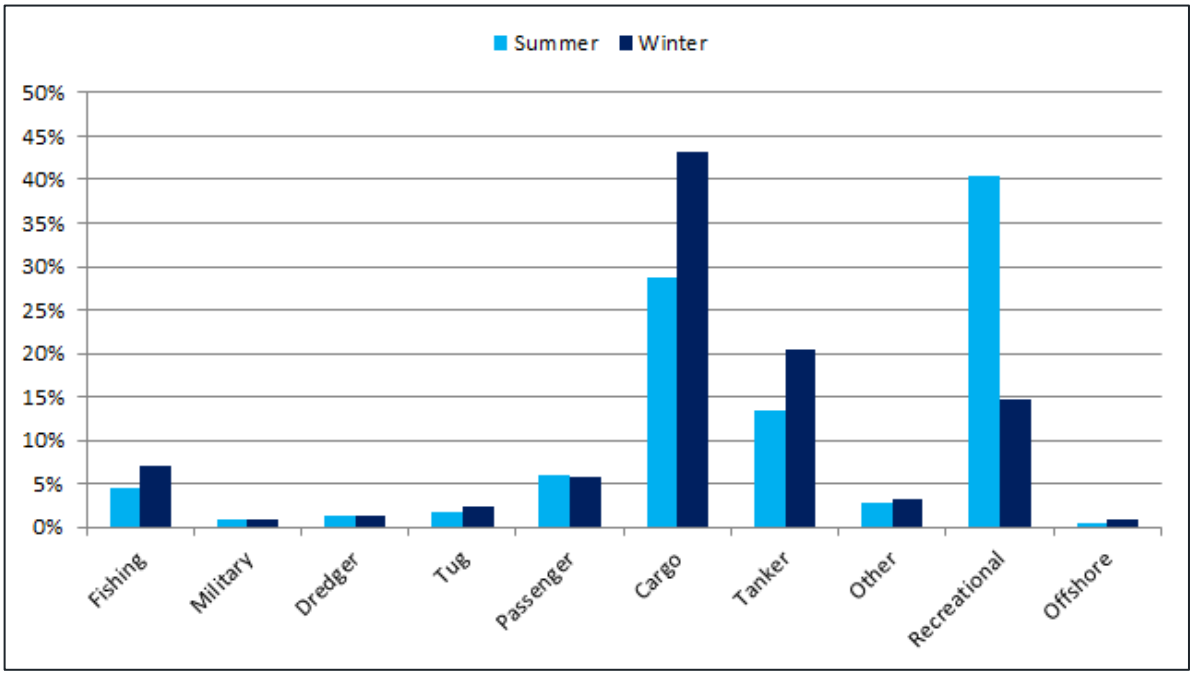

Plate 13.1 - AIS vessel type distribution

13.5.3.19 The average vessel lengths, based on unique vessels per day, recorded in the summer and winter were 86 m and 120 m, respectively. The average vessel draughts were between 6 m and 7 m for the summer and winter periods. The smaller average length seen in the summer is likely due to the large number of smaller vessels (i.e. recreational craft) recorded in this period. It is noted that small craft (e.g. recreational vessels and fishing vessels < 15 m in length) are likely under-represented as they are not obligated to broadcast on AIS under EU directive.

13.5.3.20 Deadweight Tonnage ('DWT') was estimated for all small craft such as recreational and fishing vessels, based on their vessel type and size. DWT was found through research of in-house databases and public information for larger, commercial vessels. Over half (53%) of vessels recorded in summer were identified or estimated to have DWT less than 500 which is reflective of the large number of recreational craft recorded, whilst the winter period had a more even distribution. The largest vessel recorded was the 323,183 DWT crude oil tanker, Sara.

13.5.3.21 The highest density areas for both summer (see Figure 13.7) and winter periods (see Figure 13.8) include the shipping lanes associated with the Dover Strait TSS and near Landfall. This high density is attributed to the large number of recreational vessels in the area, as well as the larger commercial vessels on approach to ports such as Portsmouth and Southampton.

Anchoring Activity

13.5.3.22 There was significant anchoring activity recorded within the study area during the six-month study period (see Figure 13.9). The majority of this was associated with the Saint Helens anchorage area located approximately 3.5 nmi south of the Marine Cable Corridor. Two dredgers, Karissa (2,628 DWT) and Sand Fulmar (9,153 DWT), were recorded at anchor within the Marine Cable Corridor on multiple occasions throughout the study period. Following meetings with navigational stakeholders on the 18 September and 2 October 2018 (see Appendix 13.1), it was identified that these vessels anchor here whilst waiting for the tide to enter Langstone Harbour.

13.5.3.23 Tankers were the most frequently recorded vessels at anchor. The majority of vessels at anchor had DWT between 500 and 15,000 with the largest vessel (MSC Sveva) at 199,272 DWT. This vessel was recorded at anchor approximately 4.5 nmi south of the Marine Cable Corridor.

Dredging Activity

13.5.3.24 Dredging activity was recorded in several locations within the study area during the entire six-month study period (see Figure 13.10). The majority of activity was associated with the Nab dredging area however, activity was also recorded at the entrance to Portsmouth and in the Dover Strait TSS. It is noted the Arco Dee appeared to be transiting over the Marine Cable Corridor however it was unclear whether the vessel was actively dredging as no designated area was identified here. Following meetings with navigational stakeholders on the 18 September and 2 October 2018 (see Appendix 13.1), it was determined that this vessel was not actively dredging and, instead, likely awaiting entrance to Langstone Harbour.

Fishing Activity

13.5.3.25 There was an average of 20 unique fishing vessels recorded per day within the study area over the entire study period. Activity was fairly comparable between the summer and winter periods. The quietest month was July (average of 17 unique vessels per day) whilst December was the busiest (average of 24 unique vessels per day).

13.5.3.26 As presented in Plate 13.2 the most frequently recorded gear types were pots and traps, boat dredges and beam trawlers (see Figure 13.11 for AIS fishing tracks colour-coded by gear type). Demersal gear types present the highest risk to marine cables as they are towed along the seabed. Demersal gear types recorded in the study area include demersal trawlers, beam trawlers, boat dredges and Scottish seines. In addition, twin trawlers are also likely to be demersal.

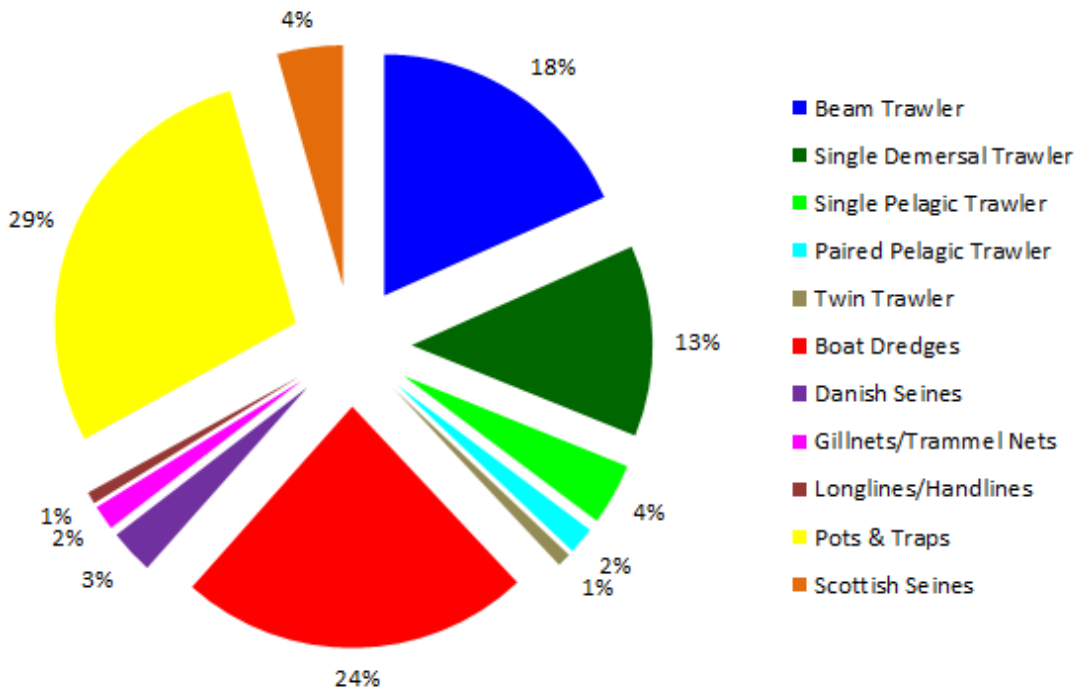

Plate 13.2 - AIS fishing gear type distribution

13.5.3.27 The majority of fishing vessels recorded within the study area were UK-registered. Other nationalities identified include Belgian, French and Dutch.

13.5.3.28 Analysis of vessel speed, behaviour and navigation status was undertaken to determine whether demersal vessels were transiting on passage or actively fishing in the area. The majority of vessels with demersal gears engaged in fishing were operating further offshore in open waters close to the TSS. Significant activity was recorded operating over the Marine Cable Corridor.

13.5.3.29 It is noted that small fishing vessels (< 15 m) are likely under-represented, particularly in coastal waters as they are not required to carry AIS. Chapter 12 Commercial Fisheries provides further details on the UK inshore fisheries and other fisheries.

Recreational Activity

13.5.3.30 There was significant recreational activity recorded on AIS however, as previously mentioned, it is known that this is under-represented due to AIS carriage requirements (see Figure 13.12). Of those recorded, the highest density was seen within 14 nmi of the coast with less activity recorded further offshore. There was an average of 179 unique vessels per day recorded in summer compared to 44 unique per day recorded in winter.

13.5.3.31 The RYA Coastal Atlas (RYA, 2016) and other desktop information identified numerous local marinas and sailing clubs within proximity to the Marine Cable Corridor (see Figure 13.13). It is noted the Solent is a significantly busy area for recreational activity, particularly in summer when a number of races and regattas are hosted by local clubs and associations. The most notable races include the Round the Island Race and Cowes Week. Future dates of these events are provided within Appendix 13.1.

13.5.3.32 The Marine Cable Corridor intersects a personal watercraft area which is established approximately 400 m west of the approaches to Langstone Harbour. Within this area, personal watercraft ('PWC') will operate at high speeds and therefore other water users should take care when entering.

Identification of Receptors

13.5.3.33 The following receptors were identified following review of the baseline assessment:

- Passing traffic;
- Anchored vessels;
- Fishing vessels;
- Recreational vessels including recreational diving, angling and charter vessels, jet and water skiing;
- Military vessels; and
- Dredgers.

13.5.4 LANDFALL

13.5.4.1 This section provides a detailed description of the baseline environment in the vicinity of the Landfall area off the coast of Eastney.

13.5.4.2 The data sources are the same as those presented in Table 13.6, however they focus on the section of Marine Cable Corridor within proximity to the coast where the Landfall of the marine cables will be constructed using HDD methods. Figure 13.14 reflects the shipping activity recorded around the site of the proposed HDD works during the summer (exit/entry point between KP 1 and 1.6 (approximately 0.9 nmi) off the coast).

13.5.4.3 All navigational features within close proximity to the coast such as anchorages and major ports are detailed in Figure 13.1. The Landfall section where HDD drilling works will take place is within the LHB pilotage jurisdiction. The closest port and anchorage is Langstone Harbour located north of the Landfall.

13.5.4.4 As mentioned previously, there is a PWC area located close to the Landfall in which jet skiers operate. In addition, recreational bathers utilise the coastal waters off Eastney Beach to the west of the Landfall and off Hayling Island to the east.

13.5.4.5 Within 5 km of the coast, there were 302 MAIB incidents recorded within the study area between 2005 and 2014 and 1,491 RNLI incidents within the same time period. The most frequently recorded incidents included machinery failure and persons in danger for both data sets. This correlates well with the results of the Marine Cable Corridor analysis and highlights that the majority of incidents are recorded in coastal waters.

13.5.4.6 Recreational vessels were the most frequently recorded vessel type within proximity to the proposed HDD works for the summer study period in particular. In addition (see Figure 13.4), fishing vessels, dredgers and 'other' small craft such as pilot vessels and lifeboats were also recorded within this area. It is again noted that recreational vessels (and fishing vessels) may be under-represented in the AIS data set and thus a review of additional data sources such as the RYA Coastal Atlas was used to determine recreational activities undertaken in the shallower, coastal waters.

13.5.4.7 Within close proximity of the coast, there are several marinas and yachting clubs (see Figure 13.13). In addition, sea angling charter boats are available from Langstone, Portsmouth, Gosport, etc. Local angling clubs include Gosport and District Angling Club, Wessex Specimen Group, Elmore Angling Club. There are several boat fishing marks in the Solent with one located outside the Langstone Harbour entrance.

Identification of Receptors

13.5.4.8 The receptors identified following review of shipping activities within 5 km of the coast are all covered under the Marine Cable Corridor and thus are not repeated here (it should be noted that chartered sea angling vessels are included under recreational). The vessels least likely to be impacted by the HDD works at the Landfall are commercial vessels as they transit into nearby ports such as Portsmouth and Southampton as opposed to Langstone Harbour. Military activity was also sparse in this area however it is again noted that these vessels are not obligated to broadcast on AIS.

13.5.5 FUTURE BASELINE

13.5.5.1 Baseline data have been obtained from the collation of existing information. The existing baseline is informed by data that are 'current' and a future baseline is informed by an extrapolation of the currently available data by reference to policy and plans, other proposal applications and expert judgement. There is inherent uncertainty when considering possible future baselines. This is particularly relevant to the potential consequences of Brexit for example on commercial shipping and fishing activity.

13.5.5.2 In addition, further information to the existing environmental conditions may evolve where there is linkage to and/or reliance upon other projects/plans being implemented prior to the construction of the Proposed Development under assessment. Section 13.6 (and Appendix 13.2 Cumulative Assessment Matrix) identifies such projects/plans and considers them through a cumulative effects assessment and in doing so, their ability to modify the existing baseline is also considered. A good example of this is the ABP Southampton Master Plan 2016 – 2035, which has been considered with regards to whether it may affect the future baseline but was determined that any possible changes are not expected to be significant.

13.6 IMPACT ASSESSMENT

13.6.1.1 Chapter 3 - Description of the Proposed Development presents the worst-case programme for construction activities. Appendix 3.2 presents the worst-case design parameters for seabed preparation, cable burial methods, non-burial protection, Landfall HDD and repair and maintenance activities.

13.6.1.2 Table 3.6 of Chapter 3 - Description of the Proposed Development presents the indicative parameters for vessels required for seabed preparation, cable installation, Landfall HDD and repair and maintenance activities. These parameters have been used to inform this assessment.

13.6.2 CONSTRUCTION AND DECOMMISSIONING

Increased Vessel to Vessel Collision Risk

13.6.2.1 An increased collision risk is created during the construction stage for all passing traffic due to the presence of vessels associated with the construction of the Proposed Development. The larger vessels such as the CLV or CLB and anchor handler vessel will have restricted manoeuvrability and thus have limited capability in taking avoidance action from a passing vessel on a collision course, should such a situation arise. The guard vessels, however, are considered to pose a lesser risk of collision due to their size and mobility in comparison.

13.6.2.2 In addition, the vessels associated with the works for the HDD exit/entry point at Landfall will increase vessel to vessel collision risk. The works will take place close to the coast (exit/entry point between KP 1.0 and KP 1.6). Vessels involved in these works include up to five support vessels and up to two jack up vessels/barges.

13.6.2.3 The greatest risk of collision will be in the busy shipping lanes in the middle of the Channel associated with the Dover Strait TSS and the nearshore section of the Marine Cable Corridor where small craft activity is particularly high, and larger vessels are transiting in and out of major ports such as Southampton and Portsmouth. Consequences of a vessel to vessel collision could range from minor damage to vessel infrastructure, to men overboard, vessel foundering and risk of injury or fatality in the worst case.

13.6.2.4 It is expected that the majority of vessels in the area will be aware of the construction work before encountering project vessels through embedded mitigation (see Section 13.7). Such mitigation includes circulation of information, AIS broadcast, marking and lighting of construction vessels, the presence of guard vessels and the issue of navigational notices/warnings in order to raise awareness of the construction work to passing vessels. All vessels are also expected to comply with COLREGS and SOLAS.

13.6.2.5 The frequency of this impact is considered to be remote and the severity serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Disruption to Vessel Routeing/Timetables

13.6.2.6 Disruption to vessel routeing/timetables may occur due to the construction works associated with the Proposed Development, including cable installation and Landfall works. This will significantly affect vessels utilising the Dover Strait TSS as this is an exceptionally busy area of shipping. The risk of a collision between two third-party vessels may also increase as a result of route deviation. Therefore, this impact is likely to affect all passing vessels.

13.6.2.7 Embedded mitigation (see Section 13.7) such as circulation of information in advance of construction works will allow routes to be planned with minimal impact on schedules. Temporary aids to navigation (if deemed necessary) will aid in routeing vessels around activity. Liaison with local ports and harbours will help minimise impacts associated with these areas where sea room is limited.

13.6.2.8 The frequency of this impact is considered to be reasonably probable and the severity minor, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Disruption to Port Arrivals/Departures

13.6.2.9 The presence of installation and support vessels associated with the cabling may also cause disruption to port and harbour arrivals and/or departures for all passing traffic. Additionally, the jack up barges associated with the HDD works at the cable Landfall will cause disruption to vessels entering/exiting Langstone Harbour in particular, due to the use of exclusion zones (currently proposed to be 500 m). As previously mentioned, embedded mitigation such as circulation of information and liaison with ports and harbours, including Langstone, Portsmouth and Southampton, will ensure they are aware of the construction timetable.

13.6.2.10 The frequency of this impact is considered to be reasonably probable, and the severity minor, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Disruption to Fishing Activities

13.6.2.11 Fishing activity was particularly abundant in waters within and around the Dover Strait TSS although vessels were recorded along the entirety of the Marine Cable Corridor, and therefore disruption to fishing vessel activity may occur during installation. This includes displacement of activity particularly due to the presence of the slow-moving cable installation vessels. It is noted that small vessel activity, particularly within coastal waters, will be under-represented in the baseline due to AIS carriage requirements which states vessels less than 15 m in length are not obligated to broadcast. Any small vessels engaged in fishing operations in shallow coastal waters near the cable Landfall may also be displaced due to the HDD works.

13.6.2.12 Embedded mitigation such as circulation of information via Kingfisher, as well as the presence of guard vessels, will notify sea users of construction works. Additionally, the appointment of a Fisheries Liaison Officer ('FLO') will aid in ensuring local fishermen are made aware of the cable installation.

13.6.2.13 The frequency of this impact is considered to be reasonably probable and the severity minor, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Disruption to Marine Aggregate Dredging Activities

13.6.2.14 Dredgers may be disrupted during the construction stage of the Proposed Development. There are a number of aggregate dredging areas within proximity to the Marine Cable Corridor although there are none that intersect. No active dredging was recorded within the Marine Cable Corridor on AIS, although the Arco Dee was recorded over the Marine Cable Corridor whilst awaiting entrance to Langstone Harbour.

13.6.2.15 Dredging activity associated with navigational channels on entrance to ports such as Langstone Harbour may also be disrupted due to the necessity of HDD works at the cable Landfall. In addition, any dredgers awaiting entrance to Langstone Harbour, as seen in the baseline assessment, may be displaced during cable installation and HDD works. It is noted there is a spoil ground located approximately 4.3 nmi south of the Marine Cable Corridor where vessels dispose of dredged material. Due to the distance of this site from the construction works, there is not anticipated to be any significant impact on this activity from installation vessels.

13.6.2.16 The possibility for disruption to aggregate dredging activities is, therefore, minimal. Circulation of information will notify dredgers of any construction works within proximity.

13.6.2.17 The frequency of this impact is considered to be extremely unlikely, and the severity minor, resulting in an overall ranking of broadly acceptable (low risk), taking into account all embedded mitigation.

Disruption to Military Exercises

13.6.2.18 Two designated military exercise and firing practice areas intersect the Marine Cable Corridor. These are operated under a clear range procedure, that is, no firing will take place unless the area is considered to be clear of all shipping. Therefore, no firing is expected to be undertaken while there are construction works ongoing within the area.

13.6.2.19 Local operations from military vessels out of Portsmouth have also been considered; however, consultation revealed there is little exercise carried out in proximity to the Marine Cable Corridor due to the large number of vessels and other activities within the area.

13.6.2.20 Assuming embedded mitigation measures are in place (e.g. circulation of information), it is likely the timetable for construction works will be taken into consideration by the MOD.

13.6.2.21 The frequency of this impact is considered to be remote and the severity minor, resulting in an overall ranking of broadly acceptable (low risk), taking into account all embedded mitigation.

Disruption to Recreational Activities

13.6.2.22 Significant recreational activity was identified in the baseline assessment, particularly within the summer season. The highest density of vessels was within coastal waters. The Marine Cable Corridor also intersects a PWC area located 400 m west of the Langstone Harbour approach. In addition to the jet skis and recreational bathers found in this area, there are charter boats operating within the coastal areas due to the high boat availability at nearby ports, in addition to the local angling clubs mentioned above (see Section 13.5.4). Again, it is noted recreational vessels are not obligated to carry AIS and thus will be under-represented.

13.6.2.23 Construction works will disrupt recreational activity (including recreational vessels, recreational diving, angling and charter vessels, jet and water skiing), particularly within inshore waters, and require temporary closures of the PWC area. In addition, the HDD exit/entry point will be located within 2 km of the Landfall and thus the jack up barges and other associated vessels may also disrupt local recreational users in the area.

13.6.2.24 Mitigation measures such as circulation of information and the presence of guard vessels will notify sea users of the works. However, it is noted recreational vessels may be less aware of the construction than larger, commercial vessels. If possible, avoidance of significant sailing races such as Cowes Week and the Round the Island Race may help lessen the disruption of activities (see Appendix 13.1 for future dates of these races).

13.6.2.25 The frequency of this impact is considered to be reasonably probable and the severity minor, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Anchor Dragging onto Exposed Marine Cables

13.6.2.26 There is a risk that an anchored vessel will lose its holding ground and subsequently drag anchor over the marine cables. Significant anchoring activity was recorded at the Saint Helens Road anchorage approximately 2-3 nmi south of the Marine Cable Corridor. The majority of vessels recorded were tankers at less than 15,000 DWT. Two dredgers were recorded at anchor within the Marine Cable Corridor whilst another two were also recorded within very close proximity (between 50 and 200 m). During consultation with Langstone Harbour (meeting on 2 October 2018 at TH), it was estimated that approximately 500-600 dredgers per annum anchor in the vicinity of the Marine Cable Corridor whilst waiting for the tide to enter port. In addition, it was acknowledged that, anchoring from recreational craft is likely to occur near the Langstone Harbour entrance. It is noted that these vessels at anchor within or close to the Marine Cable Corridor will be temporarily displaced during construction works including Landfall works.

13.6.2.27 During construction, there may be a period of time (estimated to be up to two months) after laying when the marine cables are exposed and not protected through burial or other means such as rock placement. This period represents a potentially higher risk of interaction from vessel anchors with the exposed cables.

13.6.2.28 While exposed, any vessel anchor could interact with the cables. If an anchor becomes snagged on a cable, there could be risk of injury in trying to free it. If the anchor cannot be freed, the safest action is to release it, rather than attempt to raise the anchor or cut the cable. Smaller vessels may be at risk of losing stability and capsizing in the worst case.

13.6.2.29 Mitigation includes circulation of information to make mariners aware of the exposed marine cables and use of guard vessels where cable exposures are considered to present significant risk to navigation.

13.6.2.30 The frequency of this impact is considered to be remote due to the potential of the cables being exposed when taking into account all embedded mitigation measures. It is assumed that the dredgers recorded at anchor whilst waiting to enter Langstone Harbour will avoid anchoring directly over the cables, however they may still anchor in close proximity. However, further engagement with relevant dredging companies is required to verify that they will avoid anchoring over the cables. The severity is ranked as serious, taking into account mitigation. This results in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Emergency Anchoring onto Exposed Marine Cables

13.6.2.31 If a passing vessel suffers engine failure, there is a chance it may drop anchor to avoid drifting into an emergency situation such as a collision or grounding. This is more likely to occur in the shallower, coastal waters where there is a higher risk of grounding, or in the vicinity of the TSS where vessels may choose to drift out of the busy shipping lanes before dropping anchor.

13.6.2.32 The intersection of the Marine Cable Corridor with the TSS shipping lanes and separation area poses a high-risk area for emergency anchoring, in addition to the shallow coastal waters, where traffic levels are high (particularly in summer). The separation areas of the TSS can often be utilised by vessels in distress and thus there is a higher risk of emergency anchoring. Machinery failure was a frequent incident recorded on maritime incident data.

13.6.2.33 During the period where the marine cables may be exposed (estimated to be up to two months), any anchor could interact with the cables. If the anchor fouls the cables, there could be a risk of trying to free it. Smaller vessels may be at risk of losing stability and capsizing in the worst case. If the anchor cannot be freed it should be slipped, and no attempt made to raise or cut the cables.

13.6.2.34 Embedded mitigation includes circulation of information to make mariners aware of the exposed marine cables and use of guard vessels where cable exposures are considered to present significant risk to navigation.

13.6.2.35 The frequency of this impact was considered to be remote due to the potential of cable being exposed when taking into account all embedded mitigation measures. The severity is ranked as serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Vessel Foundering onto Exposed Marine Cables

13.6.2.36 Foundering refers to a vessel (passing vessels, recreational vessels, fishing vessels) losing its structural integrity, and subsequently sinking over the marine cables. Areas of higher foundering risk are where traffic levels are high which includes coastal waters where small craft activity is particularly abundant and within the TSS shipping lanes.

13.6.2.37 Historically, fishing vessels have been seen to have the greatest risk of foundering, however other small vessels such as recreational craft are also higher risk, particularly in bad weather. From the baseline assessment, fishing vessels contribute a small proportion of vessel traffic whilst recreational vessels were the most frequently recorded in the summer period. Again, as noted above, these vessels are likely under-represented.

13.6.2.38 Maritime incident data for 2005-2014 showed only a small proportion of incidents recorded in the study area were flooding/foundering. Two flooding incidents were recorded within the Marine Cable Corridor.

13.6.2.39 Should a vessel founder over the marine cables whilst it is left exposed (estimated to be up to two months), the consequence would be potential damage to the marine cables.

13.6.2.40 During the construction stage, mariners may not be as aware of the newly laid cables although this can be mitigated through circulation of information.

13.6.2.41 The frequency of this impact was considered to be remote, and the severity moderate, resulting in an overall raking of tolerable (moderate risk), taking into account all embedded mitigation.

Dropped Object from Vessel onto Exposed Marine Cables

13.6.2.42 Areas where traffic levels are higher, for example the Dover Strait TSS lanes, generally correspond to areas of higher dropped object risk. Passing vessels such as container ships that carry containers on deck pose a higher risk of dropping an object.

13.6.2.43 An incident is most likely to occur in heavy seas due to cargo being shifted. There is also the possibility of smaller objects being dropped, e.g. from a fishing vessel operating in the area, but this is unlikely to threaten the marine cables. The area most likely to be the highest risk from dropped objects is within and around the TSS shipping lanes, utilised by larger container vessels.

13.6.2.44 During the period where the marine cables may be exposed (estimated to be up to two months), any dropped object may impact the marine cables.

13.6.2.45 During the construction stage, mariners may not be as aware of the newly laid marine cables although this can be mitigated through circulation of information. In addition, vessels are to comply with SOLAS requirements for stowage and securing of all cargo or cargo units.

13.6.2.46 The frequency of this impact was considered to be remote, and the severity ranked as moderate, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Fishing Gear Snagging on Exposed Marine Cables

13.6.2.47 Fishing vessels carrying demersal gear that interacts with the seabed when deployed are at risk of snagging on subsea cables. Demersal gear types identified in the baseline assessment include demersal trawlers, beam trawlers, boat dredges and Scottish seines which, together, contributed approximately 62% of the total distribution in the area. The highest risk area of snagging is waters further offshore in the vicinity of the Dover Strait TSS where vessels were engaged in fishing activities, particularly within the separation areas.

13.6.2.48 There is a higher risk of snagging from demersal fishing gear if the marine cables are exposed. Consequences of snagging could range from damage to gear and the cables, loss of stability due to lines being put under strain and in the worst case, capsize of a vessel, men overboard and risk of injury or fatality. For example, a risk of capsize could occur if the vessel attempted to free its gear by raising the cable rather than slipping the gear.

13.6.2.49 It is expected that mitigation including having a FLO in place and circulation of information (via Kingfisher and local communications) will help ensure fishermen are aware of the hazard and avoid fishing over the exposed cable. In addition, guard vessels will be used in any areas where cable exposures are considered to present significant risk to fishing gear snagging.

13.6.2.50 The frequency of this impact is considered to be remote assuming the cables are left exposed for a period of time during construction when taking into account all embedded mitigation. The severity is serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

13.6.3 DECOMMISSIONING

13.6.3.1 It is noted that any decommissioning activities will be determined by the relevant legislation and guidance available at the time of decommissioning. Options for decommissioning at this point in time include consideration of leaving the marine cables in situ, removal of the entire marine cables, or removal of sections of the marine cables.

13.6.3.2 Prior to decommissioning, options will be evaluated, and the final decommissioning plan will be agreed with the relevant authorities. In addition, a separate marine licence application will be prepared. Should all the cabling be required to be removed, the decommissioning works will essentially be similar in nature and result in the same or lesser impacts than those impacts considered above for the construction stage of the Proposed Development.

13.6.3.3 The current best practice is to leave the inert and environmentally benign marine cables in situ to avoid unnecessary disturbance of the seabed. Should the marine cables be left in situ, the future risk to fishing vessels in particular will required to be assessed using updated baseline data.

13.6.4 OPERATION (INCLUDING REPAIR AND MAINTENANCE)

Anchor Dragging

13.6.4.1 There is a risk that an anchored vessel will lose its holding ground and subsequently drag anchor over the marine cables, following installation. Significant anchoring activity was recorded at the Saint Helens Road anchorage approximately 2-3 nmi south of the Marine Cable Corridor. The majority of vessels recorded were tankers at less than 15,000 DWT. Two dredgers were recorded at anchor within the Marine Cable Corridor whilst another two were also recorded within very close proximity. During consultation with Langstone Harbour (meeting on 2 October 2018 at TH) it was estimated that approximately 500-600 dredgers per annum anchor in vicinity of the Marine Cable Corridor whilst waiting for the tide to enter port. In addition, it was noted that anchoring from recreational craft is likely to occur near the Langstone Harbour entrance.

13.6.4.2 It is generally assumed that larger vessels are likely to cause more damage to a buried cable than a smaller vessel as their anchors are able to penetrate deeper. The anchors of small vessels, such as fishing and recreational craft, are unlikely to deeply penetrate the seabed. However, during consultation (see Appendix 13.1) the CA advised that some recreational anchors can penetrate to depths up to one metre, although it is generally considered that penetration depths would be smaller than this, unless anchoring in very soft mud or clay. It was also noted that recreational vessels generally anchor in shallower depths of less than 10 m and should a small vessel anchor interact with the cable, a snagging may occur and threaten the stability of the vessel.

13.6.4.3 Burial depths will be informed by the CBRA; however initial studies indicate a target burial depth between 0.6 m and 5.1 m. Where burial is not possible, other protection methods, for example rock placement, will be added to protect against vessel anchors.

13.6.4.4 Embedded mitigation will include circulation of information including marking the marine cables on nautical charts to alert mariners to the presence of the marine cables. Following installation and charting of the cabling, it is expected that vessels will not plan to anchor in its immediate proximity (compliant with UNCLOS recommendations for protection of subsea cables). Cable protection such as burial will aid against damage from vessel anchors.

13.6.4.5 The frequency of this impact is considered to be extremely unlikely during the operational stage, assuming the cables are marked on navigational charts and suitably protected through burial and/or other protection measures. It is assumed that the dredgers recorded at anchor whilst waiting to enter Langstone Harbour will avoid anchoring directly over the cables and that the cables will be sufficiently buried to protect against the majority of vessel anchors. However, further engagement with relevant dredging operators is required to verify whether they will avoid anchoring over cables. The severity is ranked as serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Emergency Anchoring

13.6.4.6 If a passing vessel suffers engine failure, there is a chance it may drop anchor to avoid drifting into an emergency situation such as a collision or grounding. This is more likely to occur in the shallower, coastal waters where there is a higher risk of grounding, or in the vicinity of the TSS where vessels may choose to drift out of the busy shipping lanes before dropping anchor.

13.6.4.7 The intersection of the Marine Cable Corridor with the TSS shipping lanes and separation area poses a high-risk area for emergency anchoring, in addition to the shallow coastal waters, where traffic levels are high (particularly in summer). The separation areas of the TSS can often be utilised by vessels in distress and thus there is a higher risk of emergency anchoring. Machinery failure was a frequent incident recorded on maritime incident data.

13.6.4.8 As stated above, larger anchors associated with commercial vessels are the biggest threat to the cable as they are capable of penetrating deeper into the seabed and can cause greater damage. The CBRA will identify recommended burial depths to mitigate this risk, however initial target depths are between 0.6 m and 5.1 m.

13.6.4.9 The frequency of this impact is considered to be extremely unlikely during the operational stage, assuming the cables are marked on navigational charts and suitably protected through burial and/or other protection measures. The severity is serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Vessel Foundering

13.6.4.10 Foundering refers to a vessel (passing vessels, recreational vessels, fishing vessels) losing its structural integrity, and subsequently sinking over the marine cabling. Areas of higher foundering risk are where traffic levels are high which includes coastal waters where small craft activity is particularly abundant and within the TSS shipping lanes.

13.6.4.11 Historically, fishing vessels have been seen to have the greatest risk of foundering, however other small vessels such as recreational craft are also higher risk, particularly in bad weather. From the baseline assessment, fishing vessels contribute a small proportion of vessel traffic whilst recreational vessels were the most frequently recorded in the summer period. Again, as noted above, these vessels are likely under-represented.

13.6.4.12 Maritime incident data for 2005-2014 showed only a small proportion of incidents recorded in the study area were flooding/foundering. Two flooding incidents were recorded within the Marine Cable Corridor.

13.6.4.13 Should a vessel founder over the marine cables, the consequence would be potential damage to the cable. Burial of the cable (and/or alternative protections) may provide a degree of protection against damage from smaller vessels.

13.6.4.14 The frequency of this impact is considered to be extremely unlikely, assuming the cables are suitably protected through burial and/or other protection measures and the severity moderate, resulting in an overall ranking of broadly acceptable (low risk), taking into account all embedded mitigation.

Dropped Object from Vessel

13.6.4.15 Areas where traffic levels are higher, for example the Dover Strait TSS lanes, generally correspond to areas of higher dropped object risk. Passing vessels such as container ships that carry containers on deck pose a higher risk of dropping an object.

13.6.4.16 An incident is most likely to occur in heavy seas due to cargo being shifted. There is also the possibility of smaller objects being dropped, e.g. from a fishing vessel operating in the area, but this is unlikely to threaten the marine cables. The area most likely to be the highest risk from dropped objects is within and around the TSS shipping lanes, utilised by larger container vessels.

13.6.4.17 The frequency of this impact is considered to be extremely unlikely, assuming the cables are suitably protected through burial and/or other protection measures and the severity moderate, resulting in an overall ranking of broadly acceptable (low risk), taking into account all embedded mitigation.

Vessel Grounding due to Reduced Under Keel Clearance

13.6.4.18 This impact refers to a vessel grounding due to reduced under keel clearance associated with cable crossing points and protection methods, which could lead to subsequent capsize, injury, loss of life and oil spills. Generally, higher risk areas are coastal waters where water depths are shallower. Approximately 9 km of the Marine Cable Corridor lies in water depths of 10 m or less.

13.6.4.19 In line with MCA guidance, it is not planned to reduce the existing water depth by more than 5% along any section of the Marine Cable Corridor. Recreational and fishing vessels are the most abundant within the shallow waters; however, some larger dredgers were also recorded intersecting the Marine Cable Corridor in this area.

13.6.4.20 The 100 m dredger, Karissa, was recorded within the Marine Cable Corridor with a draught of 4.1 m, approximately 3 nmi from the cable Landfall in water depths between 6 m and 7 m. A maximum draught of 15.5 m was recorded within 5 nmi of the coast by the container vessel Tihama, while transiting into Southampton. A significant reduction in water depth could cause vessels with deeper draughts to ground. Small craft with shallower draughts are considered to be less of a risk; however, it is recommended minimal reduction in shallow water depths is achieved.

13.6.4.21 The frequency of this impact is considered to be extremely unlikely and the severity serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Fishing Gear Snagging

13.6.4.22 Fishing vessels carrying demersal gear that interacts with the seabed when deployed are at risk of snagging on marine cables. Demersal gear types identified in the baseline assessment include demersal trawlers, beam trawlers, boat dredges and Scottish seines which, together, contributed approximately 62% of the total distribution in the area.

13.6.4.23 The highest risk area of snagging is waters further offshore in the vicinity of the Dover Strait TSS where vessels were engaged in fishing activities, particularly within the separation areas. Fishing in the vicinity of the marine cables may be discouraged through embedded mitigation such as having a FLO in place, and the depicting of the location of the marine cables on nautical and Kingfisher charts/notices; however, evidence shows this is not always the case with laid cables as it is often assumed they are adequately protected against over-trawling.

13.6.4.24 The frequency of this impact is considered extremely unlikely assuming the cables are marked on navigational charts and suitably protected via burial (initial target depths between 0.6 m and 5.1 m) or other protection measures, and the severity serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Increased Collision Risk during Repair/Maintenance/Surveys

13.6.4.25 The final Marine Cable Route and cable protection measures (e.g. burial between 0.6 m and 5.1 m) will be designed to minimise the requirement for regular inspection surveys. However, it is anticipated that inspection surveys will be undertaken every 6-12 months for the first 2-5 year, reducing to once every 1-5 years during the remaining life of the Proposed Development (expected lifespan of 40 years).

13.6.4.26 In addition, the Proposed Development has been designed so that routine maintenance is not required during the operational lifetime. However, there may be a requirement to undertake unplanned repair works. An indicative worst-case is anticipated to be one repair every 10-12 years.

13.6.4.27 The requirement of such surveys and maintenance works provides important mitigation against cable interaction; however it will require vessel(s) working over the Marine Cable Route which results in an increased collision risk with all passing traffic.

13.6.4.28 Assuming circulation of any intended works is undertaken in advance, in addition to AIS broadcast, the risk is not considered to be significant. It is considered that maintenance/monitoring work, including cable repairs, is expected to be less disruptive and span a shorter period than for cable installation.

13.6.4.29 The frequency of this impact is considered to be extremely unlikely. The frequency is likely to be lower than during the construction stage due to the short, temporary nature of maintenance works. The severity of this impact is Serious, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

Magnetic Compass Interference

13.6.4.30 The static magnetic fields created by HVDC cables can interact with the earth's natural magnetic field, which can result in interference with magnetic navigational equipment, particularly in shallow waters.

13.6.4.31 It is considered unlikely that any created interference will have a significant impact on commercial vessel navigation as the vast majority of traffic uses Global Positioning System ('GPS') and non-magnetic gyrocompasses as their primary means of navigation. However, magnetic compasses still serve as an essential means of navigation in the event of power loss, and some smaller craft (e.g. fishing and recreational vessels) may rely on it as their sole means of navigation.

13.6.4.32 Approximately 9 km of the marine cables lies within water depths less than 10 m which may result in appreciable interference. Recreational and fishing vessels are the most abundant vessels recorded within this area, particularly during summer.

13.6.4.33 The potential effects of any electro-magnetic fields ('EMF') on navigation will be minimised through cable design and choice of cable protection. It is estimated that a separation distance of 50 m will be achieved between the bundled pairs and compass deviation is anticipated to be less than three degrees.

13.6.4.34 The frequency of this impact is considered to be frequent, and the severity minor, resulting in an overall ranking of tolerable (moderate risk), taking into account all embedded mitigation.

13.6.5 CUMULATIVE EFFECT ASSESSMENT

13.6.5.1 Cumulative impacts on shipping, navigation and other marine users may arise from the interaction of impacts from the Proposed Development during construction, operation or decommissioning, and impacts from other planned or consented projects in the wider vicinity of the Proposed Development.

13.6.5.2 A list of projects within the wider vicinity of the Proposed Development that have the potential to give rise to a cumulative impact have been considered (Appendix 13.2).

13.6.5.3 As detailed in Chapter 28 Cumulative Effects, the CEA has been undertaken with regards to PINS Advice Note 17 (PINS, 2015). The ZoI has been defined as the study area used in the baseline assessment, i.e. 5 nmi buffer of the Marine Cable Corridor. Those projects identified as potentially resulting in cumulative effects have been considered in more detail below, and the resultant impact rankings summarised in Table 13.9.

13.6.5.4 The IFA-2 Interconnector connecting the UK and France (MLA/2016/00209/1) is currently under construction and expected to be fully operational in 2020. Its closest point lies approximately 400 m from the Proposed Development. There is not expected to be any overlap in construction periods as installation of the Proposed Development is not anticipated to start until 2021 when the IFA-2 Interconnector will be operational. However, there may be an increase in collision risk and/or disruption to vessel routeing if maintenance/repair works are required over the IFA-2 cable whilst construction works for the Proposed Development are ongoing. If both operators follow best practice guidelines, the cumulative effects are not anticipated to be significant, due to the temporary nature of the works, and therefore impacts are ranked as tolerable (moderate risk).

13.6.5.5 The RNLI Portsmouth Lifeboat station is undergoing maintenance works over a ten-year period that continues until May 2027 (marine licence reference MLA/2017/00041/1). Due to the close proximity of the station (approximately 980 m to the north of the Landfall), there may be increased disruption to vessel navigation (e.g. vessel routeing) in the area if dredging works or maintenance works requiring vessels were to occur at the same time as the cable installation. In addition, disruption to port arrivals and departures (Langstone Harbour) may also be increased if construction periods overlapped. However, these cumulative impacts are expected to be minimal and thus ranked as tolerable (moderate risk) (i.e. same ranking as identified above in Section 13.6) due to the scale and temporary nature of the works.

13.6.5.6 As above, any dredging works associated with the South Hayling Beach Management Plan (MLA/2017/00104)), may also cause a small cumulative effect if the works overlap the construction of the Proposed Development due to the close proximity of the projects (approximately 660 m). Impacts include increased vessel to vessel collision risk due to the presence of a number of large, slow moving vessels in the area; disruption to vessel routeing within coastal waters in particular, and disruption to small craft activities such as fishing and recreational. The beach works are currently scheduled to end in 2022 and thus cumulative impacts are not significant due to the temporary nature of the works. Therefore, the cumulative impacts with this project are ranked as tolerable (moderate risk) (i.e. same ranking as identified above in Section 13.6).

13.6.5.7 There are multiple dredging projects licensed for various marinas with time periods overlapping the installation of the marine cabling (see Appendix 13.2). Therefore, there may be a slight increase in disruption to vessel activities and/or routeing and a small increase in collision risk if project works were carried out simultaneously. However, due to the small scale and temporary nature of these projects, there is not expected to be any significant cumulative impact. All cumulative impacts arising from these overlapping dredging works are ranked as tolerable (moderate risk).

13.6.5.8 The installation of the French section of the Project will have similar impacts to those identified for the Proposed Development affecting vessels operating in French waters. Whilst a proportion of vessels may operate on both sides of the EEZ boundary line, and hence encounter the Proposed Development in UK and French waters, no significant cumulative impacts are anticipated on the basis that suitable embedded mitigation measures, including use of cable protection, will be applied over the entire length of the marine cables.

13.6.5.9 The Oil and Gas Authority ('OGA') 31st Offshore Licensing Round opened on the 10 July 2018 with applications for licenses being accepted up until the 7 November 2018. The Marine Cable Corridor intersects three blocks. Decisions are expected to be made within the first half of 2019; however, there is insufficient detail at this current stage to allow a meaningful cumulative assessment to be undertaken.

13.6.5.10 In addition to the projects identified in Appendix 13.2, potential development of ABP Southampton, identified in the Ports Master Plan 2016 – 2035, could lead to changes in future traffic to that identified using the 2017/2018 AIS data. For example, increasing storage capacity could lead to an increase in the number of vessels and/or size of vessels visiting the port thus increasing the risk of vessel-vessel collision. However, any changes in shipping are not currently expected to be significant, and there is insufficient detail to allow a meaningful assessment to be undertaken. However, liaison with ABP Southampton and other ports (e.g. Portsmouth) will help manage any potential future cumulative issues.

13.6.6 TRANSBOUNDARY EFFECTS

13.6.6.1 It is not currently considered that there are any significant transboundary effects as a result of the Proposed Development.

13.7 PROPOSED MITIGATION

13.7.1 CONSTRUCTION AND DECOMMISSIONING

13.7.1.1 This section details the embedded mitigation measures that are assumed to be in place prior to the construction and decommissioning stages, as part of the FSA process:

- Circulation of information via NtM, Radio Navigational Warnings, NAVTEX, and/or broadcast warnings in advance of and during the marine works. Information will also be circulated to local ports, harbours and marinas in the area. The notices will include a description of the work being carried out.
- CLVs will display appropriate marks and lights, and broadcast their status on AIS at all times, to indicate the nature of the work in progress, and highlight their restricted manoeuvrability.
- Temporary aids to navigation will be deployed (if required) to guide vessels around any areas of installation, repair/maintenance or decommissioning activity.
- Guard vessel(s) will be employed where appropriate, to work alongside the installation vessel(s) during any work carried out. The guard vessel(s) will alert third party vessels to the presence of the installation or decommissioning activity and provide assistance in the event of an emergency.
- Compliance with COLREGS (IMO, 1972) and the International regulations for the SOLAS.
- A rolling 500 m exclusion zone around DP vessels and up to 700 m around barges that require anchor spreads will be requested during the construction stage and monitored by the guard vessel(s).
- Where cable exposures exist that would result in significant risk to receptors, guard vessels will be used until the risk has been mitigated e.g. burial and/or other protection methods.
- Liaison with local ports and harbours.
- A FLO will be in place.

13.7.1.2 Additional mitigation measures to bring impacts assessed as tolerable to ALARP are presented below:

- Minimising the period of time the marine cables are left exposed, where possible.
- Specific methodology for the cable laying operation within the TSS, and ensuring they are compliant with COLREGS.

- Targeted circulation of information about the Proposed Development to ports and regular commercial operators (e.g. ferries) prior to marine works commencing;
- Circulation of information to Dover CNIS with respect to vessels operating in and around the Dover Strait TSS.
- Circulation of information to relevant local sailing clubs along the south coast of the UK to increase the likelihood that sailors are made aware of the temporary installation work.
- Scheduling of any marine cabling works to avoid significant races (e.g. Cowes Week, Round the Island Race) if possible.

OPERATION (INCLUDING REPAIR/MAINTENANCE)

13.7.1.3 The embedded mitigation measures assumed to be in place during the operation (including repair and maintenance) stage are detailed below:

- The Proposed Development will be clearly marked on nautical charts in line with UKHO standards, with associated note/warning.
- Details of the marine cable locations and associated cable protection will be included in fishermen's awareness charts issued by Kingfisher.
- The marine cables will be suitably protected, e.g., buried where feasible, to help protect against snaggings from fishing gear and risk from vessel anchors. Protection will be informed by a CBRA (the current target burial depth is between 0.6 m and 5.1 m).
- Circulation of information via NtM, Radio Navigational Warnings, NAVTEX, and/or broadcast warnings in advance of and during maintenance works. Information will also be circulated to local ports, harbours and marinas in the area. The notices will include a description of the work being carried out.
- Any cable protection measures used (e.g. rock placement) will not reduce the existing water depths by greater than 5%.
- Compass deviation effects will be minimised through cable design and separation distance.

13.7.1.4 Additional mitigation measures to bring impacts assessed as tolerable to ALARP are presented below:

- Further consultation with the MCA if compass deviations are expected to exceed five degrees in the final cable design. The MCA also require a post-lay survey to prove any deviation.

13.8 RESIDUAL EFFECTS

13.8.1.1 The residual effects are summarised in Tables 13.7, 13.8 and 13.9. These take into account industry-standard embedded mitigation described in Section 13.7 and additional mitigation measures required to reduce the risk to ALARP.

13.8.2 CONSTRUCTION AND DECOMMISSIONING

13.8.2.1 No impacts identified in Section 13.6 during construction and decommissioning were assessed to be unacceptable. Additional mitigation measures to those in Section 13.7 to bring impacts assessed as Tolerable to ALARP includes minimising the duration of any exposed cable during installation and targeted circulation of information to relevant parties.

13.8.3 OPERATION (INCLUDING REPAIR/MAINTENANCE)

13.8.3.1 No impacts identified in Section 13.6 during operation or during any repair and maintenance activities were assessed to be unacceptable. Additional mitigation measures to those in Section 13.7 to bring impacts assessed as Tolerable to ALARP includes further consultation with the MCA if compass deviations are expected to exceed five degrees in the final marine cable design. The MCA also require a post-lay survey to prove any deviation.

Table 13.7 – Summary of effects during construction and decommissioning

Receptor	Impact Description	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
Passing Traffic	Increased collision risk	Remote	Serious	Tolerable	Circulation of information; Suitable marking and lighting of construction vessels; Use of Guard vessels; Temporary rolling exclusion zone around construction vessels.	Targeted circulation of information to regular ferry operators and / or local ports, harbours and sailing clubs.	Tolerable (ALARP)
	Disruption to vessel routeing/timetables	Reasonably Probable	Minor	Tolerable	Circulation of information; Liaison with local ports/harbours.	Targeted circulation of information to regular commercial ferry operators.	Tolerable (ALARP)
	Disruption to port arrivals/departures	Reasonably Probable	Minor	Tolerable	Circulation of information; Liaison with local ports/harbours.	Not Applicable	Not Applicable
	Vessel anchoring in an emergency onto exposed cable	Remote	Serious	Tolerable	Circulation of information; Guard vessels for exposed cable.	Minimising duration cable is exposed.	Tolerable

Receptor	Impact Description	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
	Vessel foundering over exposed cable	Remote	Moderate	Tolerable	Circulation of information.	Minimising duration cable is exposed.	Tolerable (ALARP)
	Vessel dropping object onto exposed cable	Remote	Moderate	Tolerable	Circulation of information.	Minimising duration cable is exposed.	Tolerable (ALARP)
Fishing Vessels	Disruption to fishing activities	Reasonable Probable	Minor	Tolerable	Circulation of information including through Kingfisher bulletins; Guard vessels; Appointment of FLO.	Not Applicable	Not Applicable
	Fishing gear snagging on exposed cable	Remote	Serious	Tolerable	Appointment of FLO during construction; Circulation of information; Guard vessels for exposed cable.	Minimising duration cable is exposed.	Tolerable (ALARP)
Dredgers	Disruption to aggregate dredging activities	Extremely Unlikely	Minor	Broadly Acceptable	Circulation of information.	Not Applicable	Not Applicable

Receptor	Impact Description	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
Military Vessels	Disruption to military exercises	Remote	Minor	Broadly Acceptable	Circulation of information; Liaison with QHM Portsmouth.	Not Applicable	Not Applicable
Recreational Vessels	Disruption to recreational activities	Reasonably Probable	Minor	Tolerable	Liaison with local harbours and marinas; Circulation of information.	Targeted circulation of information to local clubs; Cable installation schedule to avoid significant races if possible.	Tolerable (ALARP)
Anchoring Vessels	Vessel dragging anchor onto exposed cable	Remote	Serious	Tolerable	Circulation of information; Guard vessels for exposed cable.	Minimising duration cable is exposed.	Tolerable (ALARP)

Table 13.8 – Summary table of effects during operation

Receptor	Impact Description	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
Passing Traffic	Vessel anchoring over cable in an emergency	Extremely Unlikely	Serious	Tolerable	Use of cable protection measures; Updating relevant Chart with project infrastructure.	Not Applicable	Not Applicable
	Vessel foundering onto cable	Extremely Unlikely	Moderate	Broadly Acceptable	Use of cable protection measures.	Not Applicable	Not Applicable
	Vessel dropping object onto cable	Extremely Unlikely	Moderate	Broadly Acceptable	Use of cable protection measures.	Not Applicable	Not Applicable
	Vessel grounding due to reduced under keel clearance	Extremely Unlikely	Serious	Tolerable	Updating relevant chart with project infrastructure. Less than 5% reduction in water depth.	Not Applicable	Not Applicable
	Increased collision risk	Extremely Unlikely	Serious	Tolerable	Circulation of information	Targeted circulation of information to regular ferry operators and local clubs.	Tolerable (ALARP)

Receptor	Impact Description	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
	Interference with magnetic compass	Frequent	Minor	Tolerable	Minimising cable separation; Use of cable protection; Post-lay test of deviation.	Further consultation with MCA, post-lay survey.	Tolerable (ALARP)
Fishing Vessels	Fishing gear snagging on the cable	Extremely Unlikely	Serious	Tolerable	Updating relevant chart with project infrastructure. Use of cable protection measures; Appointment of FLO.	Not Applicable	Not Applicable
Anchoring Vessels	Vessel dragging anchor over cable	Extremely Unlikely	Serious	Tolerable	Use of cable protection measures; Updating relevant chart with project infrastructure.	Not Applicable	Not Applicable

Table 13.9 – Summary of cumulative effects

Impact Description	Receptor	Cumulative projects	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
Construction and decommissioning								
Increased vessel collision	Passing Traffic	IFA-2 Interconnector South Hayling Beach Management Plan Dredge and disposal activities	Extremely Unlikely	Serious	Tolerable	Circulation of information; Suitable marking and lighting of construction vessels; Use of Guard vessels; Temporary rolling exclusion zone around construction vessels.	Liaison with IFA-2	Tolerable (ALARP)
Disruption to vessel routeing/timetables	Passing Traffic	IFA-2 Interconnector RNLI Portsmouth Lifeboat station repairs	Reasonably Probable	Minor	Tolerable	Circulation of information; Liaison with ports/harbour.	n/a	Tolerable (ALARP)

Impact Description	Receptor	Cumulative projects	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
Disruption to port arrivals/departures	Passing Traffic	RNLI Portsmouth Lifeboat station repairs,	Reasonably Probable	Minor	Tolerable	Circulation of information; Liaison with ports/harbour.	n/a	Tolerable (ALARP)
Disruption to vessel activities	Recreational and Fishing Vessels	IFA-2 Interconnector South Hayling Beach Management Plan Dredging and disposal activities	Reasonably Probable	Minor	Tolerable	Circulation of information.	Targeted circulation of information to local yacht clubs	Tolerable (ALARP)
Operation (including repair and maintenance)								
Increased Collision Risk	Passing Traffic	IFA-2 Interconnector	Extremely Unlikely	Serious	Tolerable	Circulation of information; Suitable marking and lighting of construction vessels;	Liaison with IFA-2	Tolerable (ALARP)

Impact Description	Receptor	Cumulative projects	Frequency	Severity	Significance	Embedded Mitigation	Additional Mitigation	Residual Effects
						Use of Guard vessels; Temporary rolling exclusion zone around construction vessels.		

13.9 SUMMARY AND CONCLUSION

BASELINE

13.9.1.1 This chapter has used baseline shipping, navigation and marine user conditions to identify the significant effects that may arise as a result of the Proposed Development. This was based on the IMO Formal Safety Assessment Process (IMO, 2002).

13.9.1.2 The baseline summary comprised a review of relevant navigational features, and an analysis of passing shipping, fishing and anchoring based on real time AIS data. The fishing analysis also used longer term data. In addition, ten years of maritime incident data recorded by the RNLI and MAIB for the study area was also included. An NRA has been undertaken and is presented in Appendix 13.1.

13.9.1.3 Consultation was also undertaken with various stakeholders to further inform the baseline environment. This provided key information that was utilised in the assessment process.

ASSESSMENT

13.9.1.4 This chapter evaluated the significance of each impact identified during the construction, operation (including repair and maintenance), and decommissioning stages of the Proposed Development using the IMO FSA process. The assessment considered embedded mitigation (Section 13.7) when assigning significance.

13.9.1.5 Of the impacts considered in the construction (and decommissioning) stage, ten were considered to be tolerable (moderate risk) with embedded mitigation:

- Vessel-vessel collision risk;
- Disruption to vessel routeing/timetables;
- Disruption to port arrivals/departures;
- Disruption to fishing activities;
- Disruption to recreational activities;
- Anchor dragging onto exposed cables;
- Emergency anchoring onto exposed cables;
- Vessel foundering onto exposed cables;
- Dropped object onto exposed cables; and
- Fishing gear snagging onto exposed cables.

13.9.1.6 The remaining two potential impacts (disruption to marine aggregate dredging activities and disruption to military exercises) were considered to be broadly acceptable (low risk).

13.9.1.7 Within the operational (including repair/maintenance) stage, six impacts were considered as tolerable (moderate risk):

- Anchor dragging;
- Emergency anchoring;

- Grounding due to reduced under keel clearance;
- Vessel-vessel collision risk;
- Fishing gear snagging; and
- Magnetic compass deviation.

13.9.1.8 The remaining two potential impacts (vessel foundering, dropped objects) were evaluated as broadly acceptable (low risk).

13.9.1.9 For projects identified for CEA in Appendix 13.2, all impacts were assessed as tolerable (ALARP) with embedded mitigation and some additional mitigation.

13.9.1.10 No potential transboundary effects have been identified to date.

MITIGATION

13.9.1.11 Additional mitigation measures identified include;

- minimising the length of time any section of cable is left exposed;
- targeted circulation of information to ferry operators and local sailing clubs;
- avoidance of key sailing races; and
- further communication with the MCA regarding potential magnetic compass deviations, including test results proving the extent of deviation following the cable-laying operation.

RESIDUAL EFFECTS

13.9.1.12 No impacts identified in Section 13.6 during construction and decommissioning were assessed to be unacceptable. Additional mitigation measures to those in Section 13.7 to bring impacts assessed as Tolerable to ALARP includes minimising the duration of any exposed cable during installation and targeted circulation of information to relevant parties.

13.9.1.13 No impacts identified in Section 13.6 during operation or during any repair and maintenance activities were assessed to be unacceptable. Additional mitigation measures to those in Section 13.7 to bring impacts assessed as Tolerable to ALARP includes further consultation with the MCA if compass deviations are expected to exceed five degrees in the final marine cable design. The MCA also require a post-lay survey to prove any deviation.

CONCLUSION

13.9.1.14 This chapter provides the PEIR of shipping, navigation and other marine users for the Proposed Development (as described in Chapter 3 Description of the Proposed Development and accounting for activities excluded from assessment in Section 13.4.3) based upon the data available at the time of production. No impacts have been determined to be unacceptable when embedded and additional mitigation measures are considered.

13.10 ASSESSMENTS AND SURVEYS STILL TO BE UNDERTAKEN

13.10.1.1 The shipping, navigation and other marine users impact assessment will be updated following responses from the PEIR and further consultation that will be undertaken as part of the DCO application process.

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