2.7

Rampion 2 WIND FARM

Volume 2, Chapter 7:

Other marine users

GoBe wood.

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7. Other marine users

7.1 Introduction

7.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents the preliminary results of the assessment of the likely significant effects of Rampion 2 with respect to other marine users (OMU) during the construction, operation and maintenance (operation and maintenance) and decommissioning phases of the Proposed Development. It should be read in conjunction with the project description provided in **Chapter 4: The Proposed Development** and the relevant parts of the following chapters:

- **Chapter 6: Coastal processes** (changes to coastal processes have the potential to directly and/or indirectly impact OMU receptors and therefore the information from this assessment will be used to inform this OMU assessment);
- **Chapter 8: Fish and shellfish ecology** (this aspect has direct links with recreational fishing as it includes the likely species that are caught during recreational angling. They should therefore be informed and assessed together);
- **Chapter 10: Commercial fisheries** (this aspect has direct links with OMU receptors as it includes commercial fishing activities where recreational fishing is covered within this section. They should therefore be informed and assessed together);
- **Chapter 13: Shipping and navigation** (the shipping and navigation aspect will include activities that cross over with the OMU assessment and therefore should be considered together);
- **Chapter 15: Civil and military aviation** (this aspect includes other military activities that are not covered within this OMU assessment and therefore should be read in union);
- **Chapter 17: Marine archaeology** (the marine archaeology assessment includes any impacts on diving sites and wrecks and therefore has the potential to directly and/or indirectly impact OMU receptors, the information from this assessment is therefore used to inform the OMU assessment); and
- **Chapter 18: Socio-economics** (this includes an assessment of the impacts of seaside tourism and therefore has ties with this OMU assessment).

7.1.2 This chapter describes:

- the legislation, planning policy and other documentation that has informed the assessment (**Section 7.2: Relevant legislation, planning policy, and other documentation**);
- the outcome of consultation engagement that has been undertaken to date, including how matters relating to OMU within the Scoping Opinion received in August 2020 have been addressed (**Section 7.3: Consultation and engagement**);

- the scope of the assessment for OMU (**Section 7.4: Scope of the assessment**);
- the methods used for the baseline data gathering (**Section 7.5: Methodology for baseline data gathering**);
- the overall baseline (**Section 7.6: Baseline conditions**);
- embedded environmental measures relevant to OMU and the relevant maximum design scenario (**Section 7.7: Basis for PEIR assessment**);
- the assessment methods used for the PEIR (**Section 7.8: Methodology for PEIR assessment**);
- the assessment of OMU effects (**Section 7.9** to **7.11: Preliminary assessment** and **Section 7.12: Preliminary assessment: Cumulative effects approach**);
- consideration of transboundary effects (**Section 7.13: Transboundary effects**);
- consideration of Inter-related effects (**Section7.14: Inter-related effects**);
- a summary of residual effects for OMU (**Section 7.15: Summary of residual effects**);
- an outline of further work to be undertaken for the Environmental Statement (ES) **(Section 7.16: Further work to be undertaken for ES**);
- a glossary of terms and abbreviations is provided in **Section 7.17: Glossary of terms**; and
- a references list is provided in **Section 7.18: References**.

7.2 Relevant legislation, policy and other information and guidance

Introduction

7.2.1 This section identifies the legislation, policy and other documentation that has informed the assessment of effects with respect to OMU. Further information on policies relevant to the EIA and their status is provided in **Chapter 2: Policy and legislative context** of this PEIR.

Legislation and national planning policy

7.2.2 This section identifies the legislation and national planning policy of relevance to OMU. The Planning Act 2008, the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 and the Environment Act (1995) are considered along with the legislation of specific relevance to OMU as identified within **Table 7-1**.

Table 7-1 Legislation relevant to OMU

Legislation description	Relevance to assessment
United Nations Convention on the Law of the Sea (UNCLOS) – Article 79: Submarine cables and pipelines on the continental shelf	This article protects submarine cables and pipelines and requires Rampion Extension Development Limited (RED) to have due regard for any existing cables or pipelines in position and not prejudice the possibilities of repair. Cables have been considered throughout the preliminary assessment in **Sections 7.9, 7.10** and **7.11**.
UNCLOS – Article 113: high sea areas	This article states that if an existing submarine or power cable is broken or injured, this will be a punishable offence. If a cable or pipeline is broken during the laying or repairing of another cable, RED will be subject to pay the repair costs. Cables have been considered throughout the preliminary assessment in **Sections 7.9, 7.10** and **7.11**.
The Submarine Telegraph Act (1885)	This act protects submarine telegraph cables. Rampion 2 has the potential to affect submarine cables and therefore the protection of these cables has been considered within the scope of this assessment and the environmental measures embedded within the design and detailed within **Sections 7.9, 7.10** and **7.11**.
Energy Act (2004)	This act sets out the basic requirements for applying a safety zone to be placed around or adjacent to an Offshore Renewable Energy Installations (OREIs). Safety zones are included in the environmental measures in **Table 7-12.**
The Electricity (Offshore Generating Stations) (Safety Zones) (Applications Procedures and Control of Access) Regulations 2007	Applications for safety zones must be made to the relevant regulatory authority. In this case, it will be the DECC, however, where the Marine Management Organisation (MMO) has granted a Section 36 consent (under the Electricity Act 1989) for projects in the sea off England and Wales, the MMO will be the relevant regulatory authority. Safety zones are included in the environmental measures in **Table 7-12.**

7.2.3 **Table 7-2** lists the national planning policy relevant to the assessment of the effects on OMU receptors.

Table 7-2 National planning policy relevant to OMU

Policy description	Relevance to assessment
Overarching National Policy Statement (NPS) for Energy (EN-1) (DECC, 2011a)	Sets out the Governments policy for major energy infrastructure. The impact of marine developments on military activities due to the presence of danger and exercise areas located across the UK Continental Shelf (UKCS) are considered within **Sections 7.9, 7.10** and **7.11** of this preliminary assessment.
NPS for Renewable Energy (EN-3) (DECC, 2011b)	Sets out guidance and requirements for nationally significant energy infrastructure projects. As Rampion 2 is an offshore wind project of more than 100MW, the Proposed Development falls under this NPS.
EN-3, paragraph 2.6.35: There may be constraints imposed on the siting or design of offshore wind farms because of restrictions resulting from the presence of other offshore infrastructure or activities.	Site selection is addressed in **Volume 2, Chapter 3: Alternatives**
EN-3, paragraph 2.6.179: Where a potential offshore wind farm is proposed close to existing operational offshore infrastructure, or has the potential to affect activities for which a licence has been issued by Government, the applicant should undertake an assessment of the potential effect of the proposed development on such existing or permitted infrastructure or activities. The assessment should be undertaken for all stages of the lifespan of the proposed wind farm in accordance with the appropriate policy for offshore wind farm EIAs.	Consideration of other plans, projects and activities throughout the lifetime of this Proposed Development is made throughout this chapter. Existing offshore infrastructure is considered within **Sections 7.9, 7.10** and **7.11** of this preliminary assessment.
EN-3, paragraph 2.6.180: Applicants should engage with interested parties in the potentially affected offshore sectors early in the development phase of the proposed offshore wind farm, with an aim to resolve as many	RED have undertaken a thorough pre-application consultation process of which has been used to inform the EIA. **Section 7.3** provides details of the relevant OMU consultation.

Policy description	Relevance to assessment
issues as possible prior to the submission of an application to the IPC.	
EN-3, paragraph 2.6.184: As such, the IPC should be satisfied that the site selection and site design of the proposed offshore wind farm has been made with a view to avoiding or minimising disruption or economic loss or any adverse effect on safety to other offshore industries. The IPC should not consent applications which pose unacceptable risks to safety after mitigation measures have been considered.	Site selection is addressed in **Volume 2, Chapter 3** and **Chapter 18: Socio-economics.** The PEIR Assessment Boundary has been refined since scoping in order to minimise, as far as practicable, disruption to existing infrastructure and other users. This preliminary assessment (**Sections 7.9, 7.10** and **7.11**) identifies where likely significant effects have been determined and where mitigation is proposed and/or consultation with third-parties in order to seek appropriate controls in order to reduce risks to As Low As Reasonable Possible (ALARP).
EN-3, paragraph 2.6.187: Detailed discussions between the applicant for the offshore wind farm and the relevant consultees should have progressed as far as reasonably possible prior to the submission of an application to the IPC. As such, appropriate mitigation should be included in any application to the IPC, and ideally agreed between relevant parties.	RED have undertaken consultation with a number of stakeholders which is detailed in **Section 7.3**. Where there is potential for significant effects on OMUs, following PEIR consultation, RED will continue to consult with the relevant parties to (as noted above) seek appropriate controls in order to reduce risks to ALARP prior to submission of the DCO Application.
UK Marine Policy Statement (MPS)	The MPS is the framework for preparing Marine Plans and taking decisions affecting the marine environment. It contributes to the achievement of sustainable development in the United Kingdom marine area. It was prepared and adopted for the purposes of section 44 of the Marine and Coastal Access Act 2009.

Policy description	Relevance to assessment
UK MPS, Section 3.2.9: The construction and operation of offshore marine infrastructure, installations and activities, as well as policies on conservation designations and the health of the wider environment may impact on defence interests in certain areas. Marine plan authorities and decision makers should take full account of the individual and cumulative effects of marine infrastructure on both marine and land based MoD interests. Marine plan authorities, decision makers and developers should consult the MoD in all circumstances to verify whether defence interests will be affected.	Ministry of Defence (MoD) activities (including danger areas) are identified in this baseline section of this chapter (**Section 7.6**). This preliminary assessment (**Sections 7.9, 7.10** and **7.11**) identifies where likely significant effects have been determined and where mitigation is proposed and/or consultation with MoD will be undertaken to (as noted above) seek appropriate controls in order to reduce risks to ALARP. Further information is provided in **Chapter 13: Shipping and navigation** and **Chapter 15: Civil and military aviation.**

Local planning policy

7.2.4 **Table 7-3** lists the local planning policy relevant to the assessment of the effects on OMU receptors.

Table 7-3 Local planning policy relevant to OMU

Policy description	Relevance to assessment
South Marine Plan (SMP) Policies 2018 (Defra, 2018) **The SMP contains 12 objectives derived through 53 policies. Some policies apply across the whole of the plan areas and others apply to defined areas. The policies listed below are relevant to Rampion 2 and fall under Objective 1: Co-existence.**	
S-AGG-1 Proposals in areas where a licence for extraction of aggregates has been granted or formally applied for should not be authorised, unless it is demonstrated that the other development or activity is compatible with aggregate extraction.	The Rampion 2 export cable corridor and array area borders some marine aggregate sites. These have been considered within the preliminary assessment (**Sections 7.9, 7.10** and **7.11**) against impacts throughout the lifetime of the Proposed Development.
S-AGG-3 Proposals in areas where high potential aggregate resource occurs should demonstrate that they will, in order of preference: a) avoid b) minimise;	

Policy description	Relevance to assessment
c) mitigate significant adverse impacts on aggregate extraction. d) if it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.	
S-DD-1 Proposals within or adjacent to licensed dredging and disposal areas should demonstrate that they will, in order of preference; a) avoid b) minimise c) mitigate significant adverse impacts on licensed dredging and disposal areas d) if it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding	The PEIR Assessment Boundary overlaps with three of dredge and disposal sites. These are detailed within the baseline (**Section 7.6**) and have been considered throughout the preliminary assessment against impacts throughout the lifetime of the Proposed Development.
S-DEF-1 Proposals in or affecting Ministry of Defence Areas should only be authorised with agreement from the Ministry of Defence.	The PEIR Assessment Boundary has a small overlap with a MoD Danger area (as outlined in **Section 7.6**). They will be consulted with and will continue to be involved with this Application.

Other relevant information and guidance

7.2.5 A summary of other relevant information and guidance relevant to the assessment undertaken for OMU is provided here.

- 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). This guidance is mainly for renewable energy installations and includes guidance on marine cable protection and burial within UK waters. Should water depths be reduced by more than 5% (due to cable protection) of Chart Datum then further consultation would be required.
- International Association of Marine Aids to Navigation (AtoN) and Lighthouse Authorities (IALA), Recommendation O-139 on the marking of man-made offshore structures, Edition 2 (IALA, 2013). These recommendations apply to all offshore structures and/or platforms and make specific reference to Offshore Wind Farms (offshore wind farms) and are required for safe navigation, protection of the environment and protection of the structures themselves.

7.3 Consultation and engagement

Overview

7.3.1 This section describes the outcome of, and response to, the Scoping Opinion in relation to OMU assessment and also provides details of the ongoing informal consultation that has been undertaken with stakeholders and individuals. An overview of engagement undertaken can be found in **Section 1.5** of **Chapter 1: Introduction**.

7.3.2 Given the restrictions which have been in place due to the COVID-19 pandemic during this period, all consultation has taken the form of conference calls using online video conferencing software and emails.

Early engagement

7.3.3 Early engagement was undertaken with a number of prescribed and non-prescribed consultation bodies and local authorities in relation to OMU. This engagement was undertaken to introduce the Proposed Development and the proposed approach to scoping the EIA.

7.3.4 There are a number of chapters which have had early engagement with stakeholders that are relevant to the OMU receptors. These are: **Chapter 10: Commercial fisheries**, **Chapter 13: Shipping and navigation** and **Chapter 18: Socio-economics**.

7.3.5 There were a number of sea users organisations that were invited to Project Liaison Groups (PLG), however not all responded. Those who responded were:

- Arun Youth Aqua Centre;
- Bognor Regis Sailing Club;
- Littlehampton Harbour Board;
- Littlehampton Yacht Club;
- Newhaven Deep Sea Anglers;
- RNLI – Littlehampton; and
- Shoreham Port.

Scoping opinion

7.3.6 RED submitted a Scoping Report (RED, 2020) and request for a Scoping Opinion to the Secretary of State (administered by the Planning Inspectorate (PINS)) on 2 July 2020. A Scoping Opinion was received on 11 August 2020. The Scoping Report sets out the proposed OMU assessment methodologies, outline of the baseline data collected to date and proposed, and the scope of the assessment. **Table 7-4** sets out the comments received in Section 4 of the PINS Scoping Opinion 'Aspect based scoping tables – Offshore' and how these have been addressed in this PEIR. A full list of the PINS Scoping Opinion comments and responses is provided in **Volume 4, Appendix 5.1: Response to the Scoping**

Opinion. Regard has also been given to other stakeholder comments that were received in relation to the Scoping Report.

7.3.7 The information provided in the PEIR is preliminary and therefore not all the Scoping Opinion comments have been able to be addressed at this stage, however all comments will be addressed within the ES.

Table 7-4 PINS Scoping Opinion responses – OMU

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
4.2.1	The Scoping Report demonstrates no spatial overlap between the study area and existing oil and gas infrastructure. The Inspectorate is content for these receptors to be scoped out of the assessment.	This has been noted by RED and on this basis effects on oil and gas infrastructure have been scoped out from this assessment.
4.2.2	The Scoping Report demonstrates no spatial overlap between the study area and munitions disposal areas or MoD practice or exercise areas (PEXAs). The Inspectorate is content for these receptors to be scoped out of the assessment (with the exception of MoD Danger Area D037, see the following paragraph). The Inspectorate notes the comments of the MoD around the potential overlap between the Proposed Development and Danger Area boundary for D037 which could impact on Military training and the Navy's freedom to exercise within the Area. This matter should be considered as part of the ES where significant effects are likely to occur.	This has been included within the PEIR baseline (**Section 7.6**) and assessed in **Section 7.10** onwards. It is important also to note that ongoing consultation will be required (and is planned) with the MoD in order to address this impact (as per **Table 7-21**)
4.2.3	The Scoping Report demonstrates no spatial overlap between the study area and other offshore energy infrastructure. The Inspectorate is content for these receptors to be scoped out of the assessment.	This has been noted by RED and on this basis effects on other offshore energy infrastructure have been scoped out from this assessment.
4.2.4	The Scoping Report seeks to scope out recreational fishing and seaweed farming from the assessments of temporary increases in suspended sediments and deposition, and alteration in wave energy direction. The Scoping Report provides no information regarding the local seaweed farming industry, and no justification for scoping out effects on recreational fishing. The Inspectorate does not agree to scope this aspect out of the ES based on current information.	Local seaweed farming and recreational fishing information has been included within the P**EIR** baseline presented in **Section 7.6,** with relevant receptors taken through to assessment (**Section 7.10** onwards).

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
4.2.5	No justification is given to scope out *[effects from the temporary increase in suspended sediments and deposition on recreational boating and sailing]*, however the Inspectorate considers that given their nature significant effects are unlikely to occur to these receptors and they can be scoped out of the assessment. The ES should set out any measures intended to control impacts of this sort through provisions in the relevant embedded measures through DCO requirements and other relevant commitments.	This has been noted by RED and on this basis effects from the temporary increase in suspended sediments and deposition on recreational boating have been scoped out from this assessment. The proposed methods for construction and installation of infrastructure are considered throughout the PEIR where relevant and appropriate embedded environmental measures are detailed to address significant effects, where relevant.
4.2.6	No justification is given to scope out *[increased subsea noise impacts on: Aggregate extraction, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing],* however the Inspectorate agrees that significant effects are unlikely to occur due to the nature of the receptors and agrees they can be scoped out of the assessment.	This has been noted by RED and on this basis the impact of increased subsea noise on aggregates, disposal sites, offshore wind, subsea cables and pipelines and recreational boating and sailing have been scoped out from this assessment.
4.2.7	No justification is given to scope out *[effects from alteration in wave energy direction and period on: Aggregate extraction, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, (i.e. all receptors except diving and watersports])*. The Inspectorate considers that insufficient justification has been provided to scope out the effects on recreational boating and sailing. However, for receptors others than recreational boating and sailing, the Inspectorate agrees that significant effects are unlikely to occur due to the	This has been noted by RED and on this basis the effects from the alteration in wave energy direction and period on aggregates, disposal sites, offshore wind, subsea cables and pipelines and recreational sailing have been scoped out from this assessment. Effects

PINS ID number	Scoping Opinion comment	How this is addressed in this PEIR
	nature and sensitivity of the receptors and they can be scoped out of the assessment.	from alteration in wave energy direction and period on diving and water sports are considered further in **Section 7.10**.
4.2.8	The Scoping Report makes no mention of the aquaculture industry as a potential receptor. This is not addressed in Chapter 5.6 for Commercial Fisheries either. The ES should assess the impacts from the Proposed Development to the aquaculture sector where significant effects are likely to occur.	Aquaculture has been included within this assessment's current and future baseline (**Section 7.6**), however there is currently no overlap with any proposed aquaculture and therefore no further consideration for assessment has been presented in this PEIR (as per **Table 7-7**).

Informal consultation and engagement

Overview

7.3.8 Informal consultation has been ongoing with several stakeholders in relation to potential impacts on aggregate sites. Several Public interest groups have been set up to update working groups, of which relevant to other marine users is the business, tourism and environment, and other sea users groups. A summary of this informal consultation between the completion of the Scoping Report (RED, 2020) up until and including March 2021 is outlined in this section, which to date has focused on engagement with the marine aggregate companies. Informal consultation is ongoing at the time of PEIR preparation and will be further updated between the PEIR assessment and the DCO Application submission.

7.3.9 Note that, with respect to marine aggregate dredging, there is cross over between this chapter and **Chapter 13: Shipping and navigation**. Issues relating to navigational safety are covered in **Chapter 13**, with this chapter presenting assessment of impacts relating to aggregate dredging activities.

Hanson Aggregates Marine Ltd

7.3.10 Engagement with Hanson Aggregates Marine Ltd (HAML) has been ongoing since pre-scoping regarding data sharing. Since the Scoping Report (RED, 2020) engagement with HAML has been ongoing. A Hazard Workshop (23 February 2021) was attended by a range of shipping and navigation stakeholders, including

the marine aggregate dredging companies. Key points raised during the workshop relating to OMU are set out below.

7.3.11 HAML raised concern at the minimum distance (0.85km) between the offshore wind farm extension boundary and the HAML dredging area 435. This is considered to present a potential risk for the operation of its vessels; HAML noted that the acceptable distance for a contingency response in deploying an anchor is 1nm (1.852km). HAML also noted concerns over the proximity of the offshore wind farm extension to their competitors' licences, should they ever be used by a third party.

7.3.12 HAML also highlighted that they should be made aware of potential conflicts that may arise during the construction phase and they requested further information of the proposed activities and restrictions which may be imposed during the construction period.

7.3.13 RED acknowledged that the separation distance between Area 435 and the PEIR Assessment Boundary (0.85km), in addition to Licence area 396/1 (at 0.06km), is less than the requested 1nm buffer. RED have a Memorandum of Understanding (MOU) in place with HAML and will continue to consult with HAML which will allow mitigation to be agreed through commercial agreement prior to consent that will address safety concerns.

Tarmac Marine Ltd

7.3.14 Engagement with Tarmac Marine Ltd (Tarmac) has been ongoing since February 2021 in the form of the hazard workshop and emails. The main points raised relating to aggregate dredging activities are presented below.

7.3.15 Tarmac raised concerns over the need for sufficient clearance between the southern limit of aggregate extraction area 396 and the nearest Wind Turbine Generator(s) (WTG), in case of a loss of propulsion during future dredging operations in the south of the licence area. Tarmac noted that they conducted a trial with one of their dredgers "City of Westminster" where engineers were disengaged (as if there was a power failure) and the dredger drifted 900m before being brought up by the anchor. On the basis of this exercise, a clearance distance of at least 1,000m between their aggregates licence boundary and the WTG foundation is proposed (with consideration given to the tidal streams).

7.3.16 Tarmac also raised that the Offshore Substation (OSS) would need to be sited away from licence area (396) rather than on the edge of the PEIR Assessment Boundary (to the South East of area 396) as the worst-case location presented in the Hazard Workshop. The stakeholder advised further consultation.

7.3.17 RED acknowledged that the separation distance between Area 396 and the PEIR Assessment Boundary (0.14km) is less than the requested 1km buffer. RED have a MOU in place with Tarmac and will continue to consult with Tarmac which will allow mitigation to be agreed through commercial agreement prior to consent that will address safety concerns. Aquind Limited

7.3.18 RED have had limited contact with Aquind Limited. RED have attempted to engage with Aquind Limited and set up direct meetings, however despite multiple

attempts, Aquind have not been receptive and engaged with the Proposed Development.

7.4 Scope of the assessment

Overview

7.4.1 This section sets out the scope of the PEIR assessment for OMU. This scope has been developed as the Rampion 2 design has evolved and in response to feedback received to date as set out in **Section 7.3**. As outlined in PINS Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Version 7, PINS, 2020), information presented in the PEIR is preliminary, therefore this scope will be reviewed and may be refined as Rampion 2 continues to evolve and as a result of ongoing consultation.

Spatial scope and study area

7.4.2 The spatial scope of the OMU assessment is defined as the immediate area of the PEIR Assessment Boundary, together with the relevant impact-specific Zones of Influence (ZOIs), such as the largest distance at which increased sediment deposition is likely to occur, as defined by **Chapter 6: Coastal processes**. The ZOI buffer therefore encompasses the area over which suspended sediments may travel following disturbance as a result of Rampion 2 activities, extending 15km around the array component of the PEIR Assessment Boundary, and a distance of 10km surrounding the offshore export cable corridor.

7.4.3 For the purpose of the PEIR assessment, a wider study area across the eastern English Channel has also been assumed, to assess broader area effects on receptors such as sailing and cruising routes and dive sites. The dynamic study area is presented in **Figure 7.1, Volume 3** and considers marine, coastal and estuarine waters. The study area varies in scale depending on the particular receptor. For example, as the position of existing offshore cables and pipelines are well known, the infrastructure and other users study area can be reduced to those exact locations. For each receptor described in this chapter, the spatial variability has been considered and an appropriate baseline description of that receptor's study area is provided.

7.4.4 The exact export cable route is yet to be determined. However, the PEIR Assessment Boundary includes an export cable corridor within which the export cables will be routed to link the offshore array with the onshore cables at the landfall location at Climping.

Temporal scope

7.4.5 The temporal scope of the assessment of OMU is the entire lifetime of Rampion 2, which therefore covers the construction, operation and decommissioning periods.

Potential receptors

7.4.6 The spatial and temporal scope of the assessment enables the identification of receptors which may experience a change as a result of Rampion 2. The receptors identified that may experience likely significant effects for OMU are outlined in **Table 7-5**.

Table 7-5 Receptors requiring assessment for OMU

Receptor group	Receptors included within group
Marine aggregates	Marine aggregate licensed areas.
Disposal sites	Dredging disposal areas.
Oil and gas	Exploration and production of hydrocarbon licensed areas, oil and gas licensed blocks and subsurface anchors.
Offshore Wind	Existing wind farm array areas and cable routes.
Other offshore energy	Wave energy, tidal streams and Carbon Capture and Storage (CCS).
Military activity and munitions	Military munition disposal areas and practice areas.
Subsea cables and pipelines	Cables and pipelines.
Recreational boating and sailing	Dinghy racing, yacht racing, motorboating.
Diving and water sports (including surfing)	Recreational diving, surfing, bathing and other water sports.
Recreational fishing	Recreational fishing including sea angling, shore angling and spearfishing.

7.4.7 The list of receptors will be kept under review during the EIA as more detailed information is obtained during data collection by other aspects and any relevant changes or updates will be reflected in the final ES.

Potential effects

7.4.8 Potential effects on OMU receptors that have been scoped in for assessment are summarised in **Table 7-6**. Additional items such as aquaculture have been scoped in following the receipt of the Scoping Opinion, these are detailed in **Table 7-4** of **Section 7.3**.

Table 7-6 Potential effects on OMU receptors scoped in for further assessment

Receptor	Activity or impact	Potential effect
Construction		
Aggregates, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, diving and water sports and recreational fishing	Increased vessel traffic	Increased vessel movements associated with the construction and installation of WTGs, OSS platforms and export cables.
Aggregates, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, diving and water sport and recreational fishing	Activity or access displacement	Displacement of activities or access as a result of safety zones (500m) associated with construction activities, which could interfere with OMUs.
Aggregates, disposal sites, diving and water sports and recreational fishing	Temporary increases in suspended sediment and subsequent deposition	Temporary increases in suspended sediment associated with seabed preparation, installation of cables and drilling, which could cause changes to seabed composition and bathymetry for aggregates/ disposal sites or result in reduced water clarity for recreational users.
Diving and water sports and recreational fishing	Temporary increases in subsea noise	Temporary increases in subsea noise associated with the installation of WTG foundations by percussive piling may directly impact recreational users and have indirect effects on recreational anglers resulting from potential effects on fish.
Operation and maintenance		
Aggregates, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, diving and	Increased vessel traffic	Increased vessel movements associated with operation and maintenance activities.

Receptor	Activity or impact	Potential effect
water sports and recreational fishing		
Aggregates, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, diving and water sports and recreational fishing	Physical presence of infrastructure	Physical presence of infrastructure could interfere with other marine users.
Diving and water sports (including surfers)	Alterations in wave energy direction and period	Alterations in wave energy direction and periods from the presence of infrastructure could affect recreational users (for example. Surfers and kite surfers).
Decommissioning		
Aggregates, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, diving and water sports and recreational fishing	Increased vessel traffic	Increased vessel movements associated with the decommissioning of WTGs, platforms and export cables.
Aggregates, disposal sites, offshore wind, subsea cables and pipelines, recreational boating and sailing, diving and water sports and recreational fishing	Activity or access displacement	Displacement of activities or access as a result of advisory safety zones (500m) associated with decommissioning, which could interfere with OMUs.
Aggregates, disposal sites, diving and water sports and recreational fishing.	Temporary increases in suspended sediment concentration (SSC) and deposition	Temporary increases in suspended sediment associated with decommissioning of cables, which could cause changes to seabed composition and bathymetry for aggregates/ disposal sites or result in reduced water clarity for recreational users.

Activities or impacts scoped out of assessment

7.4.9 A number of potential effects have been scoped out from further assessment, resulting from a conclusion of no likely significant effect. These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and the wealth of evidence on the potential for impact from such projects more widely. Each scoped out activity or impact is considered in turn below and an indication given of whether the scope has evolved since Scoping.

Table 7-7 Activities or impacts scoped out of assessment

Activity or impact	Rationale for scoping out
All impacts (for the lifetime of the project) on oil and gas infrastructure receptors	There is no spatial overlap of the PEIR Assessment Boundary or ZOI with active oil and gas infrastructure (as demonstrated in **Section 7.6**) and agreed with PINS in the Scoping Opinion (PINS, 2020) presented in **Table 7-4**.
All impacts (for the lifetime of the project) on other offshore energy receptors (excluding offshore wind)	There is no spatial overlap of the PEIR Assessment Boundary or ZOI between other offshore energy infrastructures (except offshore wind, which is considered separately) (as demonstrated in **Section 7.6**) and therefore no pathway for effect (as agreed with PINS in the Scoping Opinion (PINS, 2020) presented in **Table 7-4**)
All impacts (for the lifetime of the project) on aquaculture	There is no spatial overlap of the PEIR Assessment Boundary of ZOI between current or proposed aquaculture (as demonstrated in **Section 7.6**) and therefore there is no pathway for effect.

7.5 Methodology for baseline data gathering

Overview

7.5.1 Baseline data collection has been undertaken to obtain information over the study areas described in **Section 7.4: Scope of the assessment**. The current baseline conditions presented in **Section 7.6: Baseline conditions** sets out data currently available information from the study area/s.

Desk study

7.5.2 The data sources that have been collected and used to inform this OMU assessment are summarised in **Table 7-8**.

Table 7-8 Data sources used to inform the OMU PEIR assessment

Source	Date	Summary	Coverage of study area
The Crown Estate offshore wind leasing sites Rounds 1 – 4	2020	Offshore renewable bidding areas	Full coverage of the study area
The Crown Estate, The Oil and Gas Authority, EMODnet and BEIS	2019	Oil and gas data showing all offshore oil and gas activity (surface and subsurface).	Full coverage of the study area.
The Crown Estate, Aggregate Licence Area Charts	2020	Active marine aggregate extraction areas.	Full coverage of the study area.
British Marine Aggregate Production Association (BMAPA) annual reports	2010 – 2019	Active and inactive marine Aggregate extraction areas for the South coast area.	Full coverage of the study area.
The Crown Estate and the UKs Storage Appraisal Project strategic study of the potential for UK carbon dioxide (CO_2) storage	2019	CCS / natural gas storage	Full coverage of the study area.
Centre for Environment, Fisheries and Aquaculture Science (Cefas) GIS shapefile of Disposal Sites	2019	Disposal sites also includes munitions and disposal areas.	Full coverage of the study area.
Kingfisher Information Service – Offshore Renewables and Cable Awareness (KIS-ORCA) charts	2019	Offshore cables (active and disused), interconnectors and pipelines.	Full coverage of the study area.
Ocean Wise marine themes	2021	MoD Practice and Exercise Areas (PEXAs) charts.	Full coverage of the study area.

Source	Date	Summary	Coverage of study area
SeaSearch	2019	Recreational diving records for England and organised dives.	Full coverage of the study area.
Royal Yachting Association (RYA)	2019	RYA UK Coastal Atlas of Recreation Boating v2.1 data including general boating. areas and locations of clubs, training centres and marinas.	Full coverage of the study area.
Aquind Limited	2020	Shapefile of the proposed Aquind cable corridor.	Full coverage of the study area.

Data limitations

7.5.3 There are no data limitations relating to OMU that affect the robustness of the assessment of this PEIR. The data used to inform the baseline was gathered using the best available and most contemporary evidence and therefore RED are confident with this assessment. It should also be noted, however, that more information may be made available through consultation on this PEIR that may add data and information on OMUs to the assessment that will be presented in the ES.

7.6 Baseline conditions

Current baseline

Marine aggregates

7.6.1 The marine aggregate industry is licensed commercially by The Crown Estate (TCE); however, production agreements are only issued once the operator has obtained a Marine Licence under the Marine and Coastal Access Act (MCAA) (2009). A licence allows extraction to take place for a set amount of time (usually<15 years) and is accompanied by operating conditions such as maximum extraction volumes, as well as environmental measures and monitoring requirements.

7.6.2 There are six active marine aggregate-extraction sites located within the study area and are listed in **Table 7-9** below. As shown in **Figure 7.2, Volume 3**, the closest licence area to the Proposed Development is the Inner Owers aggregate site (Licence area 396/1), from which flint gravel deposits are extracted (Tarmac, 2020). This licence area borders the Rampion 2 export cable corridor and at its closest is 0.06km away. RED will continue engagement with the aggregate companies which may include, but is not limited to, data sharing.

7.6.3 It should be noted that there are a further six aggregate sites which are no longer active. All six sites fell within the PEIR Assessment Boundary when using the data from BMAPA but had their licences surrendered in, or prior to 2014, they have therefore been included here for clarity (BMAPA, 2019).

Table 7-9 Marine aggregate sites located within the vicinity of the study area

Licence Area	Operator	Area Name	Status	Distance from study area (km)
Active sites				
435/1	HAML	Inner Owers	Production area	0.85
435/2	HAML	Inner Owers	Production area	1.50
453	CEMEX UK Marine Ltd	Owers Extension	Production area	0.45
488	Tarmac	Inner Owers North	Production area	0.55
396/1	Tarmac	Inner Owers	Production area	0.06
396/2	Tarmac	Inner Owers	Production area	1.90
Inactive Sites				
122/1A – G	Tarmac	Owers bank	Licence surrendered: 2014	N/A
453/1	CEMEX UK Marine Ltd	Inner Owers	Licence surrendered: 2014	N/A
123A – G	CEMEX UK Marine Ltd	Owers Bank	Licence surrendered: 2014	N/A
124/1A – G	HAML	Unknown	Licence surrendered: 2012	N/A
122/2	Tarmac	Unknown	Licence surrendered: 2012	N/A
122/3	Tarmac	Unknown	Licence surrendered: 2012	N/A

7.6.4 There are also marine aggregate licence areas outside of the study area located close to the Isle of Wight, in the central English Channel and further afield in the Outer Thames/east coast region. Whilst there can be no direct effects on these areas from any phase of the Proposed Development due to separation distance, consideration has also been given to these as cargoes from the licence areas are regularly landed at Shoreham and Newhaven. The preliminary assessment of likely significant effects to marine aggregate dredging vessels using such routes is presented in **Chapter 13: Shipping and navigation.**

Disposal sites

7.6.5 Since the end of 1998, most forms of disposal at sea have been prohibited. The main exceptions are the disposal of dredged material originating from ports and harbours for the purposes of maintaining navigable shipping channels and the disposal of material originating from the installation of offshore infrastructure (for instance material from sandwave clearance, seabed preparation and drill arisings).

7.6.6 There are seven disposal sites within the study area, as presented within **Figure 7.3, Volume 3** and **Table 7-10**. Of the seven sites, two open sites are directly within the study area and one closed site, these are:

7.6.7 Littlehampton (closed), which is located within the export cable corridor, the existing Rampion 1 project disposal site, which is located in the Rampion 2 PEIR Assessment Boundary and the Aquind Cable Site A, which runs through the south west of the array area.

7.6.8 It should be noted that there is a discrepancy between the Cefas data set for the marine disposal sites which has been raised with the MMO and Cefas. This discrepancy is that the Rampion 1 disposal site (as shown in **Figure 7.3, Volume 3**) needs amending, as the disposal site covers the entire Rampion 1 Order Limits.

Table 7-10 Marine disposal sites located within the vicinity of the study area

Code	Disposal Site	Category of waste	Distance from study area (km)
Open			
WI011	Newhaven	Burial at sea	11
WI117	Rampion 1	Disposal for the existing Rampion 1 project	0
WI031	Shoreham	Maintenance dredging	12.2
WI020	Brighton/ Rottingdean	Dredged material from Brig on Marina	13.5
WI060	Nab Tower	Capital and maintenance dredge material	8.1

Code	Disposal Site	Category of waste	Distance from study area (km)
WI048	Aquind Cable Site A	Unknown*	0
WI049	Aquind Cable Site B	Unknown*	16.6
Closed			
WI012	Newhaven	Dredged material from Newhaven harbour and Ouse Estuary	N/A
WI040	Littlehampton	Unknown*	N/A
WI050	Isle of Wight Industry	Unknown*	N/A
* The category of waste (Unknown) is categorised as unidentified according to Cefas online database.			

Oil and gas

7.6.9 The Petroleum Act 1998 gives all rights to the UK's petroleum resources in the Crown and provides the Oil and Gas Authority (OGA) with the power to grant licences that cover exclusive rights to 'search and bore for and get' petroleum.

7.6.10 The English Channel is not currently a focus area for the exploration and production of hydrocarbons and there are no licensed developments in or within the vicinity of the PEIR Assessment boundary. There are currently no blocks licensed or pipelines for oil and gas exploration within the study area.

7.6.11 **Figure 7.4, Volume 3** shows that there is a subsurface oil and gas structure within the existing Rampion 1 boundary, which is located approximately 5km from the PEIR Assessment Boundary. It should be noted this is a discrepancy within the Cefas dataset which has been raised with the MMO and Cefas, this is a misrepresentation, and is not a subsurface oil and gas structure, but is an anchor.

7.6.12 There are two oil and gas wells over 9km to the south and west of the PEIR Assessment Boundary (as shown in **Figure 7.4, Volume 3**).

Offshore wind

7.6.13 The UK has the largest operating offshore wind capacity in the world and has a strong market for new offshore wind developments within the UK waters. The Government has made a significant commitment, passing legislation which commits the UK to a 'net-zero' greenhouse gas emissions target by 2050 – a transition in which offshore wind will continue to have a crucial role to play. Included in this a target for offshore wind to reach 40 Gigawatt (GW) by 2030. TCE

recently closed the Round 4 leasing process which has created the opportunity for almost 8GW of new projects in the waters surrounding the UK.

7.6.14 Although the Rampion 2 study was within Bidding Area 3 (South East) of the Round 4 Leasing Process, the offshore wind leasing round tender process has now concluded, and no Round 4 projects are being brought forward in this area (see **Figure 7.4, Volume 3**). Subject to a Plan-Level Habitats Regulations Assessment (HRA), six projects are being taken forward from the leasing process: three projects in the North Wales and Irish Sea Bidding Area, two in the Dogger Bank Bidding Area and one in the South East Bidding Area (The Crown Estate, 2021). As a result, and with the exception of the existing Rampion project (Rampion 1), there will be no overlap within the study area with any other offshore wind farm developments and offshore wind projects are therefore not considered further in this PEIR.

7.6.15 **Figure 7.4, Volume 3** shows that Rampion 1 sits within the northern part of the Rampion 2 study area with the export cable running north to join the coastline at Worthing and is currently the only operational wind farm along the south coast of England. **Chapter 3: Alternatives** explains how the different offshore wind farm agreements and extension sites interrelate.

Other offshore energy

7.6.16 The UK government has estimated that wave and tidal stream energy has the potential to deliver around 20% of the UK's current electricity needs, equating to an installed capacity of 30 – 50GW (Renewable UK, 2020).

7.6.17 CCS is likely to have a major role in reducing UK carbon dioxide (CO_2) emissions in the future, utilising, for example, depleted subsea oil and gas reservoirs to provide long term storage of CO_2. There are currently no plans for CCS or any associated pipelines within the study area.

Military activity and munitions

7.6.18 A summary of relevant MoD activities and areas is presented within this section, with further information provided in **Chapter 13: Shipping and navigation** and **Chapter 15: Civil and military aviation**.

7.6.19 During data collection for military activity, no apparent munitions disposal areas were identified in or within the vicinity to the study area (the closest is off the south of the Isle of Wight, approximately 35km from the Proposed Development.

7.6.20 An MoD Firing Practice and Navy exercise area was identified within the South West of the array study area. This has been identified as MoD PEXA D037 and has a small overlap of 4.28km^2 (0.9% of the total area) with the array boundary (see **Figure 7.5, Volume 3**).

7.6.21 This area is operated under a clear range procedure, that is to say, no firing will take place unless the area is considered to be clear of all shipping. Impacts from Rampion 2 on the vessel traffic movements on the MoD are assessed in **Chapter 13**, while impacts on aviation are assessed in **Chapter 15**.

Subsea cables and pipelines

7.6.22 ‘Subsea cables’ is a broad term for a range of cables that are beneath the sea surface, these cables are typically (but not exclusively) subsea telecoms, power cables and inter-connector cables).

7.6.23 The baseline data collection exercise identified a number of subsea cables within the study area, but it should be noted that currently none overlap with the PEIR Assessment Boundary for Rampion 2. The closest is the England-France High-Voltage Direct Current (HVDC) interconnector, ‘Interconnexion France-Angleterre (IFA2), which runs in proximity to (approximately 300m from) the western boundary of the PEIR Assessment Boundary (see **Figure 7.6, Volume 3**). IFA2 makes UK landfall at Lee-on-Solent from Caen (France). The cable was commissioned in January 2021 and is currently in the final stages of energisation (Interconnexion France-Angleterre, 2021). The remaining existing cables are at greater distance from the PEIR Assessment Boundary, the next closest being the Atlantic Crossing 1, which runs through the mid English Channel, approximately 12km south of Rampion 2, although the disused ‘UK France 3’ cable is located approximately 1.6km to the east of the PEIR Assessment Boundary.

7.6.24 As noted above in the offshore wind baseline (see **paragraph 7.6.13 *et seq.***) the Rampion 1 export cable runs 15km from the north of the study area to the coastline. This is currently owned by Rampion Offshore Wind Limited, however it is anticipated that ownership will pass onto an Offshore Transmission Operator (OFTO) later in 2021.

Recreational boating and sailing

7.6.25 This section provides information on small (up to 2.4m in length) inshore recreational craft. Recreational sailing and cruising in larger vessels (2.4 – 24m) are addressed within **Section 13.9** to **13.11** of **Chapter 13: Shipping and navigation**.

7.6.26 There is a relatively high number of inshore sailing clubs and organisations in the vicinity of the study area, operating primarily from Littlehampton, Worthing, Lacing, Shoreham, Hove and Brighton. There are also numerous sailing schools and other training establishments along this stretch of coastline (see **Figure 7.7, Volume 3**). The Sussex coast is popular for sailing regattas, with the Sussex Regatta, an event organised by the Sussex Combined Clubs committee, consisting of representatives from yacht clubs around Sussex. Races happen frequently in the area, which include races around the Rampion offshore wind farm.

7.6.27 Across the inshore section of the export cable PEIR Assessment Boundary there is overlap with a general boating area (**Figure 7.7, Volume 3**), with an area marked as being of high level usage across the central section of the cable corridor. Based on the RYA data, this appears to represent a vessel transit route passing through to Brighton and Eastbourne to/from the Solent. There is high recreational boating and sailing use evident around the Isle of Wight, where there is also a relatively large number of sailing schools and an extensive general boating area.

7.6.28 The general coastal and inshore area within the region is popular for dinghy sailing and racing, activities that are undertaken from the various sailing clubs above, as

well as independently run from beaches and harbours within the area. During the summer months in particular, jet skiing, water skiing and other small recreational motorboats are launched from the beaches along the coast. The majority of these recreational activities occur well inshore defined as the area extending 250m out to sea from the coast and are therefore well inshore of the Proposed Development area, although there will be potential for direct overlap in the vicinity and nearshore around Climping, where the export cables will make landfall.

Diving and water sports (including surfing)

7.6.29 The nearshore coastal area is used for a variety of activities, from recreational diving to a range of other water sports and bathing at beaches, for the most part, due to its proximity to a large population and good access.

7.6.30 **Figure 7.8, Volume 3** presents dive sites used by SeaSearch users between 2014 and 2019 (SeaSearch, 2019), Diving is an extremely popular activity all year round off the Sussex coast, however peak levels of activity take place through the summer months. As can be seen in **Figure 7.8, Volume 3**, the areas either side of the export cable are popular diving areas however within the PEIR Assessment Boundary of Rampion 2 itself there is little diving activity.

7.6.31 There is a Sussex diving club, based in Brighton Marina which operates dives on two main features: wrecks and reefs (Sussex Diving Club, 2020). It is understood that there are a large number of varied wrecks to choose from within the Sussex area, thus making Sussex extremely popular for all grades of diver (Channel Diving, 2020). Meanwhile there is another dive club based in Brighton Marina, who offer diving trips to wrecks, but also offer boat trips to the Rampion 1 site (Channel Diving, 2020). There are a number of other important dive centres and schools within the vicinity of the study area, such as Shoreham, Lacing, Portslade, Worthing and Selsey.

7.6.32 Surfing is highly popular along the English south coast, despite the wave conditions along this section of coast being described as relatively low quality and low consistency (Surfers Against Sewage (SAS), 2010). However, to those that participate in wave-related sports (surfing, stand up paddle boating, kite surfing, wind surfing and kayaking) these inshore areas are therefore of high value. Surfing along the Sussex coast is most popular during the summer months (although there is surf all year round), with the peak surf conditions associated with the late summer and autumn months.

7.6.33 Bathing is a popular recreational activity along the Sussex coast within the Study Area due to the number of beaches available. Main use of bathing waters is predominantly in spring and summer during March to November with peak activity during the school summer holidays. Specific bathing water areas and an assessment of the impacts from the Proposed development on these bathing water areas is included in **Chapter 18: Socio-economics**.

7.6.34 Spearfishing is also popular within the study area and is well established with its own spearfishing club – Sussex Spearfishing Club (British Spearfishing Association (BSA), 2020).

7.6.35 There are also a range of clubs offering canoe or kayak hire as well as guided tours in the Study Area. Canoe clubs operating along the Sussex coast include Hastings, Cuckmere Valley, Hailsham, Chichester, Arun and Adur canoe clubs.

7.6.36 A baseline characterisation of the economy of inshore and offshore recreation (including bathing, surfing, recreational sailing and scuba diving) and a detailed assessment of the potential effects from Rampion 2 are considered further in **Chapter 18: Socio-economics.**

Recreational fishing

7.6.37 Along the Sussex coast there are significant areas for recreational sea angling, due to the broad diversity of species, ease of access and shallow waters. Shore angling occurs along the Sussex coast from piers, marinas, beaches and estuaries (Sussex Inshore Fisheries and Conservation Authority (IFCA), 2020). Levels of activity are largely dependent on the seasonality and availability of target species.

7.6.38 Climping beach produces good numbers of Bass throughout the year, while in the summer Stingrays, Mullet, Smoothounds, Silver Eels and other small species are often caught (Primeangling, 2021).

7.6.39 Boat-based angling is extremely popular on the Sussex coast, with a number of businesses offering charter fishing trips from harbours and marinas within the study area (see **Figure 13.2, Volume 3** of **Chapter 13: Shipping and navigation**). Fishing spots include the Kingmere reef which sits inside the Kingmere Rocks Marine Conservation Zone. Offshore, there are a range of fishing 'marks' that frequented by boat based angling operators. These include the areas known as 'Utopia' and 'The Overfalls', both of which are located at some distance from the Proposed Development area in the eastern Solent, though there are a range of other sites of importance as, with the Sussex coast offering many sheltered bays and estuaries that are also significant areas for recreational sea anglers to fish from (Sussex IFCA, n.d.).

7.6.40 **Chapter 13** and **Chapter 18** further discusses the impacts on recreational fishing. **Chapter 10: Commercial fisheries** discusses the impacts on commercial fisheries and fish.

Aquaculture

7.6.41 Aquaculture is defined as the farming of fish, crustaceans, mollusc and aquatic plants, including seaweed. There has been an increased interest in seaweed aquaculture recently, driven by research on, *inter alia*, algal biofuel technologies, carbon capture and plastic alternatives and many more (Capuzzo and KcKie, 2016).

7.6.42 Southampton and Portsmouth support a high number of aquaculture activities including blue mussel shellfish and manila clam. However, there is no current or planned aquaculture production within the PEIR Assessment Boundary or study area. The south coast does sit within areas of aquaculture potential for a range of species. These include fish such as Atlantic salmon, brown sea trout, rainbow trout, shellfish such as European lobster, king scallop, blue mussel, manila clam, native oyster, and algae such as badderlocks (a type of kelp), dulce, oarweed and sugar kelp (MMO, 2019), however as of yet no areas have been identified.

Future baseline

7.6.43 There are two further cables that is proposed, the CrossChannel Fibre cable, connecting Slough, UK to Paris, France. This cable leaves the UK coast from Brighton, UK and lands in France at Veules-les-Roses (**Figure 7.6, Volume 3**). The cable is scheduled to be in service by the end of 2021, exact coordinates of the cable from the PEIR Assessment Boundary are not yet available and therefore not shown along other cables in (**Figure 7.6, Volume 3**).

7.6.44 The second cable is the England-France HVDC 'Aquind' Interconnector, which will have a nominal net capacity of 2,000MW. The proposed route of this cable passes through the western part of the PEIR Assessment Boundary (**Figure 7.6, Volume 3**), connecting France and the UK, with landfalls at Dieppe and Portsmouth respectively. The Examination phase of the consent application for the project closed on the 8 March 2021, with the consent decision anticipated by 8 September 2021.

7.6.45 There is one known future offshore renewable energy project close to the PEIR Assessment Boundary, which is the Perpetuus Tidal Energy Centre (PTEC), located approximately 40km to the west of the PEIR Assessment Boundary (see **Figure 7.4, Volume 3**). PTEC have achieved planning consents and secured a connection to the electricity grid network, however, the developer is awaiting further investment and therefore have not progressed to the construction stage at this time. It is set to be the largest tidal stream energy project in England, with a total capacity of 30 megawatts (MW) (Isle of Wight Council, 2020).

7.6.46 As indicated in the current baseline, there are a number of marine aggregate dredging areas in proximity to the PEIR Assessment Boundary. All such areas are active, and the current baseline indicates a substantial number of vessel traffic movements directly associated with such areas. In the future these areas may be surrendered, thus reducing the number of associated vessel traffic movements. Likewise, new marine aggregate dredging areas may be designated (noting that no exploration areas currently exist with the next TCE marine aggregate tender round for England and Wales scheduled for during 2021/22 (TCE, 2020)). Given that there is a lack of publicly available information on future changes to the marine aggregate dredging environment, no changes are considered in the future baseline.

7.6.47 There is similar uncertainty associated with long-term predictions for recreational boating, diving and water sports (including surfing) and fishing given that there is limited reliable information on future trends on which any assumptions can be made.

7.6.48 There is limited information available on the potential for aquaculture within the area, however the MMO published a report on identifying potential areas for aquaculture in English waters. This report identified that areas around the south coast (such as the Solent and West Sussex) have very high potential for bivalve mollusc aquaculture, as well as a range of seaweed and fish species (MMO, 2019). There are no planned aquaculture sites at present and therefore no changes are currently considered to the future baseline.

7.7 Basis for PEIR assessment

Maximum design scenario

7.7.1 Assessing using a parameter-based design envelope approach means that the assessment considers a maximum design scenario whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the DCO Application. The assessment of the maximum adverse scenario for each receptor establishes the maximum potential adverse impact and as a result impacts of greater adverse significance will not arise should any other development scenario (as described in **Chapter 4: The Proposed Development**) to that assessed within this Chapter be taken forward in the final scheme design.

7.7.2 The maximum assessment assumptions that have been identified to be relevant to OMU are outlined in **Table 7-11** below and are in line with the Project Design Envelope (**Chapter 4**).

Table 7-11 Maximum assessment assumptions for impacts on OMU

Project phase and activity/impact	Maximum assessment assumptions	Justification
Increased vessel movements during construction	**WTG foundation installation:** 25 vessels (660 return trips) **WTG installation:** 22 vessels (1,340 return trips) **OSS installation**: 35 vessels (96 return trips) **Offshore export cable installation:** 22 vessels (222 return trips) **Inter-array cable installation:** 19 vessels (318 return trips) **Total:** 2,636 round trips **Array area** Buoyed construction area deployed around the maximum extent of the array area. Maximum array cable length of 135nm. Maximum offshore interconnector cable length of approximately 27nm	The maximum adverse scenario for vessel traffic is associated with the installation of jacket foundations being undertaken over the full construction timeline.

Project phase and activity/impact	Maximum assessment assumptions	Justification
	Implementation of 500m radius construction safety zones.	
Temporary increases in SSC and deposition during construction	**Sandwave clearance** Total sandwave clearance volume in array area = 1,375,000m^3. **WTG foundations** Spoil volume for all WTG foundations from drill arising (if drilling required due to pile driving refusal and assuming 10 m diameter 60 m embedment monopile): 4,000m^3 x 116 monopiles = 464,000m^3. Spoil volume for OSS foundations (jacket with pin piles foundations) from drilling arisings (if drilling required): 12,000m^3 x 3 OSS = 36,000m^3. **Export cable installation** Burial spoil (jetting) = 155,000m^3. Spoil from temporary floatation pits = 275,000m^3. HDD bentonite drilling fluid loss = 450m^3. **Interconnector cable installation** Burial spoil jetting = 100,000m^3 **Array cable installation** Burial spoil (ploughing/mass flow excavation) = 500,000m^3 **Total volume = 2,905,000m^3**	The maximum adverse scenario for foundation installation results from largest volume suspended from seabed preparation (suction bucket jacket) or the largest volume suspended from potential drilling of foundations (monopiles) as these are mutually exclusive, both with the maximum number of foundations (116). For cable installation, the maximum adverse scenario results from the greatest volume from sandwave clearance and installation. This also assumes the largest number of cables and the greatest burial depth.
Increases in subsea noise during construction	**WTG foundation installation:** 116 smaller WTGs supported on either 116 monopile (MP) foundations or 464 pin pile (PP) foundations (assuming 4 legs per jacket). MP foundations; hammer energy of up to 4,400kJ PP foundations; hammer energy of up to 2,500kJ	The use of the smaller WTGs over the larger WTGs results in a greater number of WTGs being installed. As the hammer energy is the same for both sizes of WTG, the smaller represents the maximum amount

Project phase and activity/impact	Maximum assessment assumptions	Justification
	12 months duration **OSS foundation installation:** 3 substation structures supported on either 3 MP foundations or 18 PP foundations (assuming 6 legs per jacket) MP foundations; hammer energy of up to 4,400kJ PP foundations; hammer energy of up to 2,500kJ 12 months duration	of energy emitted into the marine environment as there will be more. Both foundation types (MP and PP) are presented here as the hammer energy differs depending on the type. The higher hammer energy is for MPs and therefore gives the largest spatial impact, meanwhile the additional number of PPs required could result in a greater temporally impact.
Increased vessel movements during operation and maintenance	Maximum design scenario is identical (or less) to that of construction phase.	This will result in the maximum potential vessel disturbance.
Physical presence of infrastructure during operation and maintenance	**WTGs:** 116 smaller WTGs **OSS:** 3 OSS	The maximum potential physical presence of infrastructure will be from the installation of the maximum number of WTGs and OSSs.
Increased subsea noise during decommissioning	Maximum levels of underwater noise during decommissioning will be from underwater cutting required to remove structures. This is much less than pile driving and therefore impacts will be less than as assessed during the construction phase/piled foundations will likely be cut approximately 1m below the seabed.	This will result in the maximum potential disturbance associated with noise associated with decommissioning activities including foundation decommissioning.

Project phase and activity/impact	Maximum assessment assumptions	Justification
Increased vessel movements during decommissioning	Maximum design scenario is identical (or less) to that of construction phase.	This will result in the maximum potential vessel disturbance.
Increase in SSC and deposition during construction	Maximum design scenario is identical (or less) to that of construction phase.	WTGs will be removed by reversing the methods used to install them. Pile foundations will likely be cut approximately 1m below the seabed. The area of seabed impacted during the removal of the WTGs will be the same as the area impacted during installation. The OSSs will be a reverse installation. The area of the seabed disturbed by decommissioning activities will be the same area impacted during installation. If piled foundations are used, they will likely be cut approximately 1m below the seabed. It is likely that equipment similar to that which is used to install the cables could be used to reverse the burial process and expose them. Therefore, the area of seabed impacted during the removal of the cables could be the same as the area impacted

Project phase and activity/impact	Maximum assessment assumptions	Justification
		during the installation of the cables. Any scour protection will be left *in situ*.

Embedded environmental measures

7.7.3 As part of the Rampion 2 design process, a number of embedded environmental measures have been adopted to reduce the potential for impacts on OMU. These embedded environmental measures will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process.

7.7.4 These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements. As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of Rampion 2 and are set out in this PEIR. **Table 7-12** sets out the relevant embedded environmental measures within the design and how these affect the OMU assessment.

Table 7-12 Relevant OMU embedded environmental measures

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to OMU assessment
C-4	Horizontal Directional Drill (HDD) technique will be used at the landfall location.	Scoping	Development Consent Order (DCO) works plans, description of development and requirements	HDD minimises disturbance to OMU inshore users during construction.
C-46	Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners and Kingfisher Bulletins. The undertaker must ensure that a Notice to Mariners (NtM) is issued at least 14 days prior to the commencement of the authorised Proposed Development or any part thereof advising of the start date of each activity and the expected vessel routes from the construction ports to the relevant location.	Scoping	DCO requirements or DML conditions.	Advanced warning and location details will allow OMU receptors to undertake activities elsewhere and minimise the risk of collision or disruption from project vessels.
C-50	Crossing and proximity agreements with known existing pipeline and cables operators will be sought.	Scoping	DCO requirements or DML conditions.	Crossing agreements will minimise direct impacts to subsea

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to OMU assessment
				cables that may be affected by the proposed works.
C-51	A Vessel Management Plan (VMP) will be developed pre-construction.	Scoping	DCO requirements or DML conditions.	The VMP will address aspects of vessel management.
C-52	A piling Marine Mammal Mitigation Protocol (MMMP) will be implemented during construction and will be developed in accordance with JNCC (2010) guidance and with the latest relevant guidance and information and in consultation with stakeholders. The piling MMMP will include details of soft starts to be used during piling operations with lower hammer energies used at the beginning of the piling sequence before increasing energies to the higher levels.	Scoping - updated at PEIR	DCO requirements or DML conditions	The MMMP minimises direct disturbance impacts on OMU features such as divers during construction and indirect impacts on target recreational fish species.
C-53	An Outline Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event	Scoping	DCO requirements or DML conditions	The MPCP aims to minimise potential impacts on OMU receptors from

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to OMU assessment
	arising from offshore operations relating to Rampion 2. The MPCP will also include relevant key emergency contact details			potential pollution incidents.
C-56	RED will apply for safety zones post consent. Safety zones of up to 500m will be sought during construction, maintenance and decommissioning phases. Where appropriate, guard vessels will also be used to ensure adherence with Safety Zones or advisory passing distances, as defined by risk assessment, to mitigate any impact which poses a risk to surface navigation during construction, maintenance and decommissioning phases. Such impacts may include partially installed structures or cables, extinguished navigation lights or other unmarked hazards.	Scoping	Electricity application procedures (Section 95 of Energy Act 2004)	Safety zones will minimise the risks to OMU receptors during construction, operation and maintenance activities and decommissioning.
C-85	RED will ensure that local notice to mariners (NtM) is updated and reissued at weekly intervals during construction activities and at least five days before any planned operations and maintenance works and supplemented with VHF (very high frequency) radio broadcasts agreed with the Maritime & Coastguard Agency (MCA) in accordance with the construction and monitoring programme approved under deemed marine licence condition.	Scoping	DML conditions	NtMs will ensure that OMU receptors such as recreational boaters are informed of activities and minimise disturbance.
C-99	The risk of primary (life-threatening physical injury, or fatality) or secondary (non-life-threatening damage) injury to humans will be managed, by recommending an advisory exclusion zone around	Scoping	DCO requirements	The advisory exclusion zone will minimise impacts to

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to OMU assessment
	all piling operations within which no-one (including construction personnel) is recommended to enter the water.		or DML conditions.	OMU receptors such as divers during piling.
C-100	The soft-start programme will be determined in discussion with the Diving Liaison Officer. Consideration will be given to the potential for divers to be in the water outside of the advisory exclusion zone at the start of pile driving. This consideration will also include diving activities that could result in divers drifting into the advisory exclusion zone as part of their dive (i.e. tide and wind conditions will be assessed as part of the programme).	Scoping	DCO requirements or DML conditions.	A soft-start programme will minimise indirect impacts on target recreational fish species.
C-101	To limit potential exposure to hazardous levels of underwater noise, a comprehensive awareness and communications strategy (an Outline Diver Communication Plan) will be developed by RED in agreement with regulatory authorities to notify the diving/spearfishing community of the timing and duration of proposed works. This will include but not be limited to the appointment of a Diving Liaison Officer (who will be the main point of contact) to work with dive centres, diving clubs (including education establishments), boat operators, Coast Guard, and facilities within jetties and marinas etc. The strategy will include widely publicising (for example on the internet) details of the nature, location and timing of pile driving works and the extent of	Scoping	DCO requirements or DML conditions.	A Diving Communication Plan aims to minimise direct impacts on recreational users such as divers and spearfishers during piling.

ID	Environmental measure proposed	Project phase measure introduced	How the environmental measures will be secured	Relevance to OMU assessment
	any relevant advisory exclusion zones. The ‘startle’ reaction to underwater noise is anticipated as being less likely to occur in divers/spearfishers who have prior knowledge of the possibility of piling noise occurring.			

7.8 Methodology for PEIR assessment

Introduction

7.8.1 The Proposed Development-wide general approach to assessment is set out in **Chapter 5: Approach to the EIA**. The assessment methodology for OMU for the PEIR is consistent with that provided in in the Scoping Report (RED, 2020) and no changes have been made since the scoping phase.

7.8.2 The assessment of potential impacts upon OMU receptors is based on the maximum development scenario as identified from the design envelope (see **Chapter 4: The Proposed Development**). The key maximum assessment assumptions comprise the layout of the wind farm, the number and size of offshore structures, the type and size of foundations used, as well as the timing and duration of the proposed offshore works (see **Table 7-11**).

7.8.3 The assessment of impacts and effects on OMU is supported by the baseline desk study work summarised earlier in this chapter to ensure identification of relevant details on the OMU receptors within the study area. The collation of baseline information and use across the study area is ongoing and will be supported by the consultation provided for following publication of this PEIR, together with meetings with relevant stakeholders (as required) in order to ensure appropriate detail is obtained to inform the assessment of potential impacts.

7.8.4 The assessment considers all relevant marine recreational pursuits, offshore and coastal activities, and marine infrastructure. For each of the identified receptors, impacts are considered throughout the construction, operation and decommissioning phases of the Proposed Development.

7.8.5 Cumulative effects have been assessed by taking into consideration all other relevant developments, proposed or existing, that are in the vicinity of the development zone and which have the potential to affect the same receptors. Where other developments are expected to be completed prior to the construction of Rampion 2, and the effects of these developments are fully determined, the effects arising from the developments are considered as part of the baseline but may also be considered as part of the construction and operational cumulative assessment. Developments forming part of the dynamic baseline, and those included in the cumulative assessment are clearly identified in the Cumulative Effects Assessment (CEA).

Impact assessment criteria

7.8.6 The approach to determining the significance of the effect is a two-stage process that involves defining sensitivity of the receptors and the magnitude of the impacts against set criteria. This section describes the criteria applied in this chapter to assign values of sensitivity to the receptors and determine the magnitude of potential impacts. The terms used to define sensitivity and magnitude are informed by the EIA Regulations 2017 and the Ministry of Housing, Communities and Local Government's (MHCLG). Further details are provided in **Chapter 5**.

7.8.7 The sensitivities (or importance) of OMU receptors are defined by both their potential vulnerability to an impact from the proposed development, their recoverability, and the value or importance of the receptor. The definition of terms relating to the sensitivity of OMU receptors is detailed in **Table 7-13**.

Table 7-13 Definition of terms relating to receptor sensitivity or importance.

Sensitivity / importance	Definition used in this chapter
High	Receptor is of high value or importance, with critical importance to the local, regional or national economy. Receptor is highly vulnerable to impacts that may arise from the Proposed Development and recoverability is long-term or not possible.
Medium	Receptor is of medium value or importance, with reasonable contribution to the value of the local, regional or national economy. Receptor is moderately vulnerable to impacts that may arise from the Proposed Development and has moderate to high levels of recoverability.
Low	Receptor is of minor value or importance with small levels of contribution to the value of the local, regional or national economy. Receptor is not generally vulnerable to impacts that may arise from the Proposed Development and/or has high recoverability.
Negligible	Receptor is of very low value or importance, with negligible contribution to the value of the local, regional or national economy. Receptor is not vulnerable to impacts that may arise from the Proposed Development and/or has high recoverability.

7.8.8 The magnitude of potential impacts is defined by a series of factors including the spatial extent of any potential interaction, the likelihood, duration, frequency and reversibility of a potential impact. The definition of the levels of magnitude used within this assessment are shown below in **Table 7-14**.

Table 7-14 Definition of terms relating to magnitude of impact.

Magnitude	Definition used in this chapter
High	Total loss of ability to carry on activities. Impact is of extended temporal or physical extent and of long-term duration (i.e. total life of Proposed Development) and/or frequency of repetition is continuous and/ or effect is not reversible.

Magnitude	Definition used in this chapter
Medium	Loss or alteration to significant portions of key components of current activity leading to a reduction in the level of activity that may be undertaken and/or physical extent of impact is moderate and/ or medium-term duration (i.e. operational period) and/ or frequency of repetition is medium to continuous and/ or effect is not reversible for the project phase.
Low	Very slight change from baseline condition and/or physical extent of impact is negligible and/ or short-term duration (i.e. construction period) and/ or frequency of repetition is negligible to continuous and/ or effect is reversible.
Negligible	No change from baseline conditions.

7.8.9 The significance of the effect on OMU receptors will be determined by correlating the sensitivity of the receptor and the magnitude of the impact. The method employed for this preliminary assessment is presented in **Table 7-15**, with the final assessment for each effect based upon expert judgement. For the purpose of this PEIR, any effects with a significance level of minor or less are considered as not significant in terms of the EIA Regulations (2017).

Table 7-15 Significance assessment matrix for the significance of residual effect.

		Magnitude of impact			
		High	**Medium**	**Low**	**Negligible**
Receptor sensitivity/importance	**High**	Major (Significant)	Major (Significant)	Moderate (Potentially Significant)	Minor (Not Significant)
	Medium	Major (Significant)	Moderate (Potentially Significant)	Minor (Not Significant)	Minor (Not Significant)
	Low	Moderate (Potentially Significant)	Minor (Not Significant)	Minor (Not Significant)	Negligible (Not Significant)
	Negligible	Minor (Not Significant)	Minor (Not Significant)	Negligible (Not Significant)	Negligible (Not Significant)

7.9 Preliminary assessment: Construction phase

Increased vessel movements

Overview

7.9.1 The construction of Rampion 2 will increase vessel movements within the area by a maximum of 2,636 return trips (as per identified in **Table 7-11**) over the 4-year construction period from the seabed preparation works (for example sandwave clearing and boulder clearance) and the installation of infrastructure (WTGs, OSSs and cables (inter-array and export)).

7.9.2 The larger installation vessels (such as jack-up vessels), transport barges and cable laying vessels are likely to transit directly to the site from their homeports, or from construction ports (WTGs, cable, foundation etc.). The vessels likely to operate out of a UK harbour are likely to be the smaller vessels, such as Crew Transfer Vessels (CTVs).

7.9.3 The construction vessels will be required to deploy a number of embedded environmental measures that are listed in **Table 7-12**.

7.9.4 . Those that are relevant to vessel movements are:

- C-46 which require the Proposed Development to promulgate advanced warning and information of the associated safety zones via Notice to Mariners (NtM) and bulletins within the Kingfisher bulletins,
- C-51 regarding the Vessel Management Plan (VMP);
- C-56 which details the advisory safety zones (500m); and
- C-85 which provides for regular updates to the NtM and supplemental VHF broadcasts agreed with MCA to ensure all parties are updated on planned works and locations of activities.

Magnitude of impact

Marine aggregates

7.9.5 The impact arising from increased vessel activity as a result of the construction phase of the Proposed Development has been considered in detail within **Chapter 13** in which the risk was considered to be 'tolerable' which is not considered to be significant in EIA terms (see **Table 7-22** for definition of 'tolerable') against baseline levels of vessel movements. Whilst the specific assessment presented within that chapter relates to vessel passage to and from the worked licence areas, the assessment also holds for operation of dredging vessels whilst on site. This finding is based on the relatively minor increase in baseline vessel numbers (as identified in **Chapter 13**) in the area resulting from the operation of the construction vessels, together with advance and regular notifications for planned works promulgated (C-46, C-85, **Table 7-12**) and the implementation of the VMP (C-51, **Table 7-12**) to ensure any risks of collision or impacts to dredging operations are appropriately managed. The impact is considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and

reversible and there is no impact arising on the long-term viability of the aggregate sites. Therefore, the magnitude of the impact from construction activity vessel movements relating to Rampion 2 is considered to be **low**.

Disposal sites

7.9.6 As described above, the impact has been considered in detail within **Chapter 13** in which the magnitude was considered to be tolerable against baseline levels of vessel movements.

7.9.7 Again, whilst the specific assessment presented within that chapter relates to vessel passage between port and disposal grounds, the shipping and navigation assessment identified a relatively minor increase in baseline vessel numbers in the area resulting from the operation of the construction vessels. This, coupled with the notifications for planned works that will be issued (C-46, C-85, **Table 7-12**) and the implementation of the VMP (C-51), will ensure any risks of collision or impacts to disposal operations are appropriately managed. The impact is considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible and there is no impact arising on the long-term viability of any of the disposal sites. Therefore, the magnitude of the impact from construction activity vessel movements relating to Rampion 2 is considered to be **low**.

Offshore wind

7.9.8 As described above in the baseline section, with the exception of the proximal Rampion 1, offshore wind projects do not overlap directly with the PEIR Assessment Boundary, and there are no other proposed (future) offshore wind projects in the region. For Rampion 1, which is operational, the relatively minor increase in baseline vessel numbers in the area resulting from the operation of the construction vessels is not anticipated to affect the operations and maintenance vessel activities associated with the existing project. Additional controls and notifications of works that will be applied to the Rampion 2 construction vessel activity (C-46, C-85 and C-51, **Table 7-12**), will ensure any risks of collision or disturbance impacts are appropriately managed. The impact is considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible. Therefore, the magnitude of the impact from construction activity vessel movements relating to Rampion 2 will have is considered to be **low**.

Military activity and munitions

7.9.9 The overlap of the PEIR Assessment Boundary is with D037 PEXA area, this overlap approximately 28km^2, which constitutes 0.9% of the total PEXA area (see **Figure 7.1, Volume 3**). Based on this, the impact of increased vessel movements associated with the construction of Rampion 2 is considered to be **low** as it is localised and affects only a minor and peripheral area of the PEXA.

Subsea cables

7.9.10 The majority of existing subsea cables in the area are at distance from the Proposed Development (>12km) and therefore the increase in construction vessel activity arising from the Proposed Development is considered unlikely to affect any maintenance or other activities associated with this infrastructure. The impact to

operational activities for these cables is, therefore, in relation to vessels transiting to and from these cables from home ports; this was assessed within **Chapter 13** as tolerable against baseline levels. For the IFA2 cable, which is located approximately 300m west of the PEIR Assessment Boundary at its closest point, the controls and notifications of works that will be applied to the Rampion 2 construction vessel activity (C-46, C-85 and C-51,**Table 7-12**), will ensure any risks of collision or disturbance impacts are appropriately managed, limiting the potential magnitude of any impact. The same controls and commitments will be applied to the Aquind cable proposal, should that be consented. Overall, impacts are considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible. The magnitude of increased vessel movements arising from the construction activity of the Proposed Development is therefore considered to be **low** for the IFA2 and Aquind cables and **negligible** for the other subsea cables within the study area.

Recreational boating and sailing

7.9.11 As identified in **Chapter 13**, the increase in vessels from the construction of Rampion 2 will be tolerable against baseline levels of vessel movements within the area, however there is potential for recreational sailing and boating activities to overlap with construction vessel activities. Much of the smaller recreational activity will be concentrated relatively close to the coastline and inshore of the Proposed Development, as shown in the RYA baseline data, with interaction principally possible in the nearshore parts of the export cable corridor, however the RYA route data also indicates that vessels, likely the larger motorboats and yachts, utilise areas further offshore and across the Rampion 2 PEIR Assessment Boundary (see **Figure 7.7, Volume 3**). There is thus potential for vessel encounter and/or disruption in areas when the construction vessels are actively working at the site.

7.9.12 Notwithstanding that the potential for impact is limited by the relatively minor increase in baseline vessel numbers in the area as a result of the construction phase works, the potential impact magnitude will also be limited by the controls and notifications of works related to Rampion 2 construction vessel activity (C-46, C-85 and C-51, **Table 7-12**). Even so, whilst recreational craft activity could be affected by construction vessel activity, the potential for impact will be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible. The magnitude is therefore considered to be **low** for both vessels using the offshore areas (with the management commitments in place) and smaller craft in the nearshore zone (on the basis of a lower likelihood of encounter together with the management controls).

Diving and water sports (including surfing)

7.9.13 As identified in **Chapter 13**, the increase in vessels from the construction of Rampion 2 will be tolerable against background levels of vessel movements within the area.

7.9.14 Whilst the specific assessment presented within that chapter relates to vessel passage, the increase in marine traffic arising from the construction activities was identified as being relatively minor with respect to baseline vessel numbers in the area. As noted in the baseline section (**Section 7.6**), the majority of dive sites used in the area fall outside the boundaries of the Proposed Development (see

Figure 7.8, Volume 3) and therefore actual dive activities (at wreck or feature locations) are unlikely to be impacted. Considering these findings, together with the notifications for planned works that will be issued (C-46, C-85, **Table 7-12**) and the implementation of the VMP (C-51, **Table 7-12**), it is considered that any risks of collision or disruption to dive vessels and activities will be minimised.

7.9.15 Impacts to other sea-based recreational activities (surfing, kite surfing, wind surfing, bathing and canoeing/kayaking) are not likely to be affected by construction vessel activity given the inshore locations of the majority of such pursuits.

7.9.16 Overall, the impact is considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible and there will be no impact arising on the long-term viability of any of these activities. Therefore, the magnitude of the impact from construction activity vessel movements is assessed as being **low** for diving and **negligible** for other water sports.

Recreational fishing

7.9.17 As identified in **Chapter 13**, the increase in vessels from the construction of Rampion 2 will be tolerable against baseline levels of vessel movements within the area, with a relatively minor increase in baseline vessel numbers as a result of the construction phase works. There is potential for some disruption to the use of the sites within the PEIR Assessment Boundary, however the areas subject to active construction works (and therefore increased vessel movements) at any one time will be small and therefore any attendant restriction on boat based angling activities will be similarly limited in extent. As a result, and with reference to the provisions for advance notification of the specific locations of construction work during this phase of the Proposed Development (C-46, C-85, **Table 7-12**) and the implementation of the VMP (C-51, **Table 7-12**), it is considered that any risks of collision or disruption to recreational (boast based) angling activities will be minimised. There are no anticipated impacts on shore-based angling as a result of increased vessel movements. The impact is considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible and the magnitude of impact is therefore **low** for boat based angling and **negligible** for shore-based angling.

Sensitivity or value of receptor

Marine aggregates

7.9.18 Access to aggregate resource may be temporarily affected as a result of dredgers not being able to work up to the edge of an area due to the increased presence of construction vessels and this could constrain dredger access to aggregate resources from the need to maintain separation to ensure safe operations.

7.9.19 The sensitivity to impact is expected to be greatest in the Owers Bank extraction region, due to proximity to the development area (in particular 396/1 and 488). RED will continue engagement with the relevant aggregate companies (Tarmac, HAML and Cemex) to discuss and agree appropriate measures to ensure that conflicts are minimised to as far as reasonably possible between vessel movements across the PEIR Assessment Boundary and any third-party usage of the areas.

7.9.20 The receptor is considered to be of low vulnerability, high recoverability and of high-value and therefore considered to be of **medium** sensitivity.

Disposal sites

7.9.21 As a result of the separation distance of the majority of disposal grounds from the PEIR Assessment Boundary (>12km) it is unlikely that actual operations at these locations could be affected. Although disposal operations could be impacted via potential interruptions to normal routes and navigational passage to and from the disposal sites, the potential impact on vessels in the area was assessed in **Chapter 13** as being tolerable against baseline levels. On this basis, the sensitivity of these sites is considered to be **low**.

7.9.22 The exception to this relates to the Rampion 1 disposal area and that of the future Aquind cable, which will, if consented, be licensed as a disposal site along its length. The Aquind Cable Site A disposal site overlaps with the Rampion 2 site and the Rampion 1 disposal site is immediately adjacent to the boundary of the Proposed Development.

7.9.23 Engagement will be conducted with both operators to manage the potential for impact and to discuss and agree appropriate measures to minimise the risk of conflicts arising between vessel movements within the study area in connection with aggregate operations. In addition to consultation, the controls applied through the commitments (notifications and the use of a VMP as set out in **Table 7-12**) will ensure any potential for conflict is minimised so that access to and use of these disposal sites will not be impacted. It is considered, therefore, that the sensitivity of the Rampion 1 and the Aquind Cable A disposal sites to the increased vessel movements is **medium**, reflecting that whilst potential for interruption exists, with management and communication, any interruptions to access and usage of disposal sites will be minimised to ensure disruption to activities will not be beyond tolerable levels.

Offshore wind

7.9.24 The existing (and operational) Rampion 1 project will be sensitive to the potential for interruption to operational and maintenance activities. RED will continue ongoing interaction and engagement with the operators of Rampion 1in order to manage this and to manage the potential for impact and minimise the potential for conflicts to arise between the construction vessels of Rampion 2 and operation and maintenance vessels for Rampion 1. Additionally, the impact will be mitigated through the use of a VMP and advanced warning of construction activities through NtM (as identified in **Table 7-12**), therefore ensuring any potential for impacts on vessel access to the Rampion 1 will be appropriately managed.

7.9.25 The sensitivity of the offshore wind receptors to the increased vessel movement is therefore considered to be **low**, on the understanding that potential impacts are tolerable and short term.

Military activity and munitions

7.9.26 Impacts are expected to be in the form of potential disruption to military activities within the impact area, which could impact of freedom of movement for military exercises. As discussed within **Chapter 13**, on average there is less than one unique military vessel per day recorded within the study area and therefore disruption to military exercises is likely to be limited.

7.9.27 RED will ensure ongoing engagement and consultation with the MoD (as set out in **Table 7-21**) in order establish and agree management measures to limit the potential for construction activities to impinge on any military exercises to avoid impacts to the use of the PEXA. It is envisaged that the impact will be mitigated through the use of a VMP and advanced warning of construction activities through NtM (as identified in **Table 7-12**). On this basis, the sensitivity of military activity and munition receptors to the increased vessel movement is considered to be **medium.**

Subsea cables and pipelines

7.9.28 Impacts from increased vessel movement have the potential to disrupt maintenance activities for the relevant subsea cables and pipelines, should these be required during the construction phase of the Proposed Development.

7.9.29 The greatest potential for impact is expected to arise for the Aquind interconnector cable that runs through the south west of the site, principally due to proximity. However, RED will engage with the operator of the Aquind interconnector and manage works to avoid any significant disruption as a result of the Rampion 2 construction phase, in order to manage the potential for impact and to minimise the potential for conflicts to arise. As part of this process, the potential for disruption will be mitigated through the management of vessel movements via the VMP and there will be advanced warning of vessel transits through NtM (as identified in **Table 7-12**). The sensitivity of the receptor is therefore considered to be **low.**

Recreational boating and sailing

7.9.30 There is potential for temporary disruption of some sailing routes and general boating in the area.

7.9.31 The greatest potential for impact will be on the general boating area through which the export cable corridor passes, however, this will be limited spatially to the locations where construction vessels are present and of temporary duration. RED will engage with the relevant clubs and associations in order to minimise the potential for disturbance, and the adoption of the VMP, with advanced warning of vessel transits through the NtM as an embedded environmental measure to be used during construction will minimise this impact (see **Table 7-12**).

7.9.32 As set out in **Chapter 13**, on the basis of the high level of vessel activity that already uses the area, and the minor increase in vessel traffic arising from the construction of the Proposed Development, the recreational boating and sailing communities are unlikely to be sensitive this impact.

7.9.33 Recreational boating and sailing users are deemed to be of low vulnerability, high recoverability and medium value and therefore the sensitivity is considered to be

medium, on the understanding that the receptors will be able to undertake these activities elsewhere within the area and the impact is temporary and reversable.

Diving and water sports (including surfing)

7.9.34 Impacts from the increased vessel traffic could potentially interfere with any diving or water sport activity within the area.

7.9.35 The greatest impact is expected to be on dive sites to the existing Rampion 1 project and dive sites nearby as the construction activities and their associated safety zones (including vessel traffic) will prevent any dives being undertaken in the close vicinity of the works or along vessel transit routes. As described within the baseline, there are a number of dive centres based along the coast, many of which run dive trips to locations in the area around the proposed development site, though few are located within the PEIR Assessment Boundary. The sensitivity of diving as a receptor to increased vessel traffic is therefore considered to be low, as interaction will be minimal, the majority of sites visited are outside the area of works and any short-term interruption will be reversible.

7.9.36 The remaining water sports activities take place inshore and therefore are unlikely to be sensitive to the potential impacts of increased vessel traffic as they will not be affected by the increased vessel movements.

7.9.37 The sensitivity of the receptor is therefore considered to be **low** for diving and **negligible** for all other activities.

Recreational fishing

7.9.38 Impacts from the increased vessel traffic could potentially interfere with recreational boat based and charter fishing activities within the area. However, given the baseline vessel movements within the area it is understood that this receptor is unlikely to be sensitive to increased vessel movements of the scale predicted for Rampion 2 construction works. Additionally, environmental measures will be implemented in order to minimise the effects from increase vessel activities, including the use of the VMP, and there will be advanced warning of vessel transits through NtM (as identified in **Table 7-12**). Shore based angling is not considered to be sensitive as it will not be affected by the increase in vessel movements on the basis of the shoreline locations from which this activity is undertaken.

7.9.39 It is therefore considered that the sensitivity of the receptor is **low** (boat-based angling) and **negligible** (shore-based angling).

Significance of residual effect

Marine aggregates

7.9.40 Overall, it is considered that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low**. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Disposal sites

7.9.41 For the Rampion 1 and Aquind Cable A disposal sites, it is considered that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low**, the

effect will be of **minor** significance, which is not significant in EIA terms. For all other disposal sites, the receptor is deemed to be of **low** sensitivity and the magnitude of impact is also **low**; the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Offshore wind

7.9.42 Overall, it is considered that the sensitivity of offshore wind is **low**, and the magnitude of the increased vessel movements is predicted to be **low**. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Military activity and munitions

7.9.43 RED will have ongoing consultation and communication with the MoD to ensure that there will be no conflict between RED vessels and the MoD and there are a number of embedded environmental measures that will be deployed, for example, circulation of information and notice to mariners, it is likely that the construction activities will be taken into consideration by the MoD.

7.9.44 Overall, it is considered that the sensitivity of military activity and munition is **medium**, and the magnitude of the increased vessel movements is **low**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Subsea cables and pipelines

7.9.45 Overall, it is considered that the sensitivity of cables and pipelines is **low**, and the magnitude of the impact predicted to be **low** for the IFA2 and Aquind cables and **negligible** for all other subsea cables. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational boating and sailing

7.9.46 Overall, it is considered that the sensitivity of recreational boating is **medium**, and the magnitude of the impact is **low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Diving and water sports (including surfing)

7.9.47 It is considered that the sensitivity of diving is **low** and for other water sports **negligible**. The magnitude of impact is predicted to be **low** for diving and **negligible** for all other water sports. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational fishing

7.9.48 It is considered that the sensitivity of boat based recreational fishing is **low**, and negligible for shore-based angling. The magnitude of the impact is **low** for boat based angling and **negligible** for shore-based angling. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Displacement from the use of advisory safety zones (500m) associated with construction

7.9.49 As described within **Chapter 4: The Proposed Development**, the construction of Rampion 2 will include a maximum of 116 WTGs, 116 associated inter-array cables with a total length of 250km, a maximum of 3 OSSs and their associated

inter-export cables up to 50km in length and a maximum of four export cables with a total length of 76km.

7.9.50 Throughout the construction period, RED will circulate detailed information including construction vessel routes, locations and dates, associated safety zones (see **paragraph 7.9.51** below) through Notice to Mariners (NtM) and Kingfisher bulletins in advance (further details of this environmental measure can be found in **Table 7-12**, C-46).

7.9.51 During the construction of each part of the infrastructure listed above, there will be a 500m advisory safety zones in order to maintain safety of the other users and the construction site. This is in line with embedded environmental measure C – 56 (see **Table 7-12** for details) which details how RED will apply for safety zones up to 500m radius over the construction phase. Guard vessels will also be used where appropriate to ensure that adherence to these safety zones is kept in order to minimise risks to surface navigation.

Magnitude of impact

Marine aggregates

7.9.52 There is potential for access to the aggregate resource to be constrained as a result of dredgers not being able to dredge up to the edge of the area due to the presence of advisory safety zones. This could constrain dredger access to aggregate resources from the need to respect the safe working separation distance from Rampion 2 construction works.

7.9.53 Additional controls and notifications of works that will be applied to the Rampion 2 construction vessel activity (C-46, C-85 and C-51, **Table 7-12**), will ensure any potential for access or dredging activity displacement can be appropriately managed to minimise any potential for conflict or constraint on operations.

7.9.54 The magnitude of the impact from the presence of temporary safety zones (< 500m) during construction activities relating to Rampion 2 is considered to be **low** as the impact is predicted to be local spatial extent and of short duration, being applicable only during works undertaken within the part of the Proposed Development area that borders the boundary of areas 396, 488 and 453/1 and /2, see **Table 7-9** and **Figure 7.2, Volume 3**.

Disposal sites

7.9.55 The magnitude of the impact from the presence of temporary safety zones (< 500m) has the potential to impact on access to the Aquind Cable Site A and Rampion 1 disposal sites. The impact is however considered to be small scale and of short duration in that it is predicted to potentially affect these disposal sites for a number of weeks and is reversible. In addition, the presence of construction and the attendant safe passing separation zones will be promulgated via the notifications for planned works that will be issued (C-46, C-85, **Table 7-12**) as well as the implementation of the VMP (C-51, **Table 7-12**). Collectively these embedded environmental measures will ensure any risks of activity or access displacement at the disposal sites will be appropriately managed. Due to the distances from the Proposed Development, there will be no potential for disruption

to the operation of the other disposal sites within the study area arising from the implementation of safety zones around construction works.

7.9.56 On this basis the use of advisory safety zones during construction activities relating to the Rampion 1 and Aquind Cable A disposal sites is considered to be **low** and **negligible** for all other sites.

Offshore wind

7.9.57 There is only one offshore wind farm located in the close vicinity to the PEIR Assessment Boundary (Rampion 1) and which could, therefore, be subject to potential localised disturbance from the presence of temporary safety zones. Additional controls and notifications of works that will be applied to the Rampion 2 construction vessel activity (C-46, C-85 and C-51, **Table 7-12**), will ensure any risks of collision or disturbance impacts are appropriately managed. Any impacts will be of short to medium-term duration (throughout the construction phase), of localised extent, intermittent and reversible. The magnitude is therefore considered to be **low.**

Military activity and munitions

7.9.58 The overlap of the PEIR Assessment Boundary is with D037 PEXA area, this overlap approximately 28km^2, which constitutes 0.9% of the total PEXA area (see **Figure 7.1, Volume 3**). Based on this, the magnitude of the impact from the presence of temporary safety zones (< 500m) during construction activities relating to Rampion 2 is considered to be **low**, as impacts are spatially localised, of short duration and affect only a minor and peripheral area of the PEXA.

Subsea cables and pipelines

7.9.59 The majority of existing subsea cables in the area are at distance from the PEIR Assessment Boundary (>12km) and therefore the implementation of safety zones will not affect any maintenance or other activities associated with this infrastructure. For the IFA2 cable, which is located approximately 300m west of the PEIR Assessment Boundary at its closest point, the controls and notifications of works that will be applied to the Rampion 2 construction vessel activity (C-46, C-85 and C-51, **Table 7-12**), will ensure any risks of collision or disturbance impacts are appropriately managed, limiting the potential magnitude of any impact. Both the area and time period over which the potential buffer areas could affect operations at the cable are also small and any impacts will, therefore, be similarly spatially and temporally limited. As the Aquind cable runs through the Rampion 2 PEIR Assessment Boundary, both the spatial and duration extent of impacts will be greater than for the IFA2 cable, however the same controls and commitments will be applied to the Aquind cable proposal, should that be consented. Overall, impacts are considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible. The magnitude of activity or access displacement due to safety zones arising from the construction activity of the Proposed Development is therefore considered to be **low** for the IFA2 and Aquind cables and **negligible** for the other subsea cables within the study area.

Recreational boating and sailing

7.9.60 The use of advisory safety zones during construction has the potential to impact on recreational boating and sailing by restricting access to boating areas and

could lead to some deviation from sailing and boating routes. Much of the smaller recreational activity will be concentrated relatively close to the coastline and inshore of the PEIR Assessment Boundary, as shown in the RYA baseline data, with interaction principally possible in the nearshore parts of the export cable corridor, however the RYA route data also indicates that vessels, likely the larger motorboats and yachts, utilise areas further offshore and across the Rampion 2 PEIR Assessment Boundary (see **Figure 7.7, Volume 3**). There is thus potential for sailing or boating routes to be affected by safety zones around construction operations when the construction vessels are actively working at the site.

7.9.61 The magnitude of potential impacts will be reduced by the controls and notifications of works related to Rampion 2 construction vessel activity (C-46, C-85 and C-51, **Table 7-12**). Even so, whilst recreational craft activity could be affected by displacement from some areas during the construction phase, the potential for impact will be short to medium-term, of local extent, intermittent and reversible. The magnitude is therefore considered to be **low** for both vessels using the offshore areas (with the management commitments in place) and smaller craft in the nearshore zone (on the basis of a lower likelihood of encounter together with the management controls).

Diving and water sports (including surfing)

7.9.62 The use of advisory safe passing zones (<500m) during construction has the potential to restrict access to dive sites and recreation activities. As noted in the baseline section (**Section 7.6**), the majority of dive sites visited in the area fall outside the PEIR Assessment Boundary of the Proposed Development (see **Figure 7.8, Volume 3**) and therefore actual dive activities (at wreck or feature locations) are unlikely to be impacted. As a result, and with the implementation of the notifications for planned works that will be issued (C-46, C-85, **Table 7-12**) and control of vessel routeing under the VMP (C-51, **Table 7-12**), it is considered that any risks of exclusion from dive locations or displacement of diving activities will be effectively minimised.

7.9.63 Impacts to other sea-based recreational activities (surfing, kite surfing, wind surfing, bathing and canoeing/kayaking) are not likely to be affected by safety zones during construction of the Proposed Development given the inshore locations of the majority of such pursuits.

7.9.64 The impact from the presence of temporary safety zones (< 500m) during construction activities relating to Rampion 2 is short to medium-term (throughout the construction phase), of local extent, intermittent and reversible and there will be no impact arising on the long-term viability of any of these activities. The magnitude of the impact is therefore considered to be **low** for diving and **negligible** for all other water sports.

Recreational fishing

7.9.65 The use of advisory safe passing zones (<500m) during construction has the potential to restrict access to boat-based fishing areas within the PEIR Assessment Boundary, however the areas subject to active construction works (and therefore increased vessel movements) at any one time will be small and therefore any attendant restriction on boat based angling activities will be similarly limited in extent. As a result, and with reference to the provisions for advance

notification of the specific locations of construction work during this phase of the Proposed Development (C-46, C-85, **Table 7-12**) and the implementation of the VMP (C-51, **Table 7-12**), it is considered that any risks of activity or access displacement to recreational (boast based) angling activities will be minimised. There are no anticipated impacts on shore-based angling as a result of the implementation of safety zones around construction works.

7.9.66 The impact is considered to be short to medium-term (throughout the construction phase), of local extent, intermittent and reversible and the magnitude of impact is therefore **low** for boat based angling and **negligible** for shore-based angling.

Sensitivity or value of receptor

Marine aggregates

7.9.67 Impacts are expected to occur in the form of interruptions to the normal routes and navigational passages used by aggregate extraction vessels, due to in part to the implementation of advisory safety zones at the Proposed Development. This may lead to exclusion to small areas of aggregate resources.

7.9.68 The impact is expected to be greatest in the Owers Bank extraction area due to their proximity to the PEIR Assessment Boundary (including areas 453, 488, 396/1, 435/1 and 435/2), see **Table 7-9** and **Figure 7.2, Volume 3**.

7.9.69 RED will have ongoing engagement with the relevant aggregate companies to discuss and agree appropriate measures to ensure that no conflicts arise. RED have MOUs in place with the relevant aggregate companies and will continue to consult with them in order to identify the appropriate mitigation which will be agreed through commercial agreement prior to consent and will address safety concerns.

7.9.70 Marine aggregates are potentially vulnerable to exclusion from any part of the aggregate licence area that may be incurred through the implementation of safety zones, though both the actual location of dredging interest within the licence area and the proximity of that to construction activities (i.e. whether or not within 500m) will have an influence on the dredger vessels sensitivity to impact. The aggregate extraction activities are currently focused on areas at greater than 500m distance to the PEIR Assessment Boundary (TCE & BMAPA, 2018, 2019, 2020) and this may reduce the sensitivity to the potential impact.

7.9.71 In relation to potential activity or access displacement arising from the temporary safety zones, the receptor is considered to be of low vulnerability, high recoverability and of high-value and therefore considered to be of **medium** sensitivity.

Disposal sites

7.9.72 As a result of the separation distance of the majority of disposal grounds from the PEIR Assessment Boundary (>12km) it is unlikely that actual operations at these locations could be affected by the implementation of safety zones around construction works. The most sensitive receptors will be the Rampion 1 and the proposed Aquind cable development (Aquind Cable Site A) disposal sites which are adjacent to and overlap the PEIR Assessment Boundary, respectively. The potential for activity or access displacement to both areas will constitute only a

minor part of the two disposal sites and will be of short-term duration. RED will have ongoing engagement with the relevant company in order to manage these impacts to ensure that no conflicts arise from the construction. RED will continue to consult with the relevant companies in order to identify the appropriate mitigation which will be agreed through commercial agreement prior to consent and will address safety concerns

7.9.73 The sensitivity of disposal sites to displacement from the use of advisory safety zones (500m) is therefore considered to be **medium**, reflecting that the receptor is able to tolerate the potential impacts and are able to recover.

Offshore wind

7.9.74 The existing (and operational) Rampion 1 project will be sensitive to the potential for interruption to operational and maintenance activities that could arise as a result of the use of safety zones at construction locations for Rampion 2. RED will continue ongoing interaction and engagement with the operators of Rampion in order to manage this and to ensure that there will be no conflict between the construction vessels of Rampion 2 and operation and maintenance vessels for Rampion 1. Additionally, the impact will be mitigated through the use of a VMP and advanced warning of construction activities through NtM (as identified in **Table 7-12**), therefore ensuring any potential for impacts on vessel access to Rampion 1 will be appropriately managed.

7.9.75 The sensitivity of the offshore wind receptors to the implementation of safety zones is therefore considered to be **low**, on the understanding that potential impacts are short term.

Military activity and munitions

7.9.76 Impacts are expected to be in the form of disruption to military activities within the impact area.

7.9.77 The greatest impact is expected to be on D037 which has a slight overlap with the PEIR Assessment Boundary (of 4.28km^2). This is a minor area in comparison to the wider D037 practice area. RED will have ongoing consultation and communication with the MoD in order to ensure that there will be no conflict between RED vessels and the MoD and there are a number of embedded mitigation measures that will be deployed, for example, circulation of information and notice to mariners (as identified in **Table 7-12**), it is likely that the construction activities will be taken into consideration by the MoD.

7.9.78 The sensitivity of military activity and munition receptors to displacement from the use of advisory safety zones (500m) is considered to be **low**.

Subsea cables and pipelines

7.9.79 Impacts any arise from any interruption of construction and maintenance activities for the relevant subsea cables and pipelines.

7.9.80 The greatest potential for impact is expected to arise for the Aquind interconnector cable will run through the south west of the site (if secured), principally due to proximity. However, RED will engage with the operator of the Aquind interconnector and manage works to avoid any significant disruption as a result of the Rampion 2 construction phase, ensuring that there will be no conflict between

the two infrastructure activities. As part of this process, the potential for disruption through any restricted access or displacement of activity as a result of the safety zones implementation will be mitigated through the management of vessel movements via the VMP and there will be advanced warning of construction works activities and locations transits through NtM (as identified in **Table 7-12**). The sensitivity of the receptor is therefore considered to be **low.**

Recreational boating and sailing

7.9.81 There is potential for temporary disruption of some sailing routes and general boating in the area.

7.9.82 The greatest impact will be on from the export cable corridor, as this is within a general boating area and a high density of recreational vessel movements. RED will engage with the relevant sailing groups and associations in order to minimise disruption, and the adoption of the VMP, with advanced warning of vessel transits through the NtM as an embedded mitigation measure to be used during construction will minimise this impact (see **Table 7-12**).

7.9.83 For recreational and public users of the area in the vicinity of the development, public notifications outlining the timing and scale of construction operations, as well as NtM for users of nearshore areas, will be provided well in advance of construction works commencing and throughout the construction phase.

7.9.84 Recreational boating and sailing users are deemed to be of low vulnerability, high recoverability and medium value and therefore the sensitivity is considered to be **medium**, on the understanding that the receptors will be able to undertake these activities elsewhere within the area and the impact is temporary and reversable.

Diving and water sports (including surfing)

7.9.85 Impacts from displacement from the use of advisory safety zones could potentially interfere and restrict access to diving and water sports activities within the area.

7.9.86 The greatest impact is expected to be on any dive sites and recreational activities which are usually undertaken within 500m of the PEIR Assessment Boundary, such as dive trips to the existing Rampion 1 project and therefore diving activities may be displaced. As described within the baseline, there are a number of dive centres based along the coast, many of which dive at locations around the Proposed Development, though few appear to be located within the PEIR Assessment Boundary itself.

7.9.87 The remaining water sports activities take place inshore and therefore are unlikely to be sensitive to potential impacts arising from displacement or access issues as a result of the use of advisory safety zones.

7.9.88 Details on the timings and schedules of works will be promulgated (as identified in **Table 7-12**) ahead of works in order to allow for recreational activities to plan to avoid these construction areas.

7.9.89 The sensitivity of the receptor is therefore considered to be **low** for diving, on the understanding that the receptors will be able to undertake these activities elsewhere within the area and the impact is reversible; and **negligible** for all other water sports.

Recreational fishing

7.9.90 Impacts from the displacement from the use of advisory safety zones could potentially interfere with recreational fishing activities within the area.

7.9.91 Boat based angling will potentially be sensitive to exclusion from favoured fishing spots within the PEIR Assessment Boundary, however the areas subject to active construction works (and therefore advisory safety zones) at any one time will be small and there are a wide range of alternative locations and areas that will remain unaffected during construction, both inside and outwith the PEIR Assessment Boundary.

7.9.92 As a result of the provisions for advance notification of the specific locations of construction work during this phase of the Proposed Development (C-46, C-85, **Table 7-12**) and the implementation of the VMP (C-51, **Table 7-12**), angling boat operators will be kept fully informed as to the location and duration of any potential restricted areas during the construction phase; details on the timings and schedules of works will be promulgated (as identified in **Table 7-12**) ahead of works in order to allow for recreational fishmen to avoid these construction areas and safety zones. Therefore, these provisions, alongside the flexibility to fish in alternative and available locations, reduces the potential for these receptors to be sensitive to the potential impacts arising.

7.9.93 There are no anticipated impacts on shore-based angling as a result of the implementation of safety zones. It is therefore considered that the sensitivity of the receptor is **low** for boat based angling and **negligible** for shore-based fishing**.**

Significance of residual effect

Marine aggregates

7.9.94 Overall, it is considered that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Disposal sites

7.9.95 Overall, it is considered that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low** for the proposed Aquind Cable A area and Rampion 1 and **negligible** for all other disposal sites. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Offshore wind

7.9.96 Overall, it is considered that the sensitivity of offshore wind is **low**, and the magnitude of displacement from the use of advisory safety zones (500m) is **low** and the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Military activity and munitions

7.9.97 Overall, it is considered that the sensitivity of military activity and munition is **low**, and the magnitude of the physical presence of infrastructure and temporary advisory safety zones (500m) is **low**, and the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Subsea cables and pipelines

7.9.98 Overall, it is considered that the sensitivity of cables and pipelines is **low**, and the magnitude of the impact is **low** for IFA2 and the proposed Aquind interconnectors and **negligible** for all other subsea cables. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational boating and sailing

7.9.99 Overall, it is considered that the sensitivity of recreational boating is **medium**, and the magnitude of the impact is **low**, and the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Diving and water sports (including surfing)

7.9.100 It is considered that the sensitivity of diving is **low** and **negligible** for all other water sports, and the magnitude of the impact is **low** for diving and **negligible** for all other water sports. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational fishing

7.9.101 It is predicted that the sensitivity of boat based recreational fishing is low and for shore-based angling **negligible.** The magnitude of the impact is **low** on boat-based angling and **negligible** for shore-based fishers. The effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Temporary increases in suspended sediment and subsequent deposition

7.9.102 Seabed preparation for sandwave clearance, cable trenching (for array and export cables), drilling for foundations and spoil dispersal are all predicted to cause sediment plumes. These temporary localised increases in SSC and the associated sediment deposition are expected from seabed preparation works (such as sandwave and boulder clearance) and foundation and cable installation works. **Chapter 6: Coastal processes** and **Appendix 6.3: Coastal processes technical report: Impact assessment, Volume 4** provides a full description of the offshore physical environment assessment, with a summary of the maximum design scenario associated with the impact, as identified in **Table 7-11** of this chapter.

7.9.103 The maximum design scenario, and therefore worst-case scenario for SSC and deposition during the construction phase of Rampion 2 is described in **Table 7-11** and is predicted to be a total release of 2,905,500m^3 of sediment.

7.9.104 **Table 7-16** summarises the maximum sediment plume distance and the peak increases in SSC and deposition that could occur due to the construction activities at Rampion 2. A detailed assessment and plume modelling is available in **Chapter 6** and **Appendix 6.3, Volume 4**.

Table 7-16 Temporary increases in SSC and sediment deposition as a result of construction activities at Rampion 2

Construction Impact	Location	Maximum sediment plume distance	Details of increase in SSC and deposition
Sandwave clearance Seabed preparation for foundations (overspill during active dredging using a trailing suction hopper dredger (TSHD))	Offshore export cable corridor and array	16km (springs) and 8km (neaps)	1) Within small distances (<50m) of the dredger, SSC associated with overspill at the water surface during active dredging can be in the order of thousands to low tens of thousands of mg/l, reducing rapidly with time and distance (through settlement and dispersion) to the order of hundreds or tens of mg/l. 2) All SSC effects associated with overspill of sands during active dredging are expected to be spatially limited to within 400 - 700m of the dredger, and temporally limited to the period of active dredging plus 10 - 25 minutes afterwards (depending on the local water depth and current speed). Effects associated with gravels are expected to be more limited (up to 100m and 1 - 5 minutes). 3) At 2km downstream during or shortly after active dredging, the concentration of any fine sediments persisting in suspension is expected to be less than approximately 100 mg/l; at 5km downstream, this may have reduced to approximately 10 mg/l. Concentrations of suspended fines will continue to reduce gradually over time through dispersion, to less than measurable levels (<10mg/l) within 2 - 3 days. 4) The maximum expected average local thickness of deposition in the case of predominantly gravelly sediments is 10cm over an area of 1,125m^2, or 30cm over an area of 350m^2. 5) The maximum expected average local thickness of deposition in the case of

Construction Impact	Location	Maximum sediment plume distance	Details of increase in SSC and deposition
			predominantly sandy sediments is 1 to 2cm over an area of 4,000 - 16,000m^2. 6) Fines are expected to become widely dispersed and so will not resettle with measurable thickness locally.
Sandwave clearance Seabed preparation for foundations (spoil disposal from a TSHD)	Offshore export cable corridor and array	16km (springs) and 8km (neaps)	1) Approximately 90% of the total spoil volume in the hopper will descend directly to the seabed as a high-density discrete unit in the 'active phase' of the plume. This does not directly cause any meaningful change of SSC. The remaining 10 percent of material will form a more diffuse suspension in the 'passive phase' of the plume. 2) Within a few tens of metres, at the time of spoil release, very high passive phase plume concentrations are expected, up to hundreds of thousands to millions of mg/l initially, reducing to thousands of mg/l as the plume diffuses to a size of 100m or larger. 3) All SSC effects associated with sands and gravels in the passive phase of the plume are expected to be spatially limited to within 400 - 700m of the dredger, and temporally limited to 10 - 25 minutes following release (depending on the local water depth and current speed). Effects associated with gravels are expected to be more limited (up to 100m and 1 - 5 minutes). 4) The concentration of any fine sediments persisting in suspension will vary in proportion to the dimensions of the plume as it is dispersed over time. A plume with a small footprint (100m) may have a maximum concentration in the order of thousands of mg/l, but when dispersed to a

Construction Impact	Location	Maximum sediment plume distance	Details of increase in SSC and deposition
			larger footprint (1000m) may have a maximum concentration in the order of low tens of mg/l. Concentrations of suspended fines will continue to reduce gradually over time through dispersion and deposition, to less than measurable levels (<10mg/l) within 2 - 3 days. 5) The final distribution of sediment on the seabed from the active phase cannot be predicted in advance, but the total volume, and therefore the area of effect for a given average thickness, is limited. If the average local thickness of deposition is 5cm, the maximum area of effect per spoil disposal event is approximately 198,000m^2, equivalent to a 500m diameter circle; if the average local thickness of deposition is 30cm, the maximum area of effect per spoil disposal event is approximately 33,000m^2, equivalent to a 200m diameter circle. In all cases, a relatively thicker deposit will have a smaller footprint and a relatively larger footprint will require a smaller average thickness. 6) Sands and gravels in the passive phase will also be advected by any tidal currents present as they settle to the seabed, and so may or may not overlap the main active phase deposit. The additional deposit may contribute or may add up to approximately 10 percent to the area of effect for the given average thicknesses above, or 10 percent additional thickness for the same area, or a proportional combination of the two. 7) Fines in the passive phase are expected to become widely dispersed and so will not resettle with measurable thickness locally.

Construction Impact	Location	Maximum sediment plume distance	Details of increase in SSC and deposition
Offshore trenching for cables	Offshore export cable corridor and array	16km (springs) and 8km (neaps)	1) Within 5m of active trenching, very high plume concentrations are expected. SSC could be hundreds of thousands to millions of mg/l. 2) Within 100 - 200m downstream from active trenching (depending on the initial height of ejection and the local current speed) in a relatively narrow plume (up to tens of metres wide), mainly resuspended sands and gravels will cause high SSC in the order of thousands to tens of thousands of mg/l. However, the majority of such coarser sediments are expected to resettle to the seabed (reducing or ending any associated plume effects) within approximately 2 - 5 minutes of resuspension. 3) At 2km downstream during or shortly after active trenching, the concentration of any fine sediments persisting in suspension is expected to be less than approximately 100mg/l; at 5km downstream, this may have reduced to approximately 50mg/l. Concentrations of suspended fines will continue to reduce gradually over time through dispersion, to less than measurable levels (<10mg/l) within 2 - 3 days. 4) The maximum expected average local thickness of deposition in the case of predominantly gravelly sediments is 30 to 60cm, over an area up to 5 - 10m downstream, along the length of the trench. 5) The maximum expected average local thickness of deposition in the case of predominantly sandy sediments is 3 - 6cm, over an area up to 100 - 200m downstream, along the length of the trench.

Construction Impact	Location	Maximum sediment plume distance	Details of increase in SSC and deposition
			6) Fines are expected to become widely dispersed and so will not resettle with measurable thickness locally.
Drilling at foundations	Offshore array	16km (springs) and 8km (neaps)	1) Within small distances (<50m) of the drilling, SSC associated with overspill at the water surface during active dredging can be in the order of thousands to low tens of thousands of mg/l, reducing rapidly with time and distance (through settlement and dispersion) to the order of hundreds or tens of mg/l. 2) All SSC effects associated with overspill of sands during active dredging are expected to be spatially limited to within 400 - 700m of the dredger, and temporally limited to the period of active dredging plus 10 - 25 minutes afterwards (depending on the local water depth and current speed). Effects associated with gravels are expected to be more limited (up to 100m and 1 - 5 minutes). 3) At 2km downstream during or shortly after active dredging, the concentration of any fine sediments persisting in suspension is expected to be less than approximately 1000mg/l; at 5km downstream, this may have reduced to approximately 300mg/l. Concentrations of suspended fines will continue to reduce gradually over time through dispersion, to less than measurable levels (<10mg/l) within 2 - 3 days. 4) Deposition thicknesses are comparable to and no more than described for spoil disposal from a TSHD.

Magnitude of impact

Marine aggregates

7.9.105 SSC and deposition has the potential to impact on aggregate sites by causing changes to seabed composition and bathymetry, however given the above information summarised in **Table 7-16** it can be confirmed that there is sufficient distance between the array area and the aggregate sites that any increase in bed level will be immeasurable in practice.

7.9.106 Taking the above into consideration, the impact of SSC and deposition from construction activities is expected to be short-term, temporary and of relatively localised extent (mostly within the tidal excursion) and reversible. The magnitude of the impact is therefore considered to be **low**, indicating that there is no potential for the impact to threaten the long-term viability of the site.

Disposal sites

7.9.107 Construction activities have the potential to cause changes to seabed composition and bathymetry due to potential increases in suspended sediment and associated sediment deposition. This has the potential to have impacts on marine disposal sites by increasing the seabed level within disposal sites.

7.9.108 Rampion 2 overlaps with two disposal sites (Aquind Cable A and Rampion 1). Taking the **Table 7-16** into consideration, the impact of SSC and deposition from construction activities is expected to be short-term, intermittent and of relatively localised extent (mostly within the tidal excursion) and reversible.

7.9.109 The magnitude of the impact is therefore considered to be **low**, indicating that there is no potential for the impact to threaten the long-term viability of the site.

Diving and water sports (including surfing)

7.9.110 Taking **Table 7-16** into consideration, the impact of SSC and deposition from construction activities is expected to be short-term, intermittent and of relatively localised extent (mostly within the tidal excursion) and reversible. The magnitude of the impact is therefore considered to be **low**, indicating that there is no potential for the impact to threaten the long-term viability of the site.

Recreational fishing

7.9.111 Taking **Table 7-16** above into consideration, the impact of SSC and deposition from construction activities is expected to be short-term, intermittent and of relatively localised extent (mostly within the tidal excursion) and reversible. The magnitude of the impact is therefore considered to be **low**, indicating that there is no potential for the impact to threaten the long-term viability of the site.

Sensitivity or value of receptor

Marine aggregates

7.9.112 Impacts have the potential to arise as a result of potential changes to seabed composition and bathymetry due to the increases in SSC and associated sediment disposition, thus potentially affecting the seabed level within the disposal sites. The scenario that represents the worst-case is the use of jetting tools (including mass flow excavators) which are assumed to result in 100% of the material within

the cable trench being liquidised and dispersed in the lower water column, as well as the drilling of up to 50% of foundations with the drill arisings being deposited at the surface.

7.9.113 The magnitude of the maximum potential increase in SSC and deposition resulting from construction activities is within the natural range of the region (**Chapter 6: Coastal processes**) and the impact will be short-term, temporary and of localised extent and reversible. Sufficient distance between the installed infrastructure for Rampion 2 and existing aggregate sites will be left (see **Table 7-11**) such that any changes in bed height will be immeasurable in practice. The closest aggregate extraction area is 396/1 and therefore may be more affected by sediment deposited from cable installation activities. It is expected that increases in bed level may be 3 – 6cm (over an area of up to 200m downstream).

7.9.114 Marine aggregate sites are deemed to be of medium vulnerability, medium recoverability and medium value. The sensitivity of marine aggregates to temporary increases in SSC is therefore considered to be **medium**.

Disposal sites

7.9.115 Impacts have the potential to arise as a result of potential changes to seabed composition and bathymetry due to the increases in SSC and associated sediment disposition, thus potentially affecting the seabed level within the disposal sites.

7.9.116 There is sufficient distance between the array area of the PEIR Assessment Boundary and most disposal sites, that any increases in bed levels will be immeasurable in practice. The greatest impact is expected to be on the proposed Aquind cable development (Aquind Cable Site A) disposal sites which overlaps with the Rampion 2 site and the Rampion 1 disposal site that is located adjacent. As presented in **paragraph 7.9.102 *et seq***. sediment deposition is expected to increase bed level up to 3 – 6cm during cable installation and up to 30cm during sandwave clearance (in gravelly sediments).

7.9.117 Increases in bed level at disposal sites could be critical to their use, essentially adding to the volume of material disposed within them, however considering the magnitude of the impact, this is considered unlikely.

7.9.118 Disposal sites and their users are deemed to be of low vulnerability, medium recoverability and medium value and therefore considered to be **medium** sensitivity, reflecting that the receptor is able to tolerate the potential impact.

Diving and water sports (including surfing)

7.9.119 Impacts from temporary increases in SSC have the potential to interfere with any diving and water sports activities within the area through reduced water clarity.

7.9.120 The greatest impact is expected to be on dive sites to the existing Rampion 1 project and dive sites nearby as the construction activities will prevent any dives being undertaken in the close vicinity of the works. However, given that that SSC and deposition is predicted to travel a limited distance of approximately 5km of the site, it is not considered that the temporary impacts on water clarity will affect recreational diving. Whereas the majority of the water sport activities take place close to the coast and therefore will not be affected by the potential increases in SSC and deposition.

7.9.121 The sensitivity of the receptor is therefore considered to be **low**, on the understanding that the receptors will be able to undertake these activities elsewhere within the area and the impact is temporary and reversable.

Recreational fishing

7.9.122 Impacts from the temporary increases in SSC have the potential to affect recreational fishing via smothering of important habitats, thus affecting fish species targeted by anglers.

7.9.123 As detailed within **Chapter 8: Fish and shellfish ecology,** the sensitivity of fish receptors is assessed as being of medium – low sensitivity and therefore it is considered that the sensitivity of recreational fishing is **medium - low**, on the understanding that the receptor will be largely unaffected, and the impact is temporary and reversable.

Significance of residual effect

Marine aggregates

7.9.124 Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Disposal sites

7.9.125 Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Diving and water sports (including surfing)

7.9.126 It is predicted that the sensitivity of diving and water sports is **low**, and the magnitude of the impact is **low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational fishing

7.9.127 It is predicted that the sensitivity of recreational fishing is **medium - low**, and the magnitude of the impact is **low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Temporary increases in subsea noise associated with the installation of WTG foundations

7.9.128 The assessment focuses on underwater noise from pile-driving for the installation of foundations for offshore structures (such as WTGs and substations). While other activities such as cable laying, dredging and vessel movements will result in underwater noise, these have the potential to affect a very localised extent only, in the immediate vicinity of activities and are therefore insignificant in the context of underwater noise from piling operations (see **Appendix 11.3: Underwater noise, Volume 4**).

7.9.129 Piling operations will take place at Rampion 2 during the construction phase with piling operations taking place over a period of approximately 48 months.

7.9.130 As noted above in **Table 7-11**, the maximum design scenario considered with respect to underwater noise from piling is 116 monopiles being driven with a 4,400kJ hammer energy. It should be noted this maximum hammer energy is considered highly conservative, although this is considered the absolute maximum for the design envelope, hammer energies will be considerably lower for the majority of the time. The hammer energy will only be raised to 4,400kJ when absolutely necessary.

7.9.131 The temporal maximum design scenario represents the longest duration of effects from subsea noise and assumes a scenario whereby piled jacket foundations are used for all offshore structures. The temporal scenario includes a maximum hammer energy of 2,500kJ for pin-pile installation, which is also considered conservative, as with many of the other assumptions discussed in the paragraph above which are expected to be relevant to this maximum hammer energy.

7.9.132 With respect to the duration of the piling activities, the maximum design scenario detailed in **Table 7-11** also makes conservative assumptions. Such that the maximum duration of piling is assumed to be up to 4-hours per pile (with 3-4 pin-piles per WTG and 12 pin-piles per OSS). Therefore, the maximum total duration of piling is up to 3,000 hours, with the duration being considerably less in the event of fewer foundations and/or a different foundation type (for example monopiles).

7.9.133 In order to quantify the spatial extent of the potential noise impacts, a semi-empirical underwater noise propagation model (INSPIRE) was undertaken using the maximum design hammer energy (4,400kJ for monopiles and 2,500kJ for pin-piles) at three noise modelling locations (one at the Eastern edge of the PEIR Assessment Boundary, one at the North-west edge of the PEIR Assessment Boundary (the shallowest location) and one to the South of the PEIR Assessment Boundary (the deepest location)). The following sensitivity assessment provides a summary of the key results of this modelling in the context of the impact assessment on OMU receptors, with full details of the underwater noise modelling presented in **Appendix 11.3: Underwater noise, Volume 4**.

Magnitude of impact

Diving and water sports (including surfing)

7.9.134 Underwater noise from piling could present a safety hazard to divers if not controlled effectively. As described in the baseline section (**Section 7.6**), the study area supports a relatively high level of recreational diving activity and a wide variety of dive spots. Ensuring the safe construction and operation of Rampion 2 is of paramount importance to RED, not only in meeting its duties under the Health & Safety At Work Act, Construction Design & Management (CDM) Regulations and other legislation, but is a fundamental value of the company to provide a duty of care to others who may be affected by its activities.

7.9.135 Piling activities will be undertaken for a approximately of 48 months within the area, and while the worst-case magnitude of impacts theoretically has the potential to be major, the mitigation measures outlined above and in **Table 7-12** (C-99, C-100, C-101, **Table 7-12**), will ensure that the risk of harm to divers in the area at any point during the construction of the Proposed Development is minimised. The management measures include the implementation of advisory exclusion zones

around piling locations within which no diver is recommended to enter the water (C-99, **Table 7-12**).

7.9.136 In addition, and in order to potential exposure to hazardous levels of underwater noise, a comprehensive awareness and communications strategy (a Diver Communication Plan) will be developed by RED in agreement with regulatory authorities to notify the diving/spearfishing community of the timing and duration of proposed works. This will include but not be limited to the appointment of a Diving Liaison Officer (who will be the main point of contact) to work with dive centres, diving clubs (including education establishments), boat operators, Coast Guard, and facilities within jetties and marinas etc. The strategy will include widely publicising (for example on the internet) details of the nature, location and timing of pile driving works and the extent of any relevant advisory exclusion zones. The 'startle' reaction to underwater noise is anticipated as being less likely to occur in divers/spearfishers who have prior knowledge of the possibility of piling noise occurring (C-101, **Table 7-12**).

7.9.137 Finally, the soft-start mitigation referenced above will be determined in discussion with the appointed Diving Liaison Officer and will include engagement and management to ensure divers will not inadvertently drift within an advisory exclusion area during the dive, even where they have entered the water at an appropriate distance from the site works (C-100, **Table 7-12**).

7.9.138 On the basis of this, the potential impact magnitude to divers will be significantly reduced. Therefore, the magnitude of the increase in subsea noise that construction activities relating to Rampion 2 will have is considered to be **low,** indicating that the potential is for localised disturbance and/or loss of some areas on a temporary basis that does not threaten the long-term viability of the activity on the study area.

7.9.139 For all other water sports, the nearshore focus of the activities and the relatively shorter periods spent submerged, and thus potentially subject to underwater noise emissions, the magnitude of the potential impact is considered to be **negligible**.

Recreational fishing

7.9.140 Construction activities, particularly the pile-driving of foundations for offshore structures, will result levels of underwater noise that may impact upon fish species that are sensitive to noise, thereby leading to potential impacts on recreational fishing resource (in terms of target species) (see **Chapter 8: Fish and shellfish** and **Appendix 11.3, Volume 4**). This impact has the potential to extend several km around Rampion 2, depending on the fish species receptor.

7.9.141 As assessed within **Chapter 8**, the significance of effect for fish species as a result of the generation of piling noise is not significant for any species in terms of mortality, mortal injury or recoverable injury. However, moderate adverse behavioural effects to one species, black bream, were identified and this is a potentially significant effect. However, boat-based angling is a mobile sport and other fishing locations, and indeed fish species, can be targeted should black bream in a specific location be temporarily affected by the piling work. The lack of significant effect for the vast majority of species indicates that the potential magnitude of impacts on recreational fishing will be **low** for all boat based and

shore-based anglers, including trips targeting black bream, on the basis of the availability of other locations and species.

Sensitivity or value of receptor

Diving and water sports (including surfing)

7.9.142 The subsea noise has the potential to impact diving and water sports (including surfing) activities through displacement of diving activities during piling operations undertaken during construction.

7.9.143 The effects of underwater noise on humans have not been widely investigated, with most research and analysis having been conducted for the military sector. However, where there has been a great deal of attention given to exposure of humans to noise in air then possibility of waterborne noise exposures should be taken into consideration. In the case of potential impacts due to piling for the installation of offshore WTGs in the vicinity of popular diving sites, the potential risk of adverse effects exists.

7.9.144 The effects of exposure of humans to underwater impulsive sound depends on the level of exposure and is divided into three categories:

- primary (life-threatening physical injury or fatality);
- secondary (non-life-threatening physical injury such as auditory damage); and
- tertiary (injury or death from behavioural effects, such as startling from noise and sustaining injury directly from rapid resurfacing without appropriate time to decompress).

7.9.145 It should be stated at the outset that the potential worst case scenario (fatal traumatic shock) from piling at very close proximity is treated with utmost caution and it is ensured that this risk is ‘designed out’ of any piling operation by imposing strict exclusion zones which extend significantly beyond this zone of risk and a number of other embedded environmental measures (as identified in **Table 7-12**) and summarised below:

- C–46: Advanced warning and accurate details of the construction activities through NtM and the Kingfisher bulletin service;
- C-52: The use of a soft start/ramp up to gradually increase to the maximum hammer energy;
- C–56: The use of safety zones of up to 500m during construction activities and the use of guard vessels in order to ensure adherence;
- C–99: The risk of primary (life threatening physical injury, or fatality) or secondary (non-life-threatening damage) to humans will be managed by recommending an advisory exclusion zone around all piling operations;
- C–100: The soft-start programme will be implemented during all piling operations which will be determined in discussion with a Diving Liaison Officer (DLO); and
- C–101: The implementation of a comprehensive awareness and communications strategy (an Outline Diver Communication Plan (DCP))

developed in agreement with regulatory authorities in order to notify OMU receptors of the timing and duration of the proposed piling activities. This also includes widely publicising details of the nature, location and timings of the pile driving works.

7.9.146 As discussed in **paragraph 7.6.29**, although there are a range of dive sites that will be within the potential ZOI from noise generated during the piling of foundations, there will also be a range of alternative dive sites that will remain unaffected. The sites available, or constrained, during the construction phase of the Proposed Development will change during the construction period so although impacts may arise across a relatively wide area over the entirety of the construction phase, there will also be a wide range of alternative dive sites for the activity to continue throughout this time. Advisory exclusion zones will be centred on construction activity and will therefore move as construction work moves. This is likely to result in only temporary limitation to some dive sites at any given time, and clear and proactive communication on such restricted sites, including a schedule detailing any restricted locations, will be co-ordinated by the Proposed Development DLO and notified well in advance to the relevant diving and spearfishing groups.

7.9.147 The short-term nature of the impact, and the embedded environmental measures, such as a DLO to promulgate all necessary safety information, will be implemented during the construction, it is therefore considered that the significance of this receptor is of **medium** sensitivity.

Recreational fishing

7.9.148 Impacts from subsea noise associated with the installation of the WTG foundations have the potential to affect recreational fishing through permanent threshold shift (PTS) and temporary threshold shift (TTS) on recreational fish species. The sensitivity of recreational angling (both shore- and boat-based) is related to the sensitivity of those species targeted and information has therefore been drawn from the assessment presented in **Chapter 8**):

7.9.149 The fish and shellfish assessment identified that construction related underwater noise represents a temporary, short- to medium-term duration and intermittent impact, affecting only a relatively small portion of the habitats in the fish and shellfish study area. Overall, it is predicted that the sensitivity of fish and shellfish receptors is considered to be low to medium and the magnitude of impact is deemed to be low. The effect, therefore, was predicted to be of minor adverse significance, which is not significant in EIA terms.

7.9.150 Whilst fish may, therefore, be affected by underwater noise, and some temporary changes to species distribution may occur, such effects are temporary and intermittent and will be relatively localised in extent. Potential avoidance reactions of fish from intermittent piling noise may mean that fish are temporarily displaced from an area. Theoretically this movement could be both away from, and towards, recreational fishers. The associated sensitivity of recreational angling receptors will therefore mirror the predicted range and extent of effects on the target species and is therefore considered to be **low** to **medium**.

Significance of residual effect

Diving and water sports (including surfing)

7.9.151 The sensitivity of divers to the impacts of underwater noise generation is considered to be **medium**, with a magnitude of **low**. The effect will, therefore be of **minor** significance, which is **Not Significant** in EIA terms.

7.9.152 For all other water sports, the receptor sensitivity is **low** and impact magnitude **negligible**, which gives an effect of **minor** significance, which is **Not Significant** in EIA terms.

Recreational fishing

7.9.153 It is predicted that the sensitivity of recreational fishing is **low** to **medium** and the magnitude of the impact is **low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

7.10 Preliminary assessment: Operation and maintenance phase

Increased vessel movements

7.10.1 Increases in vessel movements during the operation and maintenance phase will be smaller to those for construction and are of a lesser magnitude. The magnitude of impacts and the sensitivities of OMU receptors to increased vessel movements are described in detail in **paragraph 7.9.1** *et seq*.

7.10.2 The magnitude of the impacts has been assessed as **low**, with the maximum sensitivity of the receptors being **medium**.

7.10.3 Mitigation will also be deployed during the operation and maintenance phase of Rampion 2 and is identified in **Table 7-12**, and includes: C–46 advanced warning of decommissioning operations and vessel routes and C-51, a VMP will be implemented. Therefore, the significance of effect from increased vessel movements occurring from the operation and maintenance phase of Rampion 2 will be of **minor** significance, which is **Not Significant** in EIA terms.

Physical presence of infrastructure

Introduction

7.10.4 As set out in **Table 7-11**, the design parameters for Rampion 2 state that up to 116 WTGs and three OSS could be constructed.

7.10.5 RED will implement a number of embedded environmental measures during operation and maintenance (as detailed in **Table 7-12**), notably C-46, C-56 and C-85. The physical infrastructure will be detailed on all navigational charts and maps. This infrastructure will also have the relevant lighting and marking in accordance with Trinity House (TH) and the International Association of Marine Aids to Navigation (AtoN) and lighthouse Authorities (IALA).

Magnitude of impact

Marine aggregates

7.10.6 During operation, the presence of the Rampion 2 structures (WTGs and OSSs) along the PEIR Assessment Boundary closest to the dredging licence areas may create an obstacle for dredging vessels during active dredging works or from turning into or out of the area, which may occur outside of the licensed dredging area, the vessel at that time being limited in its ability to manoeuvre. The impact of the presence of structures leading to an increased allision risk for aggregate vessels is considered in detail within **Chapter 13: Shipping and navigation** in which the magnitude is assessed to be broadly acceptable – tolerable.

7.10.7 The potential for impact on dredging vessel operations will be mitigated through control measures which will manage vessel activity within the Proposed Development area and its vicinity in the form of a vessel monitoring system and traffic co-ordination and reporting systems. These are secured in the following commitments (**Table 7-12**)**:**

- C-46 which requires the Proposed Development to promulgate advanced warning and information of the associated safety zones via NtM and bulletins within the Kingfisher bulletins;
- C-56 which details the advisory safety zones; and
- C-85 which provides for regular updates to the NtM and supplemental VHF broadcasts agreed with MCA to ensure all parties are updated on planned works and locations of activities.

7.10.8 In addition, and in relation to the safe and efficient operation of marine aggregate dredging vessels on the licence areas adjacent to the PEIR Assessment Boundary, an agreement will be sought prior to consent with the licence holders and operators. This commercial agreement will provide for an appropriate buffer zone to separate dredging operations from the wind farm structures together with associated working arrangements such that the safety of dredging vessels is maintained whilst the economic resource for each party is maintained:

7.10.9 Therefore, the magnitude of this impact is considered to be managed to a **low** level on the basis that agreement between the parties is reached and management control procedures are implemented.

Disposal sites

7.10.10 The Proposed Development overlaps with the Aquind Cable Site A and Rampion 1 offshore wind farm disposal sites. The operation and maintenance of Rampion 2, including relevant advisory safe passing areas associated with maintenance, may restrict access to and use of the Aquind and Rampion 1 disposal sites. Loss of access associated with occurrence of maintenance activities is considered to be limited in extent and infrequent.

7.10.11 RED will seek proximity agreements with the operators of both disposal sites to ensure that no impacts on the operability of any of the projects will arise by the overlap between the project areas. On the basis of the separation distance between Rampion 2 and the other disposal sites, there is no anticipated potential for impact to arise.

7.10.12 The impact is predicted to be of local spatial extent, short-term duration, intermittent and reversible. The magnitude is therefore considered to be **negligible**.

Offshore Wind

7.10.13 There is only one offshore wind farm within the PEIR Assessment Boundary and that is Rampion 1. Although the Rampion 1 site agreement overlaps with the PEIR Assessment Boundary, the offshore wind farm infrastructure itself does not and therefore the magnitude of the impact, physical presence of infrastructure at Rampion 2 is considered to be **negligible**.

7.10.14 Military activity and munitions

7.10.15 The maximum design scenario (as detailed in **Table 7-11**) will result in up to 116 WTGs and 3 OSS. The overlap of the Proposed Development is with D037 PEXA area, this overlap approximately 28km^2, which constitutes 0.9% of the total PEXA area (see **Figure 7.5, Volume 3**).

7.10.16 The potential impact relating to the presence of the Proposed Development arises from the risk that any installation in Danger Area D037 could impact on freedom of movement for military exercises. The preliminary assessment presented in **Chapter 13**, identifies that from the vessel traffic survey data, on average less than one unique military vessel per day was recorded within the entire study area, a volume validated by the long-term Automatic Identification System (AIS) data. The relatively minor proportion of the PEXA that will be occupied by the Proposed Development (approximately 0.9% of the total area covered by Danger Area D037) and the substantially smaller portion of the total area covered by military PEXAs in the region as a whole, suggests that the potential disruption to military exercises is likely to be very limited.

7.10.17 It is also considered that military vessels may be less likely to choose to navigate internally within the array, and therefore the discussion relating to Danger Area D037 for the equivalent construction phase impact is again applicable. In particular, given the low frequency of military traffic noted above, and the portion of the military PEXA overlapping the PEIR Assessment Boundary relative to the PEXAs in the region as a whole, the disruption to military activities is likely to be minimal. On this basis, the magnitude of this impact is therefore considered to be **low**.

7.10.18 RWE will undertake discussions with the MoD to seek approval/agreement if infrastructure is to be planned in an area of overlap with D037.

Subsea cables

7.10.19 There is the potential that repair or maintenance works are required to existing cables in the vicinity of Rampion 2 during the operational phase. The potential impact relates to both the proposed Aquind Interconnector, which passes through the Rampion 2 PEIR Assessment Boundary, and the IFA2 cable that is routed in proximity to the western part of the Proposed Development (300m separation).

7.10.20 Restriction of access to an active cable for inspection and maintenance activities could be critical to the operation of that cable. Pipeline and cable proximity agreements and crossings are common across the UK Continental Shelf (UKCS),

and there are established mechanisms for controlling the level of impact to both parties. As such, the magnitude of impact is considered to be **negligible**.

Recreational boating and sailing

7.10.21 The presence of structures in the offshore environment may increase allision risk for recreational vessels using offshore areas. This impact is considered in detail within **Chapter 13** in which the magnitude is assessed to be broadly acceptable – tolerable. There will be no surface piercing infrastructure in the inshore areas where much of the smaller craft boating and sailing activities occur, which reduces any potential for effect in such circumstances to a negligible level. Where smaller craft use areas further offshore, for example during racing events or general use, the same assessment findings as for larger recreational vessels (in terms of allision risk) will be relevant and therefore these are included in that assessment.

7.10.22 The physical presence of infrastructure will also lead to potential obstruction issues for recreational sailing and boating. Again, this will be relevant only to areas where surface infrastructure is in place (i.e. the wind turbine array) and therefore whilst there is overlap between the export cable corridor and areas of high density use, including the general boating area (**Figure 7.7, Volume 3**), the lack of any obstacles within this overlap reduces any potential for effect in such circumstances to a negligible level. Maintenance activities within the export cable corridor may be required during the operational phase, however any loss of access associated with occurrence of maintenance activities is considered to be limited in extent and infrequent. There will therefore be minimal change from current baseline conditions during operation and maintenance phase of the Proposed Development.

7.10.23 The presence of the WTGs and OSSs will not exclude vessels from passing through the Proposed Development and although some sailors may decide to avoid the array area, it is anticipated that the majority will continue to route through the array area if sailing or cruising further offshore, as is the case for the existing Rampion 1 project (based on the recreational usage data shown in **Figure 7.7, Volume 3**). The level of obstruction to sailing and boating in the offshore array area will be related to the presence of infrastructure, such as the WTGs and OSSs, however such restrictions will be highly localised to the immediate structures and therefore of negligible magnitude.

7.10.24 It is therefore considered that the magnitude of this impact is **negligible** to **low.**

Diving and water sports (including surfing)

7.10.25 The presence of the Rampion 2 operational infrastructure is not considered likely to affect diving or the majority of inshore and coastal water sports given its location offshore and the continued access to the Proposed Development area for recreation once fully operational.

7.10.26 For surfing and activities reliant on wave climate, the presence of the foundation structures within the water column does have the potential to affect wave conditions at the coast. This has, however, been assessed specifically within **Chapter 6**, with the relevant findings as follows:

7.10.27 With respect to the recreational surfing venues the following is concluded.

- Very localised area of wave shadowing might occur immediately behind individual foundations, but wave heights are expected to recover rapidly (within a few tens of metres of the foundation) due to normal lateral spreading of the ambient wave energy.
- Associated changes to wave period and direction in the wave shadow are not measurable (namely, less than approximately 0.1s and 3 degrees, respectively). Where present, the small magnitude of change follows a similar spatial pattern and footprint of effect as wave height, recovering to baseline conditions with distance (a few tens of metres) downwind from the array.
- The relatively slender monopiles at jacket OSS platform installed in Rampion 1 alone cause little to no effect on wave height greater than 2.5% of the baseline condition, either locally around each foundation, or as an array scale effect. A very localised effect between 2.5-5% is occasionally visible at the location of the Rampion 1 OSS platform.
- The greatest relative magnitude of effect of Rampion 2 and Rampion 1 together is between 5-10% of the baseline wave height, within and immediately downwind of the Rampion 2 array area, associated with the 50% exceedance return period scenario, for each of the wave directions tested. The magnitude of effect reduces to less than 5% within a short distance (3-4km) downwind of the array area. Even the smallest potentially measurable effects on wave height (more than 2.5-5%) do not extend to any of the adjacent coastlines.
- The relative magnitude and extent of the effect is greatest for the 50% exceedance return period scenario (the lowest energy wave height condition considered), and progressively decreases through higher return period scenarios for all of the wave directions tested. This occurs because wave energy is proportional to the product of the wave height and the square of the wave period. A reduction in wave energy at higher energy levels will therefore result in a smaller proportional reduction in wave height. For a given return period, the relative magnitude and extent of the effect is similar for the range of wave directions simulated.

7.10.28 Overall, that the following was concluded.

- Wave direction is naturally variable over time and only locations directly downwind of the Rampion 2 array area will have any pathway for change under a particular wave condition and therefore intermittent over time. The model results show that the array scale effects extending outside of the array area are relatively dispersed and do not lead to a focused effect at any particular location.
- Wave height, period and direction (for a wide range of typical everyday to severe storm conditions) will not be measurably changed at any coastal locations, including any recreational surfing venues. The magnitude of impact to recreational surfing venues is therefore considered **very low** with no discernible change from background conditions.

7.10.29 On this basis, the magnitude of this impact is considered to be **negligible**.

Recreational fishing

7.10.30 The presence of structures in the offshore environment may increase allision risk for recreational boat angling. This impact is considered in detail within **Chapter 13** in which the magnitude is assessed to be broadly acceptable – tolerable, and therefore of low magnitude.

7.10.31 Recreational angling boats may be subject to a degree of obstruction within the area of the WTG array due to the physical presence of the WTGs and OSSs, however such obstructions will be limited to the exact footprint of the surface infrastructure and therefore of negligible magnitude. The assessment of potential impacts on fish (as the targeted resource for anglers) in the operational phase identified generally low magnitude impacts for changes to or loss of habitat as a result of the operational development, although there is potential for a medium magnitude impact on black bream within the export cable corridor. The potential effects of operational (energised) transmission cables are also assessed for electro-sensitive species, however on the basis of the highly localised spatial extent of any such potential effects, magnitude of impact was recorded as low. Maintenance activities associated with the operation of the wind farm also resulted in a predicted low magnitude impact.

7.10.32 The potential impacts only apply to boat-based angling, as shore-based angling will not be affected by the physical presence of infrastructure.

7.10.33 The associated magnitude of impact on recreational angling receptors will therefore mirror the predicted range and extent of effects on the target species and is therefore considered to be **negligible** to **medium**.

Sensitivity or value of receptor

Marine aggregates

7.10.34 As described in **Table 7-9** and presented in **Figure 7.2, Volume 3**, the PEIR Assessment Boundary is in close proximity to a number of extraction areas. The closest extraction areas lie immediately east of the offshore cable corridor (areas 453, 488, 396/1, 435/1 and 435/2), and are operated by Cemex, Tarmac Marine and Hanson Aggregates Marine. There are also groups of marine aggregate dredging areas to the west of the PEIR Assessment Boundary (near the Isle of Wight) and to the south east of the PEIR Assessment Boundary (within the Eastern English Channel area).

7.10.35 With respect to the adjacent aggregate licence areas, dredging operations are potentially sensitive to restrictions on access and any displacement of activity as a result of the operational development, principally due to proximity of structures to worked areas within the licence areas and the attendant issues arising on safe vessel manoeuvring. Agreement will be sought through ongoing consultation with the licence holders and operators which will address any safety concerns prior to consent. This agreement will provide for an appropriate buffer zone to separate dredging operations from the wind farm structures together with associated working arrangements such that the safety of dredging vessels is maintained whilst the economic resource for each party is maintained.

7.10.36 The other aspect relates to transit routes from the dredging licence areas to ports for the discharge of cargoes, which could potentially affect both the adjacent licence areas and those further afield (close to the Isle of Wight and in the Eastern English Channel regions). This has been assessed within **Chapter 13** with the assessment identifying that the main routes used by the marine aggregate dredgers will require either no deviation due to the presence of Rampion 2, or the level of deviation is considered to be low (maximum 2.8nm). On this basis it is considered the commercial effect on these routes, including additional transit time and fuel consumption will be minimal with no substantial disruption. One of the routes, highlighted by Britannia Aggregates between Newhaven and the central English Channel to the east of the PEIR Assessment Boundary, is evident in the vessel traffic survey data but not in sufficient numbers to constitute a main route. However, such traffic is recorded as passing well clear of the PEIR Assessment Boundary and so the effect associated with such traffic was noted as negligible.

7.10.37 Marine aggregates are therefore considered to be of **medium** sensitivity to the physical presence of the Proposed Development in the operation and maintenance phase.

Disposal sites

7.10.38 There is direct overlap with two disposal sites; the Aquind Cable Site A and Rampion 1. On the basis of the controls applied to the operation of the Proposed Development and the licence holders through securing proximity agreements prior to consent, which will ensure the operation and maintenance phase of the Proposed Development will not conflict with access or activities associated with either disposal ground. Disposal sites and their users are deemed to be of low vulnerability, medium recoverability, and medium value. The sensitivity of the receptor is therefore considered to be **medium**.

Offshore wind

7.10.39 The existing (and operational) Rampion 1 project will be sensitive to the potential for interruption to operational and maintenance activities that could arise as a result of the proximity of the Rampion 2 structures and cables during its operations and maintenance phase. In addition, there is potential for sensitivity due to maintenance activities, including relevant advisory safe passing areas associated with such maintenance works, for the Proposed Development that may be required in proximity to Rampion 1.

7.10.40 The sensitivity of the receptor (Rampion 1) relates principally to restrictions on access and any displacement of its own maintenance activities as a result of the operational development, principally due to proximity of structures to Rampion 1 and the attendant issues arising on safe vessel manoeuvring. Agreement will be sought with the operators of Rampion 1 prior to consent in order to provide for an appropriate buffer zone to separate the Proposed Development's operations from the wind farm structures together with associated working arrangements such that the safety of maintenance vessels for both projects is maintained.

7.10.41 The operators of Rampion 1 are deemed to be of medium vulnerability, medium recoverability, and high value. However, with proximity agreements and managed safe working arrangements in place, the sensitivity of the receptor is therefore considered to be **medium**.

Military activity and munitions

7.10.42 The Proposed Development overlaps with the D037 PEXA area, this overlap is approximately 28km^2, which constitutes 0.9% of the total PEXA area (see **Figure 7.5, Volume 3**). Although the overlap is small in comparison to the wider military PEXA area, the physical presence of infrastructure, the PEXA area will be potentially sensitive to any overlap with the Proposed Development, should structures be placed within the PEXA boundary. The sensitivity arises from the potential for structures within Danger Area D037 to impact on the freedom of movement for military exercises.

7.10.43 As detailed in **Table 7-12**, embedded environmental measures will be used during operation and maintenance such as, the physical Proposed Development infrastructure will be detailed on all navigational charts and maps (C-46 and C-56). Further engagement with the Ministry of Defence will be sought to agree the acceptability of the use of this minor proportion of the PEXA area and the impact that this might have on military exercise activities.

7.10.44 The sensitivity of military activity and munitions to the physical presence of infrastructure is therefore considered to be **medium**, on the understanding that agreement can be reached to ensure any change in area of the PEXA will not substantially affect freedom of vessel movement.

Subsea cables

7.10.45 The operation and maintenance of Rampion 2, including relevant advisory safe passing areas associated with maintenance, may restrict access to the existing IFA2 Interconnector, which is routed in proximity to (circa 300m from) the western extent of the PEIR Assessment Boundary, and the proposed Aquind Interconnector, which will run through the Rampion 2 array area.

7.10.46 RED will liaise and engage with the relevant companies in order to arrange the necessary proximity and working practice agreements (**Table 7-12** (C-50) and **Table 7-21**).

7.10.47 The operators of active cables are deemed to be of medium vulnerability, medium recoverability, and high value. However, due to the very low likelihood of spatial and temporal overlap of repair works with the constructed Rampion 2, and the embedded mitigation in place, the sensitivity of the receptor is therefore considered to be **medium**.

Recreational boating and sailing

7.10.48 Recreational boating use will be potentially sensitive to obstruction impacts arising from the presence of surface infrastructure, particularly where this precludes ongoing use of the area within which sailing and boating is currently undertaken. Inshore sailing and motorboat use, including the highest density use areas for recreational craft and the general boating area inshore of the Proposed Development (**Figure 7.7, Volume 3**) will not be affected as no surface infrastructure will be installed where these areas and the project overlap. For offshore sailing, whilst there will be the need to avoid structures, the limited extent of such restrictions, the ability of sailors to avoid such obstacles and the wide separation (minimum 860m) between WTGs will result in little change to available

areas within which to sail across the area. The sensitivity to such minimal changes from baseline conditions is therefore considered to be **low**.

Diving and water sports (including surfing)

7.10.49 The majority of water sport users, including divers, will not be sensitive to the presence of the offshore infrastructure as either the activities are undertaken inshore, away from the location of the installed WTGs and OSSs, or the activities will be able to continue much as before across the area, the main change being the need to avoid the structures themselves. This is supported by the evidence from Rampion 1 for diving activities, with clubs offering dives specifically to the operational development area, demonstrating the resilience and lack of sensitivity of diving clubs and divers to installed and operational wind farm projects.

7.10.50 Surfing activities, along with other water sports that rely on wave conditions, for example kite surfing, will be sensitive to any changes arising from the physical interruption to waves and currents arising from the presence of the wind farm infrastructure in the water column.

7.10.51 Therefore, the sensitivity of diving and water sports (excluding surfing and wave-reliant pursuits) is considered to be **negligible**, and **medium** sensitivity applicable to surfing and kite surfing.

Recreational fishing

7.10.52 The physical presence of infrastructure has the potential to affect recreational fishing. **Chapter 10** assesses the impact of long-term habitat and increased hard substrate and structural complexity due to the presence of WTG foundations, scour protection and cable protection on fish and shellfish receptors. This concludes that fish and shellfish species (as receptors) have a low sensitivity to this impact, the impact will be of low magnitude and therefore effects arising will be of minor adverse significance.

7.10.53 Access to fishing locations within the Proposed Development area will be maintained for boat-based angling.

7.10.54 Boat based angling will still be possible within the Rampion 2 array area, with the exception of safety zones around infrastructure and no significant effects on the availability or distribution of targeted species is predicted. Therefore, overall it is considered that the sensitivity of recreational fishing to this impact is **low**.

Significance of residual effect

Marine aggregates

7.10.55 Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **low**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Disposal sites

7.10.56 Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of the impact is **negligible**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Offshore wind

7.10.57 Overall, it is predicted that the sensitivity of offshore wind is **medium**, and the magnitude is **negligible**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Military activity and munitions

7.10.58 Overall, it is predicted that the sensitivity of military activity and munition is **medium**, and the magnitude is **low**, the effect will be of **minor** significance, which is **Not Significant** in EIA terms.

Subsea cables and pipelines

7.10.59 Overall, it is predicted that the sensitivity of cables and pipelines is **medium**, and the magnitude of the impact is **negligible**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational boating and sailing

7.10.60 Overall, it is predicted that the sensitivity of recreational boating is **low**, and the magnitude of the impact is **negligible to low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Diving and water sports (including surfing)

7.10.61 It is predicted that the sensitivity of surfing and wave-reliant water sports is **medium**, with diving and all other water sports ascribed a sensitivity of **negligible**, and the magnitude of the impact is **negligible**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

Recreational fishing

7.10.62 It is predicted that the sensitivity of recreational fishing is **negligible to medium**, and the magnitude of the impact is **low**, the effect will therefore be of **minor** significance, which is **Not Significant** in EIA terms.

7.11 Preliminary assessment: Decommissioning phase

Overview

7.11.1 The nature and scale of impacts arising from decommissioning are expected to be of similar or reduced magnitude to those generated during the construction phase. Certain activities, such as piling, will not be required.

7.11.2 It is possible that closer to the time of decommissioning in discussion with relevant regulators and statutory bodies, it is determined that removal of certain parts of the development (e.g. cables) will have a greater environmental impact than leaving the subsurface infrastructure *in situ*. In such an eventuality, and for these components of the Proposed Development, the impacts will be similar to those described for the operational phase, although aspects relating to maintenance or repair will not be required.

7.11.3 To date, no large offshore wind farm has been decommissioned in UK waters. It is anticipated that any future programme of decommissioning will be developed in

close consultation with the relevant statutory marine and nature conservation bodies. This will enable the guidance and best practice at the time to be applied to minimise any potential impacts.

Increased vessel movements

7.11.4 Increases in vessel movements during the decommissioning works will be similar to those for construction and are of a similar magnitude. The magnitude of impacts and the sensitivities of OMU receptors to increased vessel movements are described in detail in **paragraph 7.9.1** *et seq*.

7.11.5 The magnitude of the impacts has been assessed as **low**, with the maximum sensitivity of the receptors being **medium**.

7.11.6 Mitigation will also be deployed during the decommissioning of Rampion 2 and is identified in **Table 7-12**, and includes: C – 46, advanced warning of decommissioning operations and vessel routes, and C- 51, a VMP will be implemented. Therefore, the significance of effect from increased vessel movements occurring from the decommissioning of Rampion 2 will be of **minor** significance, which is **Not Significant** in EIA terms.

Displacement from the use of advisory safety zones (500m)

7.11.7 The physical presence of infrastructure and temporary advisory safety zones (500m) from the decommissioning works will be similar to those for construction and of a similar magnitude. The magnitude of the impact and sensitivities of OMU receptors to this impact are described in detail in **paragraph 7.9.49** *et seq*.

7.11.8 The magnitude of the impact has been assessed as **low**, with the maximum sensitivity of the receptors being **medium**.

7.11.9 RED will implement a number of mitigation measures during decommissioning (as detailed in **Table 7-12**) such as C-46 and C-56. Therefore, the significance of effect from the displacement from the use of advisory safety zones (500m) associated with the decommissioning activities has a maximum of **minor** significance, which is **Not Significant** in EIA terms.

Temporary increases in suspended sediment and subsequent deposition

7.11.10 Increases in SSC and sediment deposition from the decommissioning works will be similar to that for construction and are of a similar magnitude. The magnitude of the impact and the sensitivities of OMU receptors to increased SSC and sediment deposition are described in detail in **paragraph 7.9.102** *et seq*.

7.11.11 The magnitude of the impact has been assessed as **low**, with the maximum sensitivity of the receptors being **medium**. Therefore, the significance of effect from changes in SSC and associated sediment deposition occurring as a result of decommissioning activities in the subtidal and intertidal area has a maximum of **minor** significance of effect, which is **Not Significant** in EIA terms.

7.12 Preliminary assessment: Cumulative effects

Approach

7.12.1 A preliminary cumulative effects assessment (CEA) has been carried out for Rampion 2 which examines the result from the combined impacts of Rampion 2 with other developments on the same single receptor or resource and the contribution of Rampion 2 to those impacts. The overall method followed in identifying and assessing potential cumulative effects in relation to the onshore environment is set out in **Chapter 5, Section 5.10**.

7.12.2 The offshore screening approach follows the RenewableUK (RenewableUK, 2013) accepted guidance which is specific to the marine elements of an offshore wind farm, addressing the need to consider mobile wide-ranging species (foraging species, migratory routes etc).

Scope of the cumulative effects assessment

Overview

7.12.3 For OMU, a Zone of Influence (ZOI) (as described in **Section 7.4: Scope of the assessment** and shown in **Figure 7.1, Volume 3**) has been applied for the CEA to ensure direct and indirect cumulative effects can be appropriately identified and assessed. The ZOI has been determined as the largest distance over which an impact may occur, for the purposes of the OMU assessment, this is defined over the distance which increased SSC and deposition may occur and therefore extends 15km around the array boundary and 10km surrounding the offshore cable corridor.

7.12.4 A short list of other developments that may interact with the Rampion 2 ZOIs during their construction, operation or decommissioning is presented in **Appendix 5.4: Cumulative effects assessment shortlisted developments, Volume 4 and** on **Figure 5.4.1, Volume 4.** This short list has been generated applying criteria set out in **Chapter 5** and has been collated up to the finalisation of the PEIR through desk study, consultation and engagement.

7.12.5 A tiering structure has been used for screening and assessment of other developments as in accordance with PINS Advice Note Seventeen (**Chapter 5**). Definitions of Tiers are set out in **Table 5-3** of **Chapter 5: Approach to EIA, Volume 4**. Where other projects are expected to be completed before construction of the Proposed Development and the effects of those projects are fully determined, effects arising from them are considered as part of the baseline and may be considered as part of both the construction and operational assessment.

7.12.6 Only those developments in the short list that fall within the OMU ZOI have the potential to result in cumulative effects with the Proposed Development. All developments falling outside the OMU ZOI are excluded from this assessment. Furthermore, the following types of other development have the potential to result in cumulative effects on OMU receptors:

- subsea cables and pipelines (telecom and power cables);

- aggregate production areas;
- offshore wind farms; and
- telecom cables.

7.12.7 On the basis of the above, the following specific other developments (as presented within **Table 7-17**) contained within the short list in **Appendix 5.4, Volume 4** are scoped into this CEA.

Table 7-17 Developments to be considered as part of the CEA

ID (Figure 5.4.1)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
C2	Cable	Interconnexion France-Angleterre 2 – IFA-2 HVDC	Installed but not yet operational	High - Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
C1	Cable	AQUIND (UK to France)	Proposed (assume offshore installation in 2022)	High – Third party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
W10	Offshore wind farm	Dieppe – Le Treport (France)	Under construction (2019-2023)	Medium – Third party project details published in the public domain but not confirmed as being 'accurate'.	1	Medium

ID (Figure 5.4.1)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
W20	Offshore wind farm	Fécamp (France)	Under construction (2020 – 2023)	High – Third party project details published in the public domain and confirmed as being ‘accurate’ by the developer.	1	High
T1	Tidal Energy	Perpetuus Tidal Energy Centre (PTEC)	Proposed (Offshore plans approved 2016, plan to be operational 2025. Onshore planning application to be submitted 2021.)	Medium – Third-party project details published in the public domain but not confirmed as being 'accurate'	1	High
A395/1	Aggregates	395/1 Off Selsey Bill – Aggregates Industries UK Ltd	Active (end date 05/03/2028)	High – Third-party project details published in the public domain and confirmed as being ‘accurate’ by the developer.	1	High

ID (Figure 5.4.1)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
A396/1	Aggregates	396/1 Inner Owers – Tarmac Marine Ltd	Active (end date 07/07/2030)	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
A396/2	Aggregates	396/2 Inner Owers – Tarmac Marine Ltd	Active (end date 07/07/2030)	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
A435/1	Aggregates	435/1 Inner Owers – Hanson Aggregates Marine Ltd	Active (end date 07/07/2030)	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
A435/2	Aggregates	435/2 Inner Owers – Hanson	Active (end date 07/07/2030)	High – Third-party project details published in the public domain and confirmed as being	1	High

ID (Figure 5.4.1)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
		Aggregates Marine Ltd		'accurate' by the developer.		
A453	Aggregates	453 Owers Extension – CEMEX UK Marine Ltd.	Active (end date 31/03/2032)	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
A488	Aggregates	488 Inner Owers North – Tarmac Marine Ltd.	Active (end date 07/07/2030)	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
C3	Cable	CrossChannel Fibre	Under construction (completion date October 2021)	Low – ES not available	1	Low

ID (Figure 5.4.1)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
D1	Open disposal site	Newhaven	Open	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
D2	Open disposal site	Rampion 1	Open	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
D3	Open disposal site	Shoreham	Open	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
D4	Open disposal site	Brighton/ Rottingdean	Open	High – Third-party project details published in the public domain and confirmed as being	1	High

ID (Figure 5.4.1)	Development type	Project	Status	Confidence in assessment	Tier	Level of detail of CEA to be adopted
				'accurate' by the developer.		
D5	Open disposal site	Nab Tower	Open	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
D6	Open disposal site	Aquind Cable Site A	Open	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High
D7	Open disposal site -	Aquind Cable Site B	Open	High – Third-party project details published in the public domain and confirmed as being 'accurate' by the developer.	1	High

7.12.8 Baseline data and further information on other developments will continue to be collected prior to the finalisation of the ES and iteratively fed into the assessment. An updated cumulative effects assessment will be reported in the ES.

7.12.9 The cumulative MDS is described below in **Table 7-18**.

Table 7-18 Cumulative maximum design scenario

Potential impact	Scenario	Justification
Construction		
Cumulative temporary increase in SSC and deposition	**Tier 1:** • Planned AQUIND interconnector (construction phase) • Active cables, Cross Channel Fibre (operation and maintenance phase) • Rampion 1 offshore wind farm (operation and maintenance) • Active aggregates (operation and maintenance) **Tier 2:** No Tier 2 projects identified **Tier 3:** No Tier 3 projects identified	Maximum cumulative increases in SSC and deposition is calculated within a representative buffer of Rampion 2 to represent the maximum distance sediments may travel in one tidal excursion (15km).
Temporary increases in subsea noise	**Tier 1:** • Planned AQUIND interconnector (construction phase) • offshore wind farm under construction (Dieppe – Le Treport and Fécamp) • Planned PTEC (construction phase) **Tier 2:** No Tier 2 projects identified **Tier 3:** No Tier 3 projects identified	Maximum potential for interactive effects from subsea noise associated with construction and offshore wind farm piling activities is considered within a representative 100km buffer of the Rampion 2 array area. This buffer was chosen as underwater noise effects are expected to occur over a wider area.

7.12.10 A description of the significance of cumulative effects upon OMU receptors arising from each identified impact is given below. The cumulative effects assessment has been based off information publicly available in the ESs for the other developments. It is noted that the maximum assessment assumptions quoted within these ESs are often refined during the determination period and in the post-consent phase such that the final schemes built out may have a reduced impact when compared to what has previously been assessed.

Cumulative temporary increases in SSC and deposition

7.12.11 There is potential for cumulative increases in SSC and deposition as a result of the construction activities associated with Rampion 2 and the other developments identified (see **Table 7-18**). For the purpose of this preliminary assessment, the additive impact has been assessed within the OMU ZOI which extends 15km around the array boundary and 10km around the export cable corridor, representing the maximum tidal excursion in the area, and therefore the furthest distance sediments may travel from the site. The other developments identified in Tier 1 are the AQUIND Interconnector cables and aggregate licence areas 395/1, 396/1, 396/2, 435/1, 435/2, 453 and 488. There are no Tier 2 or Tier 3 projects.

7.12.12 The AQUIND interconnector cable is located within the south west of the Proposed Development array area and it is understood that construction will coincide with the construction of Rampion 2. The worst-case scenario for increased SSC is considered to be surface release of up to 1,754,000m^3 of sediment (AQUIND Limited, 2019). Cumulatively with Rampion 2 construction this may result in the disturbance and deposition of up to 4,616,000m^3 of sediment. However, only a small proportion (approximately 6%) of the AQUIND interconnector cable intersects with the Rampion 2 OMU study area, and therefore, the maximum amount of sediment released cumulatively with Rampion 2 will be considerably less than this estimated total. Any cable maintenance repairs undertaken within the operational phase of the developments will be short term, intermittent and localised to the site and therefore cumulative impacts are expected to be minimal. Additionally, due to the naturally dynamic environment of the site, any sediment released from these operations during the construction and operational phases of the development will likely be dispersed in the faster flows. Therefore, taking this into consideration, there are not predicted to be any significant cumulative impacts from the construction or operation of the AQUIND interconnector cable.

7.12.13 Aggregate licence areas 395/1, 396/1, 396/2, 435/1, 435/2, 453 and 488 will be operational during the construction of Rampion 2 and therefore there is potential for cumulative temporary increases in SSC and deposition from these active dredging operations. The target material at these marine aggregate areas is sands and gravels and characteristically, the aggregate deposits in the Marine Aggregate Regional Environmental Assessment (MAREA) region contain 1 to 3% mud (silt and clay) *in situ* and therefore the suspended sediment concentrations in the overflow from dredging vessels are relatively low compared to other regions of the UK (EMU Limited, 2012).

7.12.14 As part of the Rampion 1 offshore wind farm ES assessment work, potential changes to seabed sediment thickness as a result of combined foundation installation and aggregate extraction works were modelled to inform the impact assessment (ABPmer, 2012). The modelling predicted that bed level changes of

up to around 1mm could occur; however, it was expected that this sediment will be widely remobilised. Such negligible deposition will not be anticipated to cause any significant impacts to OMU receptors. ABPmer (2012) also considered that there was only a minimal potential for of any interaction between suspended sediment from export cable installation and aggregate extraction. Overall, it is therefore considered that there will be limited scope for cumulative impacts on OMU receptors.

7.12.15 Cumulative effects can also be considered in terms of duration of exposure from multiple projects, which do not overlap but happen consecutively. However, as the effects from the majority of the other developments will be temporary, there are likely to be significant temporal gaps between the discrete construction and maintenance events, which will limit the potential for cumulative effects. As aggregate activities are not considered to cause a significant cumulative increase to SSC and deposition and as a result, cumulative effects in terms of duration of exposure are not expected.

7.12.16 The sensitivity of OMU receptors to increase SSC and deposition is detailed in **paragraph 7.9.112 *et seq***. which concludes OMU receptors have **low** sensitivity to increased SSC and deposition, with a **low** magnitude of impact. Taking into consideration the localised, short-term nature of the impacts it is concluded that the significance of effect from temporary disturbance of the Proposed Development cumulatively with Tier 1 projects/developments is **minor adverse significance**, which is **Not Significant** in EIA terms.

Cumulative increases in subsea noise

7.12.17 There is potential for impacts arising from noise and vibration as a result of construction activities associated with Rampion 2 and other projects (**Table 7-18**). For the purposes of this PEIR, this additive impact has been assessed within 100km of Rampion 2, which is considered the maximum extent of impacts from noise as highlighted in noise modelling undertaken as part of their PEIR assessment.

7.12.18 The only Tier 1 projects identified within the 100km buffer that may be under construction at the same time as Rampion 2, is PTEC (see **Table 7-17**). As PTEC is a tidal energy demonstration facility, to date no known tidal turbine construction is detailed. Both French offshore wind farm Dieppe – Le Treport and Fécamp will be operation by 2023 with no temporal overlap or piling or drilling activities with Rampion 2. No Tier 2 or 3 projects have been identified.

7.12.19 The greatest risk of cumulative impacts of underwater noise on OMU receptors such as divers has been identified as being that produced by impact piling during the construction phase at other offshore wind farm sites in the wider study area. Impacts will not be expected to occur cumulatively due to the small range within which potential effects will be expected (i.e. predicted to occur within tens of kilometres of piling activity within each of the offshore wind farm developments).

7.12.20 Due to the lack of temporal overlap (construction to be completed for both Dieppe – Le Treport and Fécamp by 2023), there is not considered to be a cumulative impact of these three other developments on OMU receptors. The cumulative impact of underwater noise on OMU receptors is predicted to be of regional spatial extent, short-term duration, intermittent and reversible. It is predicted that the

impact will affect the receptor directly. The magnitude of the cumulative impact is therefore considered to be low.

7.12.21 The sensitivities of OMU receptors to underwater noise are discussed in **paragraphs 7.9.142 *et seq*** and are assessed to be of low-medium sensitivity.

7.12.22 Overall, it is predicted that the sensitivity of OMU receptors is **low to medium** and the magnitude is deemed to be **low**. The effect will therefore by of **minor adverse significance**, which is **Not Significant** in EIA terms.

7.13 Transboundary effects

7.13.1 Transboundary effects arise when impacts from a development within one European Economic Area (EEA) states affects the environment of another EEA state(s). A screening of transboundary effects has been carried out and is presented in Appendix B of the Scoping Report (RED, 2020).

7.13.2 The potential transboundary impacts screened into the assessment for OMU were:

- Direct displacement impacts from construction and the physical presence of infrastructure on recreational boat users transiting to and from UK harbours/marinas during all phases.

7.13.3 Effects on recreational boat users are predicted to be of limited extent to within the close vicinity of the PEIR Assessment Boundary, however recreational boat users from EEA states (principally France) could be transiting to and from UK harbours and/or marinas on the Sussex coast. Overall, the sensitivity of recreational boating and sailing users to displacement was predicted to be **medium** and the magnitude was predicted to be **low**. The effect was therefore considered to be a **minor adverse significance**, which is not significant in EIA terms.

7.14 Inter-related effects

7.14.1 The inter-related effects assessment considers likely significant effects from multiple impacts and activities from the construction, operation, and decommissioning of Rampion 2 on the same receptor, or group of receptors and are identified in **Table 7-19**. Such inter-related effects include:

- Proposed Development lifetime effects: i.e. those arising throughout more than one phase of the Proposed Development (construction, operation, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation; and
- Receptor led effects: assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group). Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

Table 7-19 Inter-related effects assessment for OMU receptors

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
Proposed Development lifetime effects			
Construction, operation and, decommissioning	Reduction in access to aggregate areas.	Minor adverse during construction, operation and maintenance and decommissioning phases.	During the construction and decommissioning phases of the Proposed Development, safety zones will be used, and therefore the areas from which aggregates will potentially be constrained, will be highly localised. Aggregate activity is able to continue extraction during the operation and maintenance phase, effects on OMU receptors across the phases are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each phase. Impacts to shipping and navigation has been carried out in **Chapter 13: Shipping and navigation** and further consultation will be undertaken post PEIR.
Construction, operation and, decommissioning	Displacement or disruption of recreationally important fish and shellfish resources.	Negligible to minor adverse during all phases.	Proposed Development lifetime inter-related effects are unlikely as the majority of disturbance (resulting in highest SSC/deposition) will be during the construction and decommissioning phases with minimal disturbance likely during the operation and maintenance phase. Impacts to fish will be at their maximum during the construction phase as a result of effects associated with underwater noise from piling and increased SSC.

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
			Across the Proposed Development lifetime, the effects on recreational fishing are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each phase. Impacts on fish and shellfish has been carried out in **Chapter 8: Fish and shellfish ecology**, impacts to commercial fisheries has been undertaken in **Chapter 10: Commercial fisheries** and impacts on socio-economics has been undertaken in **Chapter 18: Socio-economics**.
Construction, operation and, decommissioning	Increased vessel traffic within recreational areas as a result of changes to shipping routes and construction vessel traffic leading to interference with recreational activity.	Minor adverse during all phases.	With the successful implementation of measures adopted for this development (i.e. issue NTMs and VMP), no significant effects are predicted for the construction, operation and maintenance, and decommissioning phases of the Proposed Development. The majority of vessel traffic (resulting in interference with recreational activities) is predicted to peak during construction and decommissioning with reduced potential for interference during operation and maintenance. Therefore, across the Proposed Development lifetime, the effects on recreational areas are not anticipated to interact in such a way as to result in combined effects of greater significance than the

Project phase(s)	Nature of inter-related effect	Assessment alone	Inter-related effects assessment
			assessments presented for each phase. Impacts to shipping and navigation has been carried out in **Chapter 13: Shipping and navigation.**

7.15 Summary of residual effects

7.15.1 **Table 7-20** presents a summary of the preliminary assessment of significant impacts, any relevant embedded environmental measures and residual effects on OMU receptors.

Table 7-20 Summary of preliminary assessment of residual effects

Activity and impact	Magnitude of impact	Receptor and sensitivity or value	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Construction				
Increased vessel movements on aggregates	Low	Medium	C-46, C-51, C-56	**Minor (Not Significant)**
Increased vessel movements on disposal sites	Low	Medium	C-46, C-51, C-56	**Minor (Not Significant)**
Increased vessel movements on offshore wind	Low	Low	C-46, C-51, C-56	**Minor (Not Significant)**
Increased vessel movements on military activity and munitions	Low	Medium	C-46, C-51, C-56	**Minor (Not Significant)**

Activity and impact	Magnitude of impact	Receptor and sensitivity or value	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Increased vessel movements on subsea cables and pipelines	Low (Aquind and IFA2); Negligible all others	Low	C-46, C-51, C-56	**Minor** **(Not Significant)**
Increased vessel movements on recreational boating and sailing	Low	Medium	C-46, C-51, C-56	**Minor** **(Not Significant)**
Increased vessel movements on diving and water sports (including surfing)	Diving Low; All others Negligible	Diving Low; All others Negligible	C-46, C-51, C-56	**Minor** **(Not Significant)**
Increased vessel movements on recreational fishing	Boat Low; Shore Negligible	Boat Low; Shore Negligible	C-46, C-51, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on aggregates	Low	Medium	C-46, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on disposal sites	Low (Aquind and Rampion 1); Negligible all others	Medium	C-46, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on offshore wind	Low	Low	C-46, C-56	**Minor** **(Not Significant)**

Activity and impact	Magnitude of impact	Receptor and sensitivity or value	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Displacement from the use of advisory safety zones (500m) on military activity and munitions	Low	Low	C-46, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on subsea cables and pipelines	Low (Aquind and IFA2); Negligible all others	Low	C-46, C-50, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on recreational boating and sailing	Low	Medium	C-46, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on diving and water sports (including surfing)	Diving Low; All others Negligible	Diving Low; All others Negligible	C-46, C-56	**Minor** **(Not Significant)**
Displacement from the use of advisory safety zones (500m) on recreational fishing	Boat Low; Shore Negligible	Boat Low; Shore Negligible	C-46, C-51, C-56	**Minor** **(Not Significant)**
Temporary increases in SSC and associated deposition on aggregates	Low	Low	None	**Minor** **(Not Significant)**
Temporary increases in SSC and associated deposition on disposal sites	Low	Medium	None	**Minor** **(Not Significant)**
Temporary increases in SSC and associated	Low	Medium	None	**Minor**

Activity and impact	Magnitude of impact	Receptor and sensitivity or value	Embedded environmental measures	Preliminary assessment of residual effect (significance)
deposition on recreational boating and sailing				**(Not Significant)**
Temporary increases in SSC and associated deposition on diving and water sports (including surfing)	Low	low	None	**Minor** **(Not Significant)**
Temporary increases in SSC and associated deposition on recreational fishing	Low	Medium-low	None	**Minor** **(Not Significant)**
Temporary increases in subsea noise on diving and water sports	Diving Low; All others Negligible	Diving Medium; All others Low	C-46, C-56, C-99, C-100, C-101	**Minor** **(Not Significant)**
Temporary increases in subsea noise on recreational fishing	Low	Low to Medium	C-46, C-56, C-99, C-100, C-101	**Minor** **(Not Significant)**
Operation and maintenance				
Increased vessel movements on aggregates	Low	Medium	C-46, C-51	**Minor** **(Not Significant)**
Increased vessel movements on disposal sites	Low	Medium	C-46, C-51	**Minor** **(Not Significant)**
Increased vessel movements on offshore wind	Low	Low	C-46, C-51	**Minor**

Activity and impact	Magnitude of impact	Receptor and sensitivity or value	Embedded environmental measures	Preliminary assessment of residual effect (significance)
				(Not Significant)
Increased vessel movements on military activity and munitions	Low	Medium	C-46, C-51	**Minor** **(Not Significant)**
Increased vessel movements on subsea cables and pipelines	Low (Aquind and IFA2); Negligible all others	Low	C-46, C-51	**Minor** **(Not Significant)**
Increased vessel movements on recreational boating and sailing	Low	Medium	C-46, C-51	**Minor** **(Not Significant)**
Increased vessel movements on diving and water sports (including surfing)	Diving Low; All others Negligible	Diving Low; All others Negligible	C-46, C-51	**Minor** **(Not Significant)**
Increased vessel movements on recreational fishing	Boat Low; Shore Negligible	Boat Low; Shore Negligible	C-46, C-51	**Minor** **(Not Significant)**
Physical presence of infrastructure on aggregates	Low	Medium	C-46, C-56, C-85	**Minor** **(Not Significant)**
Physical presence of infrastructure on disposal sites	Negligible	Medium	C-46, C-56, C-85	**Minor** **(Not Significant)**

Activity and impact	Magnitude of impact	Receptor and sensitivity or value	Embedded environmental measures	Preliminary assessment of residual effect (significance)
Physical presence of infrastructure on offshore wind	Negligible	Medium	C-46, C-56, C-85	**Minor** **(Not Significant)**
Physical presence of infrastructure on military activity and munitions	Low	Medium	C-46, C-56, C-85	**Minor** **(Not Significant)**
Physical presence of infrastructure on subsea cables and pipelines	Negligible	Medium	C-46, C-56, C-85	**Minor** **(Not Significant)**
Physical presence of infrastructure on recreational boating and sailing	Negligible	Low	C-46, C-56, C-85	**Minor** **(Not Significant)**
Physical presence of infrastructure on diving and water sports	Negligible	Diving Negligible; Surfing/Kite Surfing Medium	C-46, C-56, C-85	**Minor** **(Not Significant)**
Physical presence of infrastructure on recreational fishing	Negligible to Medium	Low	C-46, C-56, C-85	**Minor** **(Not Significant)**
Decommissioning				
Impacts from decommissioning are expected to be similar to those listed for construction, if the Proposed Development's infrastructure is removed from the seabed at the end of the development's operational life. If, closer to the time of decommissioning, it is deemed that removal of certain aspects of the development (for example cables) will have a greater environmental impact than leaving *in situ*, it may be preferable to leave those aspects *in situ*. In this case, the impacts for decommissioning will be similar to those described for the operation and maintenance, except where effects are dependent on the maintenance of the Proposed Development.				

7.16 Further work to be undertaken for ES

Introduction

7.16.1 Further work that will be undertaken to support the OMU assessment and presented within the ES is set out below.

Baseline

7.16.2 The ES baseline will be informed using the same baseline data sources as used within this PEIR (**Section 7.6**), where data sources have been updated, the baseline data and conditions will be updated, for example, the SeaSearch data will be updated with the relevant dive site data from 2020, which will be included in the baseline once this has become available.

Assessment

7.16.3 The assessment methodology will be consistent with the Scoping stage methodology and the PEIR methodology as presented in **Section 7.7** of this document. The methodology will be informed by the baseline and, where appropriate, will be revised as necessary following any updates to the baseline data.

Consultation and engagement

7.16.4 Further consultation and engagement that will be undertaken to inform the OMU assessment and presented within the ES is set out in **Table 7-21.**

Table 7-21 Further planned stakeholder consultation and engagement

Stakeholder	Issues to be addressed	Relevance to assessment
HAML	Proximity of works to aggregate sites.	RED will hold consultation with BMAPA to discuss the works and how to minimise any impacts on the aggregate sites in the close vicinity of the works.
Tarmac		
CEMEX UK Marine Ltd		
MoD	Overlap with D037 area.	RED will engage with the MoD in order to reach agreement on appropriate separation distances and working practices across all phases of Rampion 2.

Stakeholder	Issues to be addressed	Relevance to assessment
Rampion 1	Proximity of works to operational Rampion 1 project	RED will engage with the operators of Rampion 1 in order to reach agreement regarding proximity and working practices across all phases of Rampion 2.
Aquind	Proximity of works to proposed Interconnector project	RED will engage with the proponents of the Aquind project in order to reach agreement regarding proximity and working practices across all phases of Rampion 2.
IFA2	Proximity of works to operational Interconnector	RED will engage with the operators of IFA2 in order to reach agreement regarding proximity and working practices across all phases of Rampion 2.

7.17 Glossary of terms and abbreviations

Table 7-22 Glossary of terms and abbreviations

Term (acronym)	Definition
AIS	Automatic Identification System
AtoN	Aids to Navigation
Baseline	Refers to existing conditions as represented by latest available survey and other data which is used as a benchmark for making comparisons to assess the impact of development.
Baseline conditions	The environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
BMAPA	British Marine Aggregate Production Areas
BSA	British Spearfishing Association
CCS	Carbon Capture Storage
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries & Aquaculture Science

Term (acronym)	Definition
Construction Effects	Used to describe both temporary effects that arise during the construction phases as well as permanent existence effects that arise from the physical existence of development (for example new buildings).
CTV	Crew Transfer Vessel
Cumulative effects	Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments.
Cumulative Effects Assessment	Assessment of impacts as a result of the incremental changes caused by other past, present and reasonably foreseeable human activities and natural processes together with the Proposed Development.
DCO Application	An application for consent to undertake a Nationally Significant Infrastructure Project made to the Planning Inspectorate who will consider the application and make a recommendation to the Secretary of State, who will decide on whether development consent should be granted for the Proposed Development.
DCP	Diver Communication Plan
DECC	Department for Energy and Climate Change
Decommissioning	The period during which a development and its associated processes are removed from active operation.
Development Consent Order (DCO)	This is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects, under the Planning Act 2008.
DLO	Diving Liaison Officer
DML	Deemed Marine Licence
Embedded environmental measures	Equate to ‘primary environmental measures’ as defined by Institute of Environmental Management and Assessment (2016). They are measures to avoid or reduce environmental effects that are directly incorporated into the preferred masterplan for the Proposed Development.
Environmental Impact Assessment (EIA)	The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or ‘baseline’).
Environmental Statement (ES)	The written output presenting the full findings of the Environmental Impact Assessment.

Term (acronym)	Definition
Future baseline	Refers to the situation in future years without the Proposed Development.
HAML	Hanson Aggregates Marine Ltd
Horizontal Directional Drill (HDD)	An engineering technique avoiding open trenches.
IALA	Lighthouse Authorities
IFCA	Inshore Fisheries and Conservation Authority
Impact	The changes resulting from an action.
Indirect effects	Effects that result indirectly from the Proposed Development as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects. Often used to describe effects on landscape character that are not directly impacted by the Proposed Development such as effects on perceptual characteristics and qualities of the landscape.
Informal consultation	Informal consultation refers to the voluntary consultation that RED undertake in addition to the formal consultation requirements.
Likely significant effects	It is a requirement of Environmental Impact Assessment Regulations to determine the likely significant effects of the Proposed Development on the environment which should relate to the level of an effect and the type of effect.
Magnitude (of change)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short term or long term in duration'. Also known as the 'degree' or 'nature' of change.
MAREA	Marine Aggregate Regional Environmental Assessment
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
MoD	Ministry of Defence
MPS	Marine Policy Statement
Nationally Significant	Nationally Significant Infrastructure Projects are major infrastructure developments in England and Wales which are

Term (acronym)	Definition
Infrastructure Project (NSIP)_	consented by DCO. These include proposals for renewable energy projects with an installed capacity greater than 100MW.
NPS	National Policy Statement
NtM	Notice to Mariners
OFTO	Offshore Transmission Owners
OGA	Oil and Gas Authority
OMU	Other marine users
OREIs	Offshore Renewable Energy Installations
OSS	Offshore Substation
PEIR Assessment Boundary	The PEIR Assessment Boundary combines the search areas for the offshore and onshore infrastructure associated with the Proposed Development. It is defined as the area within which the Proposed Development and associated infrastructure will be located, including the temporary and permanent construction and operational work areas.
PEXAs	Practice and Exercise Areas
Planning Inspectorate (PINS)	The Planning Inspectorate deals with planning appeals, national infrastructure planning applications, examinations of local plans and other planning-related and specialist casework in England and Wales.
PLG	Project Liaison Groups
Preliminary Environmental Information Report (PEIR)	The written output of the Environmental Impact Assessment undertaken to date for the Proposed Development. It is developed to support formal consultation and presents the preliminary findings of the assessment to allow an informed view to be developed of the Proposed Development, the assessment approach that has been undertaken, and the preliminary conclusions on the likely significant effects of the Proposed Development and environmental measures proposed.
Proposed Development	The development that is subject to the application for development consent, as described in Chapter 4.
PTEC	Perpetuus Tidal Energy Centre
PTS	Permanent Threshold Shift

Term (acronym)	Definition
Receptor	These are as defined in Regulation 5(2) of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and include population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and landscape that may be at risk from exposure to pollutants which could potentially arise as a result of the Proposed Development.
RYA	Royal Yachting Association
SAS	Surfers Against Sewage
Scoping Opinion	A Scoping Opinion is adopted by the Secretary of State for a Proposed Development.
Scoping Report	A report that presents the findings of an initial stage in the Environmental Impact Assessment process.
Secretary of State	The body who makes the decision to grant development consent.
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.
Significant effects	It is a requirement of the EIA Regulations to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect. Where possible significant effects should be mitigated.
SSC	Suspended sediment concentration
TCE	The Crown Estate
Temporal Scope	The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur and are typically defined as either being temporary or permanent.
Temporary or permanent effects	Effects may be considered as temporary or permanent. In the case of wind energy development the application is for a 30 year period after which the assessment assumes that decommissioning will occur and that the site will be restored. For these reasons the development is referred to as long term and reversible.
TH	Trinity House
The Applicant	Rampion Extension Development Limited (RED)

Term (acronym)	Definition
Tolerable	The International Maritime Organisation Formal Safety Assessment methodology (IMO, 2018) is the internationally recognised approach for assessing effects on shipping and navigation receptors, and is the approach required under the MCA methodology (MCA, 2013). This methodology is centred on risk control and assesses each effect in terms of its frequency and consequence in order that its significance can be determined as "*Broadly Acceptable*", "*Tolerable*" or "U*nacceptable*".
TSHD	Trailing Suction Hopper Dredger
TTS	Temporary Threshold Shift
UKCS	UK Continental Shelf
UNCLOS	United Nations Convention on the Law of the Sea
VMP	Vessel Management Plan
Zone of Influence (ZOI)	The area surrounding the Proposed Development which could result in likely significant effects.

7.18 References

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