MARINE ENERGY WALES

MARINE ENERGY TEST AREA (META)

Environmental Impact Assessment

Chapter 16:
Other Users

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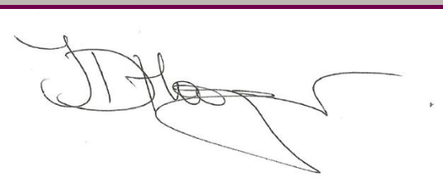

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Acronyms

Acronym	Description
AIS	Automatic Identification System
CIA	Cumulative Impact Assessment
EIA	Environmental Impact Assessment
EMMP	Environmental Monitoring and Mitigation Plan
MCA	Maritime and Coastguard Agency
META	Marine Energy Test Area
MEW	Marine Energy Wales
MHPA	Milford Haven Port Authority
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MOD	Ministry of Defence
NPS	National Policy Statement
NRA	Navigational Risk Assessment
NSIP	National Significant Infrastructure Project
PCC	Pembrokeshire County Council
PCF	Pembrokeshire Coastal Forum
PCNPA	Pembrokeshire Coast National Park Authority
PPSA	Pembrokeshire Performance Sailing Academy
RNLI	Royal National Lifeboat Institution
RYA	Royal Yachting Association
SAS	Surfers Against Sewage
SCUBA	Self-Contained Underwater Breathing Apparatus
SSC	Suspended Sediment Concentration

Units

Unit	Description
ft	Foot
km	Kilometre
kW/m	Kilowatt per metre
m	Metre
m^2	Metre squared
MW	Megawatt
NM	Nautical Mile

16. OTHER USERS

16.1 Introduction

16.1.1.1 This chapter of the Environmental Statement presents the results of the Environmental Impact Assessment (EIA) for the potential impacts of the META project on Other Users. Specifically, this chapter considers the potential impact of the META project seaward of Mean High Water Springs (MHWS) during its installation, operation and maintenance, and decommissioning phases.

16.1.1.2 The receptors which are considered in this chapter include:

- Recreational activities (including sailing and power boating, kite surfing, surfing and windsurfing, kayaking, SCUBA diving, and recreational fishing);
- Port activities;
- Subsea cables and pipelines;
- Dredging and disposal activities; and
- Danger areas.

16.1.1.3 Many of the potential impacts on Other Users receptors are related to navigational safety and collision risk. To avoid duplication, navigational safety and risk to all vessel types from the META project is considered in chapter 12: Shipping and Navigation. Therefore, the following assessment only considers impacts that will potentially affect the undertaking of a marine activity or the operational effectiveness of marine infrastructure in the Other Users Study Area. Indirect effects on nearshore recreational receptors through visual amenity are considered in chapter 14: Seascape.

16.1.1.4 The assessment presented is informed by the following technical chapter:

- Chapter 12: Shipping and Navigation.

16.2 Purpose of this chapter

16.2.1.1 The primary purpose of the Environmental Statement is to support the marine consent applications for the META project, which are outlined in chapter 1: Introduction.

16.2.1.2 It is intended that the Environmental Statement will provide statutory and non-statutory consultees with sufficient information to determine the potential significant impacts of the META project on the receiving environment and will inform the issue of appropriate consents and/or licences by the regulatory authorities. It will also inform any consent conditions.

16.2.1.3 In particular, this Environmental Statement chapter:

- Presents the existing environmental baseline established from desk studies and informed by consultation;
- Presents the potential environmental effects on Other Users arising from the META project, based on the information gathered and the assessments undertaken;
- Identifies any assumptions and limitations encountered in compiling the environmental information; and
- Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process.

16.3 Study area

16.3.1.1 The Other Users Study Area includes all Other Users receptors within an area which has the potential to be affected by the META project. The Other Users Study Area encompasses the three META project sites of Warrior Way (site 6), Dale Roads (site 7) and East Pickard Bay (site 8), and extends to 1.5 NM inshore of the Warrior Way site (site 6) in the upper reaches of the Milford Haven Waterway (hereafter referred to as 'the Waterway') and 1.5 NM offshore of the East Pickard Bay site (site 8) at the mouth of the Waterway. The Other Users Study Area is shown in Figure 16.1~~Figure 16.1~~.

16.4 Policy context

16.4.1 National Policy Statements

16.4.1.1 While it is recognised that the META project does not constitute a Nationally Significant Infrastructure Project (NSIP), the National Policy Statements (NPS) available to support NSIPs are considered to provide useful context to the EIA for the potential impacts of the META project on Other Users.

16.4.1.2 Planning policy on renewable energy infrastructure is contained in the Overarching NPS for Energy (EN-1; DECC, 2011a) and, specifically in relation to Other Users, the NPS for Renewable Energy Infrastructure (EN-3, DECC, 2011b).

16.4.1.3 NPS EN-3 includes guidance on what matters are to be considered in the assessment. These are summarised in Table 16.1 below.

16.4.1.4 NPS EN-3 also highlights several factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 16.2.

16.4.1.5 The Marine Policy Statement (MPS) and the draft Welsh National Marine Plan (dWNMP) (MMO, 2014) are also relevant to Other Users. Consideration of the UK MPS in relation to the META project is made within Table 3.1 of chapter 3: Needs and Alternatives. Consideration of the draft Welsh National Marine Plan is outlined in Table 3.2, chapter 3: Need and Alternatives.

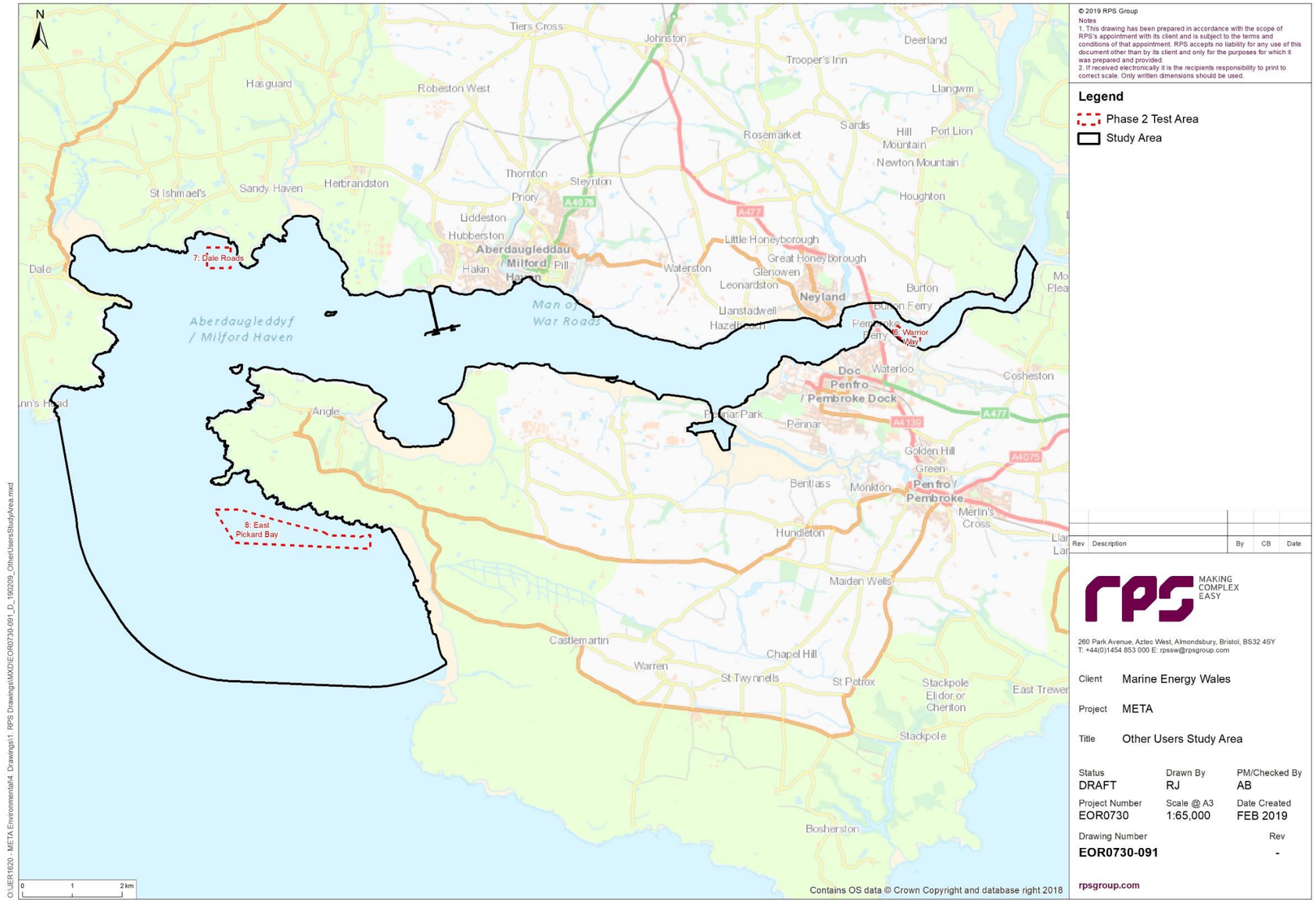

Figure 16.1: Other Users Study Area.

Table 16.1: Summary of policy framework provisions relevant to Other Users.

Summary of relevant policy framework	How and where considered in the Environmental Statement
Oil, gas and other offshore infrastructure and activities	
Applicants should undertake an assessment of the potential effect of the proposed development on existing or permitted infrastructure or activities (paragraph 2.6.179 of NPS EN-3).	The Other Users assessment has considered potential effects on existing or permitted infrastructure or activities for each phase of the development process.
Applicants should engage with interested parties early in the development phase and such stakeholder engagement should continue throughout the life of the development. Such engagement should be taken to ensure that solutions are sought that allow the development and other uses of the sea to successfully co-exist (paragraph 2.6.180 to 2.6.181 of NPS EN-3).	The Applicant has held discussions with interested parties at an early stage and this consultation is summarised in Section 0.

Table 16.2: Summary of NPS EN-3 policy on decision making relevant to Other Users.

Summary of relevant policy framework	How and where considered in the Environmental Statement
Where a proposed development potentially affects other offshore infrastructure or activity, a pragmatic approach should be employed by the decision maker. The decision maker should expect the applicant to minimise negative impacts and reduce risks to as low as reasonably practicable (paragraph 2.6.183 of NPS EN-3).	The Applicant has sought to avoid or reduce potential impacts, as described in the assessment presented in Section 16.11.
The decision maker should be satisfied that the site selection and site design of the proposed development 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 decision maker should not consent applications which pose unacceptable risks to safety after mitigation measures have been considered (paragraph 2.6.184 of NPS EN-3).	The META project sites have been sited to avoid or minimise conflict with other users, where possible. The Applicant has, where appropriate and feasible, proposed mitigation measures to reduce or negate impacts as part of the project design (see Section 16.10). Further information on the site selection process is presented in chapter 3: Need and Alternatives.
Providing proposed schemes have been carefully designed and that the necessary consultation has been undertaken at an early stage, mitigation measures may be possible to negate or reduce effects on other offshore infrastructure or operations to a level sufficient to enable the decision maker to grant consent (paragraph 2.6.186 of NPS EN-3).	
Detailed discussions between the applicant and the relevant consultees should have progressed as far as reasonably possible prior to the submission of an application. As such, appropriate mitigation should be included in any application, and ideally agreed between relevant parties (paragraph 2.6.187 of NPS EN-3).	

16.5 Consultation

16.5.1.1 A summary of the key issues raised during consultation specific to Other Users is outlined below, together with how these issues have been considered in the production of this Environmental Statement chapter. Table 16.3~~Table 16.3~~ summarises the issues raised relevant to Other Users, which have been identified during consultation activities undertaken to date. Table 16.3~~Table 16.3~~ also indicates either how these issues have been addressed within this Environmental Statement or how the Applicant has had regard to them.

Table 16.3: Summary of key consultation issues raised during consultation activities undertaken for the META project relevant to Other Users.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
5 November 2018	Royal National Lifeboat Institution (RNLI), meeting and subsequent email correspondence	Floating infrastructure may attract kayakers/surfers etc to the area of deployments at East Pickard Bay thereby increasing the risk of interactions with the devices/buoys.	The potential for interactions with the devices is considered within chapter 12: Shipping and Navigation for recreational vessels/craft. Notices to mariners will be issued on a specific device-deployment basis, and will be sent directly to an email list of registered interested parties to help ensure that as many interested parties as possible are aware of the presence of infrastructure and the need to avoid the area during the period of specific device deployments (see Table 16.10~~Table 16.10~~).
14 January 2019	Royal Yachting Association (RYA) Scoping Response	The RYA recognises that this is currently a scoping request and that impacts to recreational boating have been included. We consider that the location of sites impact on cruising routes should also be included, particularly as regards East Pickard Bay. The RYA would also expect to be consulted on the Navigational Risk Assessment (NRA) and other statutory requirements when the project moves to the application process	Potential impacts on cruising routes are considered within section 16.11 and further within chapter 12: Shipping and Navigation and associated Appendix 12.1: NRA.
18 January 2019	Maritime and Coastguard Agency (MCA) Scoping Response	Our remit for offshore renewable energy development is to ensure that safety of navigation is preserved whilst progress is made towards government targets for renewable energy. We would expect the Environmental Statement to supply detail on the possible impact on navigational issues for both commercial and recreational craft, covering: • Collision Risk • Navigational Safety • Visual intrusion and noise • Risk Management and Emergency response • Marking and lighting of site and information to mariners • Effect on small craft navigational and communication equipment • The risk to drifting recreational craft in adverse weather or tidal conditions • The likely squeeze of small craft into the routes of larger commercial vessels.	• Potential impacts on navigational issues for commercial and recreational vessels are considered within chapter 12: Shipping and Navigation and Appendix 12.1: NRA. Visual intrusion is considered in chapter 14: Seascape, and underwater noise is considered in chapter 6: Underwater Noise. • Notices to mariners will be issued on a specific device-deployment basis, and will be sent directly to an email list of registered interested parties to help ensure that as many interested parties as possible are aware of the presence of infrastructure and the need to avoid the area during the period of specific device deployments (see Table 16.10~~Table 16.10~~). • Navigational marker buoys will only be deployed when required to demarcate testing activities and will not be deployed for the duration of the site consent (see Table 16.10~~Table 16.10~~).
30 January 2019	Stakeholder Workshop	**Warrior Way (site 6)** • There is an activity centre at Warrior Way - the Pembrokeshire Performance Sailing Academy (PPSA) - offering dinghy sailing, power boat and shore-based courses, meaning there will be a lot of small vessel activity in proximity to Warrior Way (site 6) • Yacht racing occurs at Neyland, and Pembroke Yacht Club at Hobbs Point – Wednesday nights and Sunday. Start line uses entire width of the Waterway at Hobbs Point [these races go downstream from the start line which is in line with Neyland marina entrance] • Cruiser racing predominately occurs in daylight hours, 12-20 boats maximum, of 29-35 foot • Kids jumping/swimming at Hobbs Point Jetty [unofficially] • Concern that activities at Warrior Way may cause vessels to be pushed towards the shallows on the opposite side of the Waterway • Small craft training occurs at Warrior Way, and several children may use the slipway at any one time during the Spring/Summer. A dedicated safety boat recovers people (including children) from the water following practice capsize events. Concern that unattended small craft could drift into the Warrior Way area with the tidal flow • Line fishing occurs within the Warrior Way area (predominantly recreational) • Potential conflicts are not insurmountable with careful planning and management	Recreational activities in the vicinity of the Warrior Way (site 6) site have been identified in Section 16.7 from review of available data and as advised through consultation. Potential impacts on recreational receptors are assessed in section 16.11. The potential for interactions with the devices is considered within chapter 12: Shipping and Navigation for recreational vessels/craft.
30 January 2019	Stakeholder Workshop	**Dale Roads (site 7)** • Water sports occur at a lower level compared with Warrior Way. Diving occurs on the wrecks to the south of Great Castle Head. Occasional power boat training. Swimming is generally discouraged in the Waterway, and restricted to sheltered bays (e.g. Dale Bay, Sandy Haven)	Recreational activities in the vicinity of the Dale Roads (site 7) site have been identified in Section 16.7 from review of available data and as advised through consultation. Potential impacts on recreational receptors are assessed in section 16.11. The potential for interactions with the devices is considered within chapter 12: Shipping and Navigation for recreational vessels/craft.
30 January 2019	Stakeholder Workshop	**East Pickard Bay (site 8)** • Kayaking is sporadic, however there is potential for surfers to actively investigate the devices	Recreational activities in the vicinity of the East Pickard Bay (site 8) site have been identified in Section 16.7 from review of available data and as advised through consultation. Potential impacts on recreational receptors are assessed

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
			in section 16.11. The potential for interactions with the devices is considered within chapter 12: Shipping and Navigation for recreational vessels/craft.
30 January 2019	Stakeholder Workshop	Other general points raised: • The Milford Haven Port Authority (MHPA) regularly patrol the waters May-September • Potential for reduced underkeel clearance • It was noted that there is good management and relationships between recreational users and the port authority, with a designated officer. Activities are generally away from the Port and there is well-established interaction	• Potential impacts on recreational receptors are assessed in section 16.11 • Potential for reduced underkeel clearance is considered within chapter 12: Shipping and Navigation and Appendix 12.1: Navigational Risk Assessment (NRA)
22 February 2019	Email from PPSA	Key points in relation to Warrior Way (site 6): • Automatic Identification System (AIS) and RYA data sources are unreliable for the area • Many members of the public use the slipway seasonally at Warrior Way/Cleddau Reach to launch/recover craft (sailing dinghies, powerboats/sportboats, water ski/wakeboard users and Personal Watercraft). In addition, PPSA, Llanion Cove and other paddlesports and multi-activity users use the slipway throughout the year • The site boundaries encompass the slipway area and would compress access to the river east of the Cleddau Bridge. Request that if possible the boundaries be revised • Request consultation regarding scheduling of activities before a Notice to Mariners is published, due to the need to accommodate advance bookings • The area is used to train novice sailors and powerboat users. There may be times when boats drift into the META test area. The proposed site is also within the area used for introducing planned speed manoeuvres on powerboat courses	• Recreational activities in the vicinity of the Warrior Way (site 6) site have been identified in section 16.7 from review of available data and as advised through consultation. Potential impacts on recreational receptors are assessed in section 16.11 • The site boundaries have been revised and no longer encompass the slipway • The potential for interactions with the devices is considered within chapter 12: Shipping and Navigation for recreational vessels/craft

16.6 Methodology to inform the baseline

16.6.1 Desktop study

16.6.1.1 Information on Other Users within the Other Users study area was collected through a detailed desktop review of existing datasets. These are summarised at Table 16.4~~Table 16.4~~ below.

Table 16.4: Summary of key desktop datasets.

Title	Source	Year	Author
RYA data	RYA	2010	RYA
Pembrokeshire Coastal Forum (PCF) data	PCF	2010	PCF
Subsea cables	Oceanwise Marine Themes GIS Data	2018	Oceanwise / Hydrographic Office
Subsea pipelines	Kis-Orca	2018	Kis-Orca
Harbour Facilities	Oceanwise Marine Themes GIS Data	2018	Oceanwise / Hydrographic Office
Pile	Oceanwise Marine Themes GIS Data	2018	Oceanwise / Hydrographic Office
Disposal sites	Oceanwise Marine Themes GIS Data	2018	Oceanwise / Hydrographic Office
Shoreline construction	Oceanwise Marine Themes GIS Data	2018	Oceanwise / Hydrographic Office
Dredging areas and routes	Oceanwise Marine Themes GIS Data	2018	Oceanwise / Hydrographic Office
Danger areas	Ministry of Defence (MoD)	2019	MoD
Wales Marine Planning Portal	Wales Marine Planning Portal	2018	Welsh Government

16.6.2 Site specific surveys

16.6.2.1 No site-specific surveys have been undertaken to inform the EIA for Other Users. This is because the baseline characterisation developed through existing data sources and consultation is sufficient in order to inform the Other Users chapter.

16.7 Baseline environment

16.7.1 Overview

16.7.1.1 Milford Haven is the largest estuary in Wales and one of the world's deepest natural harbours (Pembrokeshire County Council, 2014a). The Waterway is shared by a number of different activities and interests including recreational activities, commercial shipping, port activities, fishing, dredging and disposal. These activities are managed on a day to day basis by the MHPA in collaboration with community stakeholders and partner organisations (Port of Milford Haven, 2016), and coexistence is achieved through established communications and operating procedures (including bye-laws, Notices to Mariners, Water Ranger patrols; Port of Milford Haven, 2016). The following sections provide a description of the baseline environment for each Other Users receptor group.

16.7.2 Recreational activities

16.7.2.1 The Waterway is popular for a number of water-based pursuits and several activity and adventure providers are based in the local area offering angling and sightseeing trips, sailing, windsurfing, kayaking, paddleboarding, powerboating, canoeing, surfing, coasteering and diving. Sailing is the most abundant recreational activity on the Waterway, with most activity taking place between the Cleddau bridge and the lower reaches of the Waterway (Port of Milford Haven, 2016). Beaches within and in the vicinity of the Waterway include Dale, West Angle and Freshwater West, which are classified as having excellent water quality (Natural Resources Wales, 2018). The Pembrokeshire Coast Path also runs along the northern shore from the mouth of the Waterway at St Ann's Head, crossing the Waterway at the Cleddau Bridge, and running inland to Pembroke before following the coastline around the Angle Peninsula.

16.7.2.2 Recreational activities are well regulated by the MHPA in conjunction with the Pembrokeshire Coast National Park Authority (PCNPA), and compliance with rules and regulations is enforced through the year-round presence of the MHPA water ranger (particularly during the summer). Leisure and other uses of the Waterway are zoned. East Pickard Bay (site 8) is outside this zoning scheme, but stakeholder consultation has confirmed that this site is much less intensively used by leisure vessels than the sites within the Waterway (see chapter 12: Shipping and Navigation).

16.7.2.3 The following sections describe the recreational baseline environment in the vicinity of each of the META test sites.

Warrior Way (site 6)

16.7.2.4 The Warrior Way (site 6) site is located within the Waterway adjacent to the Pembrokeshire Science and Technology Park, south east of Pembroke Ferry, and at the mouth of the Cosheston Pill. There are cruiser sailing and power boating activities in this area (Figure 16.2~~Figure 16.2~~). The site overlaps with an RYA General Boating area and there are RYA clubs, training centres and marinas in the immediate vicinity, including the Neyland Yacht Club and the Pembroke Haven Yacht Club. The site overlaps with areas identified for jet skiing, wake boarding and water skiing, kayaking and rowing activities (Figure 16.2~~Figure 16.2~~). A dinghy sailing area is located to the east of the site and wildlife boat trips also route through this stretch of the Waterway passing to the north of the site. There are areas for sea angling to the north and either side of the site.

16.7.2.5 The entrance to Cosheston Pill, to the east of the Warrior Way (site 6) site, is an area used by sailing schools for teaching beginners (Port of Milford Haven, 2016). Consultation has also identified that recreational activities take place in the vicinity of Hobbs Point, however this location is further around from the Warrior Way site and to the west of the bridge (see Table 16.3~~Table 16.3~~).

16.7.2.6 The level of recreational activity varies depending on the season. Most of the activity in the Waterway is seasonal, increasing from April to August and then declining in September (Port of Milford Haven, 2016). Indicative usage and seasonality data available for the Warrior Way (site 6) site (PCF, 2010) suggests that power boating (26-50 users) may take place daily during the summer and over Easter, frequently during late spring and autumn, and infrequently during the winter; kayaking (26-50 users) may take place daily during the summer, frequently during Easter and late spring, and infrequently over the rest of the year; jet skiing (0-25 users) and wake boarding and water skiing (0-25 users) may take place frequently during the summer and over Easter, and infrequently over the rest of the year; and rowing (26-50 users) may take place frequently during the late spring and summer, and infrequently over the rest of the year.

16.7.2.7 Consultation has advised that Warrior Way (site 6) is the most intensively used of the three META project sites for leisure navigation. In particular, the area is frequently used for youth sail training and other water-based activities (including coasteering). Many leisure navigators in small craft access the area from the slipways at Llanion cove at the south-east of the site. Recreational vessel AIS tracks in the summer were mainly recorded passing to the north of the site boundary, with few tracks recorded within the site with the exception of the northern corner. There were no recorded tracks in the winter period at this site (see chapter 12: Shipping and Navigation).

Dale Roads (site 7)

16.7.2.8 The Dale Roads site is located within the Waterway in Lindsway Bay to the south of St Ishmael's. The site overlaps with areas identified for rowing, windsurfing and cruiser sailing and lies within an RYA General Boating Area, however cruising routes and wildlife boat trip routes are identified as passing further to the south of the site (Figure 16.3~~Figure 16.3~~).

16.7.2.9 The site does not overlap with areas identified for kayaking, power boating (marginal overlap only) or sea angling but these activities take place in the vicinity of the site (Figure 16.3~~Figure 16.3~~) including occasional power boat training (see Table 16.3~~Table 16.3~~). There are no RYA clubs, training centres or marinas in the immediate vicinity of the site. Diving areas have been identified immediately south of the headland at Great Castle Head in addition to other isolated areas in the wider vicinity.

16.7.2.10 The sandy beach at Lindsway Bay is only accessible by coastal path or footpath from St Ishmael's (Pembrokeshire County Council, 2014b). PCF mapping data (see Table 16.4~~Table 16.4~~) suggests that coasteering takes place along the cliffs at the eastern side of the bay and around Great Castle Head, however Marine Energy Wales (MEW) understands that this area is not currently actively used for coasteering although it may be used in future.

16.7.2.11 The level of recreational activity varies depending on the season. Most of the activity in the Waterway is seasonal, increasing from April to August and then declining in September (Port of Milford Haven, 2016). Indicative usage and seasonality data available for the Dale Roads (site 7) site (PCF, 2010) suggests that rowing (26-50 users) may take place frequently during the late spring/summer and infrequently over the rest of the year; and windsurfing (0-25 users) may take place daily during Easter/late spring/summer, frequently during the autumn and infrequently during the winter.

16.7.2.12 Consultation has advised that the Dale Roads (site 7) site is also a popular leisure area. Very few recreational vessel AIS tracks were recorded passing through the site in the summer (though many tracks were recorded passing relatively close to the site boundaries), and no tracks were recorded passing through the site in the winter. Stakeholder consultation confirmed that the density of traffic using Dale Roads (site 7) was much lower than Warrior Way (site 8), although it was noted that the Dale Roads area is occasionally used for power boat training exercises (see chapter 12: Shipping and Navigation).

East Pickard Bay (site 8)

16.7.2.13 The East Pickard Bay site is located just beyond the entrance to the Waterway, between Sheep Island and Freshwater West. The site overlaps with kite surfing, windsurfing and power boating areas (Figure 16.4~~Figure 16.4~~).

16.7.2.14 Freshwater West beach is located to the east of the site and is regarded as one of the best surfing locations in Wales. The beach is popular with watersports enthusiasts and is host to the annual Welsh National Surfing Championships, and a surf school. The beach is used by experienced surfers due to the strong currents although learner surfers associated with the surf school may also be present. The beach is also used for body boarding, kite boarding, sea angling, swimming and dog walking activities. Frainslake Sands, to the south, lies within the Castlemartin Range (see Section 16.7.6).

16.7.2.15 The nearest diving areas are to the north of Sheep Island and an isolated area to the west of the site. Sea angling also takes place to the west and south of the site (Figure 16.4~~Figure 16.4~~). The site does not overlap with an RYA General Boating Area and there are no RYA clubs, training centres or marinas in the immediate vicinity of the site.

16.7.2.16 The level of recreational activity varies depending on the season. Indicative usage and seasonality data available for the East Pickard Bay (site 8) site (PCF, 2010) suggests that kite surfing (0-25 users) may take place frequently during the summer and autumn and infrequently over the rest of the year; windsurfing (0-25 users) may take place frequently year round; power boating (26-50 users) may take place daily during the summer and over Easter, frequently during late spring and autumn and infrequently over the winter; and kayaking (26-50 users) may take place frequently over most of the year and infrequently during the winter. At the beach, surfing (101-200 users) may take place daily during the autumn and frequently over the rest of the year; body boarding (51-100 users) may take place frequently year round; kite-boarding (0-25 users) may take place frequently during the late spring and summer and infrequently over the rest of the year; sea angling (0-25 users) may take place frequently year round; and swimming (51-100 users) may take place frequently during the late spring and summer and infrequently/never over the rest of the year/winter.

16.7.2.17 Consultation has advised that the East Pickard Bay (site 8) site is less intensively used than either Warrior Way (site 6) or Dale Roads (site 7) and is mainly transited by leisure vessels on passage. Very few recreational vessel AIS tracks were recorded passing through the area in the summer (though many tracks were recorded passing relatively close to the site boundary), and no tracks were recorded passing through the site in the winter. Stakeholder consultation confirmed that the density of traffic using East Pickard Bay (site 8) was much lower than Warrior Way (site 6) (see chapter 12: Shipping and Navigation).

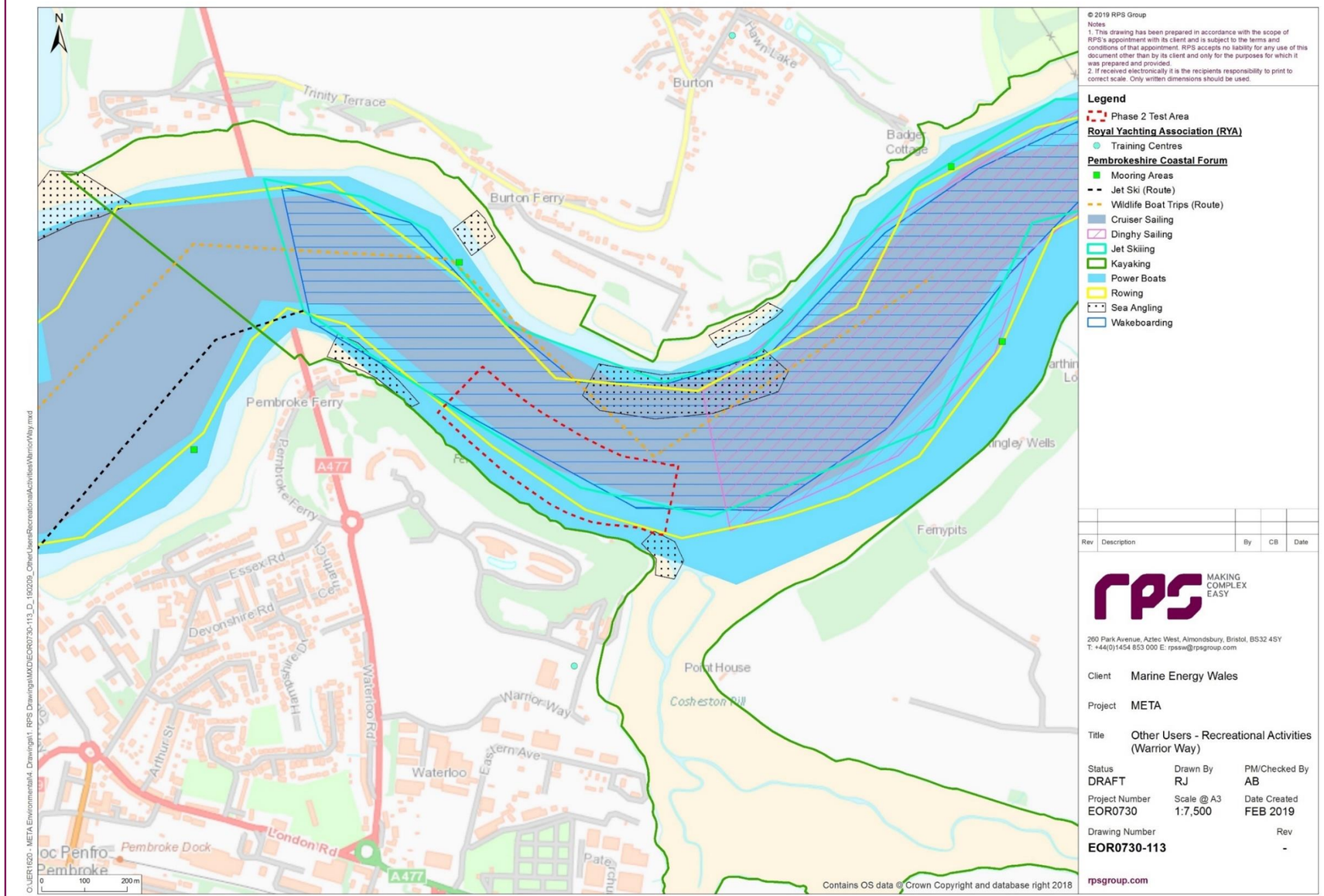

Figure 16.2: Recreational activities – Warrior Way (site 6).

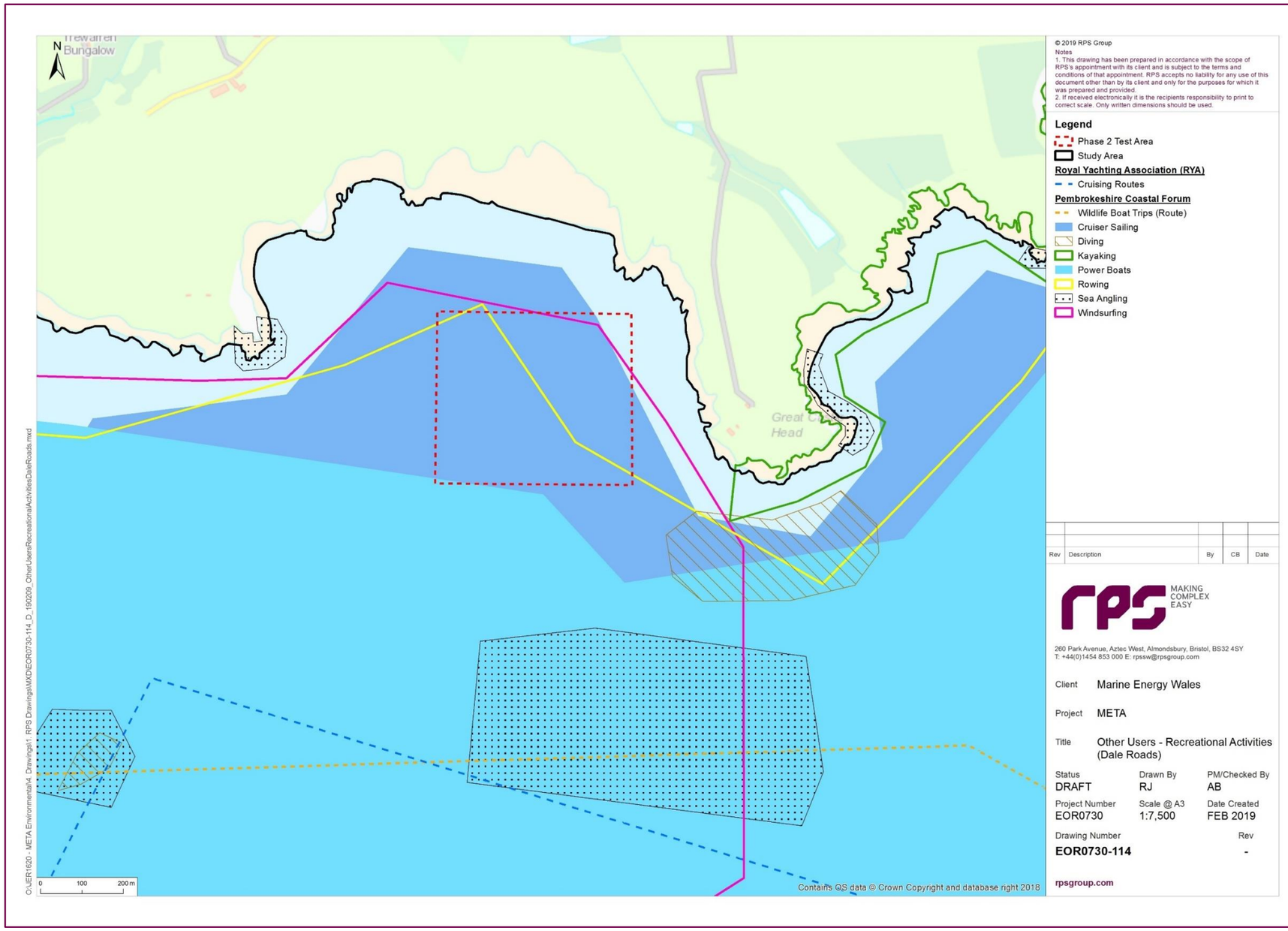

Figure 16.3: Recreational activities – Dale Roads (site 7).

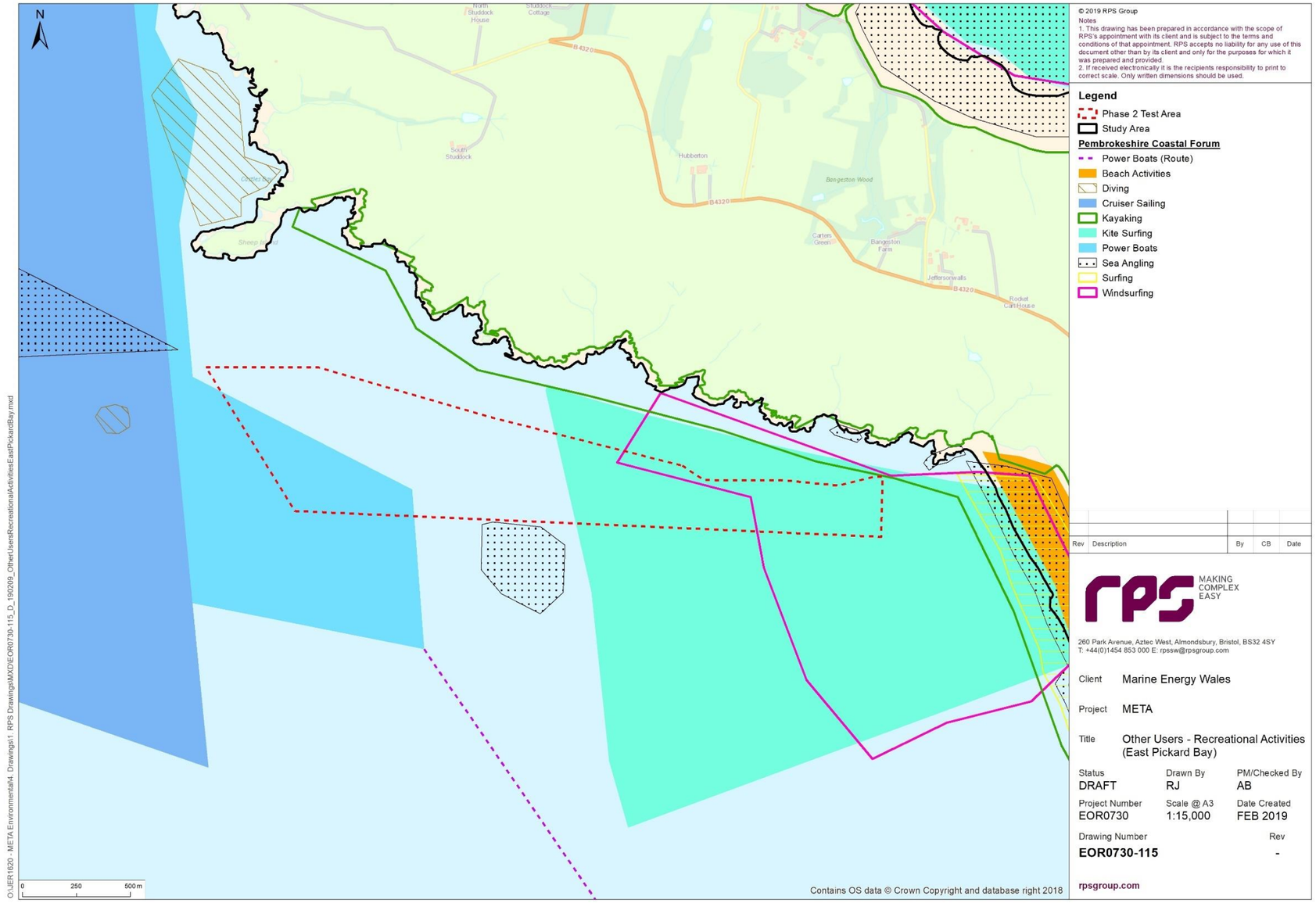

Figure 16.4: Recreational activities – East Pickard Bay (site 8).

16.7.3 Port activities

16.7.3.1 The Port of Milford Haven is the UK's largest energy port and a leading shipping gateway hosting a variety of cargo vessels. The port serves refineries and oil terminals which receive cargo from the North Sea, Africa, the Middle East, Asia and Europe and processed materials are then transported within the UK and internationally (Port of Milford Haven, 2019). The port also hosts a gas-fired power station, Pembroke Power Station, and increasingly supports the marine renewable energy sector.

16.7.3.2 Pembroke Port, which is owned and operated by the Port of Milford Haven, specialises in cargo, heavy lift and ferry operations (Pembroke Port, 2019). Other docks and ports operated by the Port of Milford Haven include Milford Fish Docks, Milford Marina and the Pembroke Dock ferry terminal which operates ferry services from Wales to Ireland.

16.7.3.3 Shipping activity in relation to the three META project sites is examined in detail within chapter 12: Shipping and Navigation and is not repeated here. Section 16.7.4 and 16.7.4.1 below describe the baseline for subsea cables and pipelines and dredging and disposal activities which are associated with the Port of Milford Haven.

16.7.4 Subsea cables and pipelines

16.7.4.1 There are a number of high capacity gas and oil pipelines and electricity connections to wider parts of the UK associated with the activities at the Port of Milford Haven (Port of Milford Haven, 2019). This includes subsea cables between Chapel Bay and South Hook Point and between Popton Point and Hakin (Figure 16.5~~Figure 16.5~~). There is a subsea pipeline crossing the Waterway between Pembroke Power Station and Wear Point (Figure 16.5~~Figure 16.5~~).The nearest pipelines/cables to the Warrior Way (site 6) site are located approximately 157 m to the north and 321 m to the west of the site. There are no subsea cables in the immediate vicinity of the Warrior Way (site 6) site and no subsea cables or pipelines in the immediate vicinity of the Dale Roads (site 7) or East Pickard Bay (site 8) sites (Figure 16.5~~Figure 16.5~~).

16.7.5 Dredging and disposal activities

16.7.5.1 Dredging activities take place in the Waterway associated with maintenance of the Port of Milford Haven shipping channels and berths. There are no dredging areas in the vicinity of the Warrior Way (site 6), Dale Roads (site 7) or East Pickard Bay (site 8) sites (Figure 16.6~~Figure 16.6~~).

16.7.5.2 There is one licenced open disposal site in the Waterway, Neyland, just to the west of the Cleddau Bridge and approximately 528 m from the Warrior Way (site 6) site (Figure 16.5~~Figure 16.5~~). There are no other open disposal sites in the vicinity of the META project areas.

16.7.6 Military Practice Areas

16.7.6.1 The Castlemartin Range is located immediately south of the entrance to the Waterway and extends for up to 12 NM from the coast between Little Furznip (at the southern extent of Freshwater West) and St Govan's Head (Milford Haven Port Authority, 2019).

16.7.6.2 The southern boundary of the East Pickard Bay (site 8) site is located adjacent to the northern boundary of the Castlemartin Military Practice Area D113A (Figure 16.7~~Figure 16.7~~). The range at Castlemartin supports the training of military personnel (Army) in the firing of a range of munitions at land-based targets. The seaward danger area provides a safety zone for overfire and shrapnel which may result from the striking of targets (RPS, 2010). While the range is active, it is actively managed and protected by a range safety vessel (see chapter 12: Shipping and Navigation). The Castlemartin firing times are available on the MOD website which includes a description of the extent of the seaward danger area.

16.7.6.3 There are no Military Practice Areas in the vicinity of the Warrior Way (site 6) or Dale Roads (site 7) sites.

16.7.7 Seaweed Farming

16.7.7.1 A seaweed farming area is shown as overlapping with the Warrior Way (site 6) site (Figure 16.5~~Figure 16.5~~), however MEW is not aware of any installed infrastructure associated with seaweed farming at this location. Seaweed farming is therefore not considered further within this assessment.

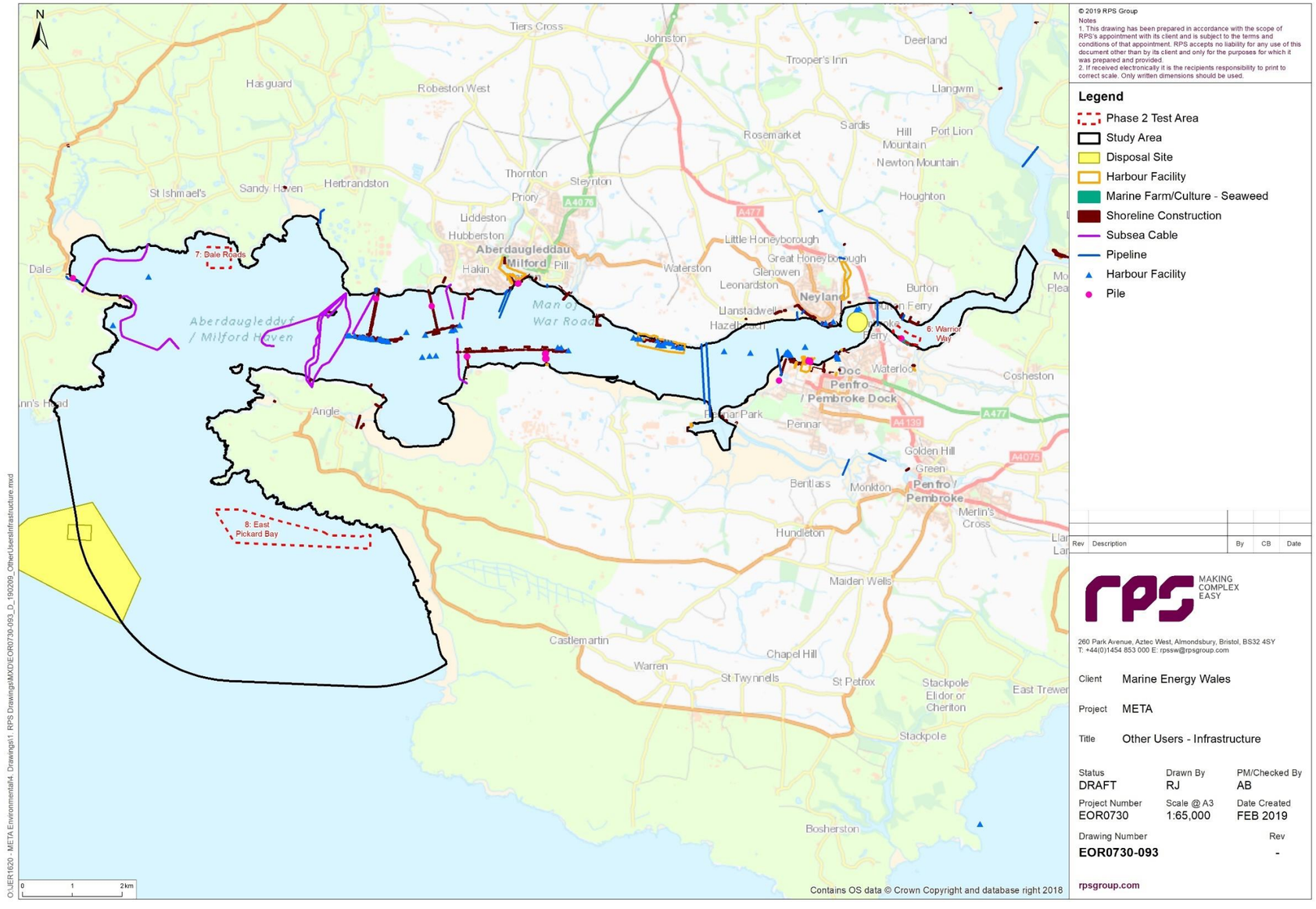

Figure 16.5: Other infrastructure.

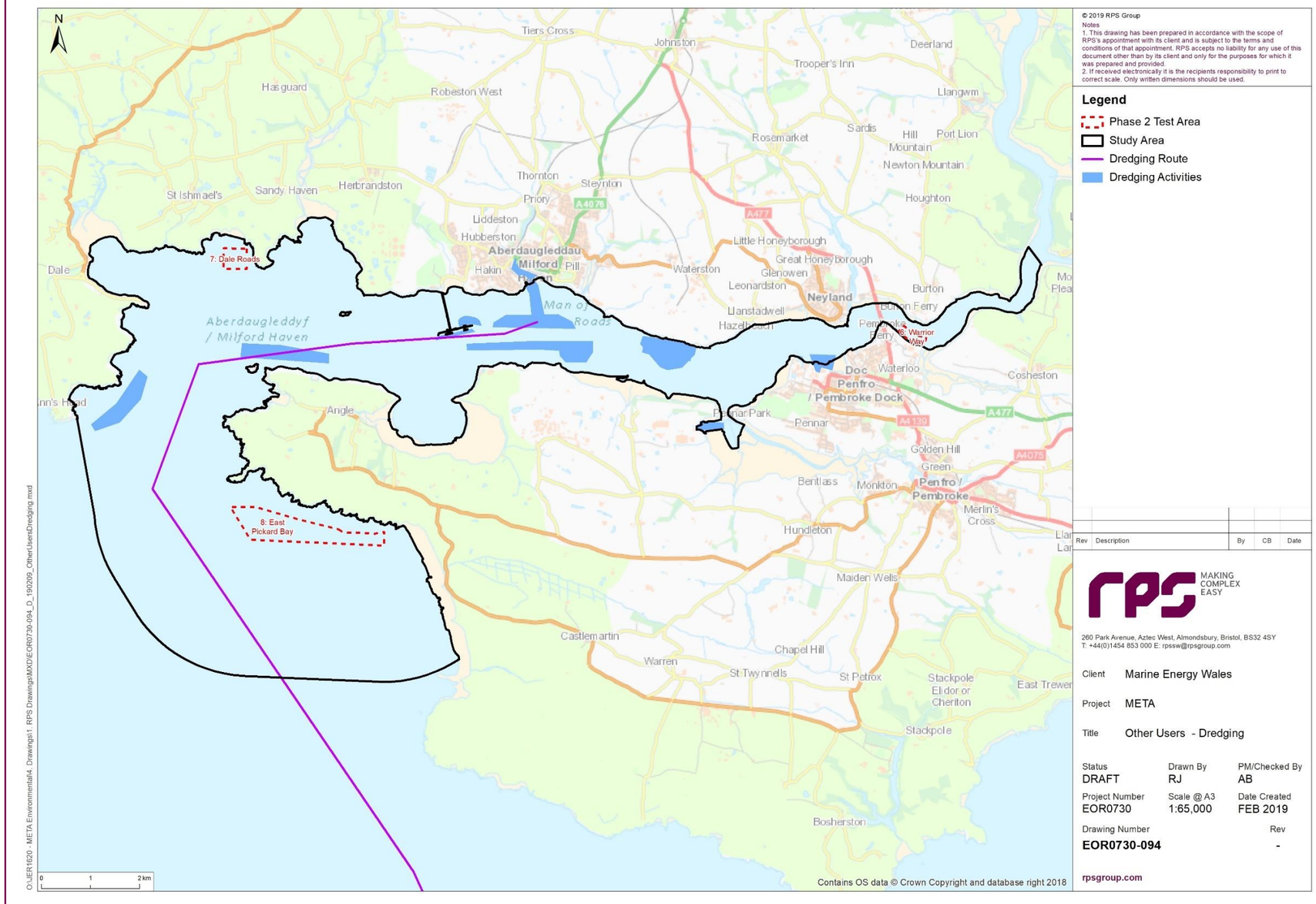

Figure 16.6: Dredging activities.

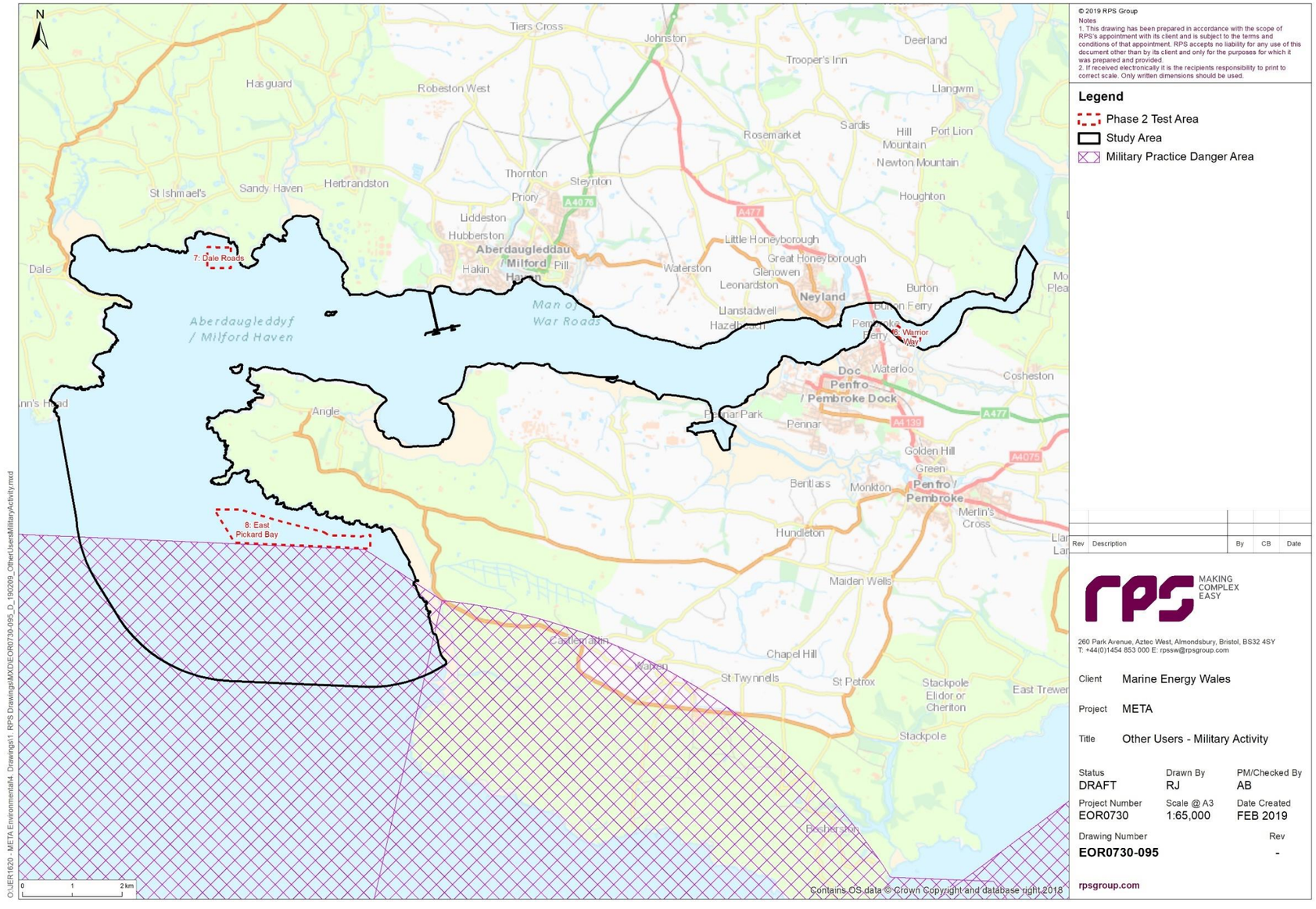

Figure 16.7: Military practice areas.

16.7.8 Future baseline scenario

16.7.8.1 The Marine Works (EIA) Regulations 2007 (as amended 2017) requires that "a description of the relevant aspects of the current state of the environment (baseline scenario), and an outline of the likely evolution thereof without implementation of the project, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge" is included within the Environmental Statement.

16.7.8.2 In the event that the META project does not come forward, an assessment of the future baseline conditions has been carried out and is described within this section.

16.7.8.3 The future baseline scenario for recreational activities is considered unlikely to change substantially from that presented in Section 16.7.1 in the absence of the META project, although there is an aim to increase visitor numbers outside the peak summer months (Pembrokeshire County Council (PCC), 2018) and therefore recreational activities may take place over a longer season. The Port of Milford Haven is in the process of expansion through the Milford Waterfront and Pembroke Dock Marine projects, which are likely to result in increased activity within the port. These projects are further considered in the cumulative impact assessment (CIA) presented in Section 16.13. The future baseline scenario for subsea cables and pipelines may see a gradual change as new facilities are identified as part of the port expansion plans, with the installation of the Greenlink Interconnector and the temporary marine cable associated with the proposed Bombora Wave Energy project, which are considered further in the CIA (Section 16.13). The future baseline scenario for dredging and disposal activities and military practice areas is considered unlikely to change substantially from that presented in Section 16.7.4.1 and 16.7.6 in the absence of the META project.

16.7.9 Data limitations

16.7.9.1 The data sources used in this chapter are detailed in Table 16.4~~Table 16.4~~ above. The data used are considered to be the most up to date publicly available information which can be obtained from the applicable data sources as cited, and data that have been provided through consultation as detailed in Table 16.3~~Table 16.3~~. The data are therefore limited by what is available and by what has been made available, at the time of writing the Environmental Statement.

16.7.9.2 It is considered that the data employed in the assessment are of a robust nature and are sufficient for the purposes of the impact assessment presented.

16.8 Key parameters for assessment

16.8.1 Maximum and most likely design scenario

16.8.1.1 The maximum design scenarios identified in Table 16.5~~Table 16.5~~ have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the details provided in the project description (chapter 2: Project Description). Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope, to that assessed here be taken forward in the final design scheme.

16.8.1.2 The most likely design scenarios identified in Table 16.5~~Table 16.5~~ have been selected as those having the potential to result in the most likely effect on an identified receptor or receptor group. These scenarios have been selected from the details provided in the project description (chapter 2: Project Description). Effects of greater adverse significance are outlined under the maximum design scenario.

16.8.1.3 The Other Users assessment has been informed by the following assessments:

- Coastal Processes (chapter 5); and
- Shipping and Navigation (chapter 12)

16.8.2 Impacts scoped out of the assessment

16.8.2.1 On the basis of the baseline environment and the project description outlined in chapter 2: Project Description, a number of impacts are proposed to be scoped out of the assessment for Other Users. These impacts are outlined, together with a justification for scoping them out, in Table 16.6~~Table 16.6~~).

Table 16.5: Maximum and most likely design scenarios considered for the assessment of potential impacts on Other Users.

Potential impact	Maximum design scenario	Most likely design scenario	Justification
Installation phase			
Installation of the META project may displace recreational activities resulting in a loss of recreational resource	Installation of new devices may take place throughout the 15-year consent period **Warrior Way** • Scaled or micro tidal devices, instruments, components and subassemblies, monitoring equipment, site preparation • Up to one device deployment occurring at any one time which may occupy all or part of the water column, demarked by up to four navigational marker buoys • Up to four device deployments in a 12-month period • Total area required for single device: up to 200 m^2 (sea area/seabed footprint) + up to 150 m^2 (mooring spread) = 350 m^2 • Potential for advisory clearance distance around installation activities • Access via Pembroke Port (vessel length up to 35 m). **Dale Roads** • Scaled or full-scale wave energy converter (WEC) devices, research and monitoring methodologies • Up to one device deployment occurring at any one time which may occupy a significant proportion of the water column and may include surface-piercing, demarked by up to four navigational marker buoys • Up to two device deployments in a 12-month period • Total area required for single device: up to 600 m^2 (seabed footprint) + up to 200 m^2 (mooring spread for floating devices) = 800 m^2 • Installation of up to four pin piles per device via drilling, with associated Safety Zone likely to be required • Potential for advisory clearance distance around installation activities • Access via Pembroke Port (vessel length up to 164 m) • **East Pickard Bay** • Scaled or full-scale WEC device testing and component testing for floating offshore wind technology, rock ballasting • Up to two device deployments at any one time which may occupy a significant proportion of the water column and may include surface-piercing, at surface and sub-surface components, demarked by up to four navigational marker buoys • Up to four devices deployed in a 12-month period • Total area required for single device: up to 33,810 m^2 (sea surface area). For multiple devices: up to 33,910 m^2 (sea surface area) +	Installation of new devices may take place throughout the 15-year consent period **Warrior Way** • Scaled or micro tidal devices, instruments, components and subassemblies, monitoring equipment, site preparation • Up to one device deployment occurring at any one time which may occupy all or part of the water column, demarked by up to four navigational marker buoys • Up to two device deployments in a 12-month period • Total area required for single device: up to 100 m^2 (sea area/seabed footprint) + up to 75 m^2 (mooring spread) = 175 m^2 • Potential for advisory clearance distance around installation activities • Access via Pembroke Port (vessel length up to 30 m) • **Dale Roads** • Scaled or full-scale WEC devices, research and monitoring methodologies • Up to one device deployment occurring at any one time which may occupy a significant proportion of the water column and may include surface-piercing, demarked by up to four navigational marker buoys • Up to one device deployment in a 12-month period • Total area required for single device: up to 200 m^2 (seabed footprint) + up to 100 m^2 (mooring spread for floating devices) = 300 m^2 • No pin piling required, no associated Safety Zones required • Potential for advisory clearance distance around installation activities • Access via Pembroke Port (vessel length up to 164 m) **East Pickard Bay** • Scaled or full-scale WEC device testing and component testing for floating offshore wind technology, rock ballasting • Up to one device deployment occurring at any one time which may occupy a significant proportion of the water column and may include surface-piercing, at surface and sub-surface components, demarked by up to four navigational marker buoys • Up to one device deployed in a 12-month period • Total area required for single device: up to 1,700 m^2 (seabed footprint) + up to 625 m^2 (mooring spread for a single device) = 2,325 m^2 • No pin piling required, no associated Safety Zones required.	Maximum area likely to be demarked by navigational marker buoys or subject to Safety Zones or advisory clearance distances leading to the greatest loss of recreational resource.

Potential impact	Maximum design scenario	Most likely design scenario	Justification
	up to 500,000 m² (mooring spread for multiple devices) = 533,910 m² • Installation of up to four pin piles per device via drilling, with associated Safety Zone likely to be required • Potential for advisory clearance distance around installation activities • Access via local ports (vessel length up to 200 m)	• Potential for advisory clearance distance around installation activities • Access via local ports (vessel length up to 200 m)	
Operation and maintenance phase			
Operation and maintenance of the META project may displace recreational activities resulting in a loss of recreational resource	• Operational testing throughout the year and not restricted to daylight hours, however maintenance activities will be restricted to daylight hours, wherever possible. • Communication and power to support the tests will be provided locally at the META project sites through test support buoys/platforms or inherently built in to the devices themselves as and when necessary, and this will not require the installation of any permanent infrastructure to support the testing. Requirements for ancillary infrastructure will be discussed with the consenting authority on a device-specific basis **Warrior Way** • Scaled or micro tidal devices, instruments, components and subassemblies, monitoring equipment. • Up to one device deployment occurring at any one which may occupy all or part of the water column, demarked by up to four navigational marker buoys. • Total area required for single device: up to 200 m² (sea area/seabed footprint) + up to 150 m² (mooring spread) = 350 m². • Up to 20 m length, 10 m width and up to 2 m height above sea surface. • Up to four device deployments in a 12-month period. • Up to 104 vessel visits in a 12-month period. • Up to five vessels utilised at any one time for operation and maintenance activities. • Access via Pembroke Port (vessel length up to 35 m). **Dale Roads** • Scaled or full-scale WEC devices, research and monitoring methodologies. • Up to one device deployment occurring at any one time which may occupy a significant proportion of the water column and may include surface-piercing, demarked by up to four navigational marker buoys. • Total area required for single device: up to 600 m² (seabed footprint) + up to 200 m² (mooring spread) = 800 m². • Up to 30 m length, 20 m width and up to 2 m height above sea surface. • Up to two device deployments in a 12-month period.	• Operational testing throughout the year and not restricted to daylight hours, however maintenance activities will be restricted to daylight hours, wherever possible. • Communication and power to support the tests will be provided locally at the META project sites through test support buoys/platforms or inherently built in to the devices themselves as and when necessary, and this will not require the installation of any permanent infrastructure to support the testing. Requirements for ancillary infrastructure will be discussed with the consenting authority on a device-specific basis **Warrior Way** • Scaled or micro tidal devices, instruments, components and subassemblies, monitoring equipment • Up to one device deployment occurring at any one time occupying all or part of the water column, demarked by up to four navigational marker buoys • Total area required for single device: up to 100 m² (sea area/seabed footprint) + up to 75 m² (mooring spread) = 175 m² • Up to 5 m length, 5 m width and at sea surface • Up to two device deployments in a 12-month period. • Up to 52 vessel visits in a 12-month period • Up to three vessels utilised at any one time for operation and maintenance activities • Access via Pembroke Port (vessel length up to 30 m) **Dale Roads** • Scaled or full-scale WEC devices, research and monitoring methodologies. • Up to one device deployment occurring at any one time which may occupy a significant proportion of the water column and may include surface-piercing, demarked by up to four navigational marker buoys. • Total area required for single device: up to 200 m² (seabed footprint) + up to 100 m² (mooring spread) = 300 m². • Up to 15 m length, 10 m width and height being at the sea surface. • Up to one device deployment in a 12-month period. • Up to 52 vessel visits in a 12-month period.	Maximum area likely to be demarked by navigational marker buoys leading to the greatest loss of recreational resource.

Potential impact	Maximum design scenario	Most likely design scenario	Justification
	• Up to 104 vessel visits in a 12-month period. • Up to five vessels utilised at any one time for operation and maintenance activities. • Access via Pembroke Port (vessel length up to 164 m). **East Pickard Bay** • Scaled or full-scale WEC device testing and component testing for floating offshore wind technology, rock ballasting. • Up to two device deployments at any one time which may occupy a significant proportion of the water column and may include surface-piercing, at surface and sub-surface components, demarked by up to four navigational marker buoys. • Total area required for single device: up to 33,810 m^2 (sea surface area). For multiple devices up to 33,910 m^2 + up to 500,000 m^2 (mooring spread for multiple devices) = 533,910 m^2. • Up to 147 m length, 230 m width and up to 15 m height above sea surface however a maximum scenario height of up to 15 m above sea surface will only apply in devices up to a maximum dimension scenario of 60 m length x 60 m width. Where maximum dimensions of a device are over 60 m length x 60 m width, a maximum height of 5 m above sea surface will be applied. • Up to two tow tests in a 12-month period. • Up to four device deployments (moored or gravity based) in a 12-month period. • Up to 150 vessel visits in a 12-month period. • Up to five vessels utilised at any one time for operation and maintenance activities. • Access via local ports (vessel length up to 200 m). • A test-support buoy capable of dissipating energy at site may be provided but will not require the installation of any permanent infrastructure.	• Up to three vessels utilised at any one time for operation and maintenance activities. • Access via Pembroke Port (vessel length up to 164 m). **East Pickard Bay** • Scaled or full-scale WEC device testing and component testing for floating offshore wind technology, rock ballasting. • Up to one device deployment occurring at any one time which may occupy a significant proportion of the water column and may include surface-piercing, at surface and sub-surface components, demarked by up to four navigational marker buoys. • Total area required for single device: up to 1,700 m^2 (seabed footprint) + up to 625 m^2 (mooring spread for a single device) = 2,325 m^2. • Up to 80 m length, 17 m width and minimal height above sea surface/at sea surface. • Up to one tow test in a 12-month period. • Up to one device deployment (moored or gravity based) in a 12-month period. • Up to 104 vessel visits in a 12-month period. • Up to three vessels utilised at any one time for operation and maintenance activities. • Access via local ports (vessel length up to 200 m). • A test-support buoy capable of dissipating energy at site may be provided but will not require the installation of any permanent infrastructure.	
Decommissioning phase			
Decommissioning of the META project may displace recreational activities resulting in a loss of recreational resource	As per Installation Phase	As per Installation Phase	As per Installation Phase

Table 16.6: Impacts scoped out of the assessment for Other Users.

Potential impact	Justification
Installation, operation and maintenance and decommissioning phases	
The META project may impact the wave regime resulting in a change to the surfing resource at East Pickard Bay	The impact of devices at East Pickard Bay (site 8) on the wave regime and associated potential impacts along the shoreline is assessed in chapter 5: Coastal Processes. The assessment identified that any reduction in wave height would return to uniformity within 150 m (peak wave climate) and 80 m (mean wave climate) beyond the device. This is less than the distance between the easternmost boundary of the site and the westernmost boundary of the surfing area identified by available data (345 m). The assessment also identified that the incoming waves at the East Pickard Bay site (site 8) approach from the south west therefore any disruption due to energy extraction within this site would occur between the wave device and the cliffs rather than to waves approaching Freshwater West. This impact has therefore been scoped out of further assessment.
The META project may result in sediment plumes which may overlap with diving sites	There are no diving sites in the vicinity of the Warrior Way site (site 6). There is a diving site to the south east of the Dale Roads site (site 7) and a small diving area to the west of the East Pickard Bay site (site 8) (the diving site to the north of Sheep Island is sheltered by the headland and therefore there is no potential impact pathway). The impact of devices on suspended sediment concentrations (SSC) is assessed in chapter 5: Coastal Processes. The assessment considered that the very finest material disturbed from installation activities would travel in the

Potential impact	Justification
	order of 600 m from the Dale Roads site (site 7) and 50 m from the East Pickard Bay site (site 8) during an average tide, which is less than the distances to the respective diving areas. This impact has therefore been scoped out of further assessment.
The META project may restrict access to subsea cables and pipelines	There are no subsea cables/pipelines in the immediate vicinity of the Warrior Way site (site 6) and no subsea cables or pipelines in the immediate vicinity of the Dale Roads (site 7) or East Pickard Bay (site 8) sites (the Greenlink Interconnector and the marine cable associated with the Bombora proposal are considered within the CIA, Section 16.13). The nearest pipelines to the Warrior Way site (site 6) are located approximately 157 m to the north and 321 m to the west of the site. Due to the distance between the nearest pipeline and the Warrior Way site it is considered unlikely that access to the pipeline for repair or maintenance will be restricted during installation activities or operational and maintenance activities. This impact has therefore been scoped out of further assessment.
The META project may impact marine disposal sites from increases in SSC and associated deposition of disturbed sediment to the seabed	There is one licenced open disposal site in the Waterway approximately 528 m from the Warrior Way site (site 6). There are no other open disposal sites in the vicinity of the META project sites. The impact of devices on SSC is assessed in chapter 5: Coastal Processes. The assessment considered that the finest material disturbed from installation activities would travel in the order of 100 m from the Warrior Way site (site 6) during an average tide, which is less than the distance to the disposal site. The temporary increase in SSC would be similar to background levels. This impact has therefore been scoped out of further assessment.
The META project may impact subsea cables and pipelines from scour and sediment mobilisation	There are no subsea cables in the immediate vicinity of the Warrior Way site (site 6) and no subsea cables or pipelines in the immediate vicinity of the Dale Roads (site 7) or East Pickard Bay (site 8) sites. The nearest pipelines to the Warrior Way site (site 6) are located approximately 157 m to the north and 321 m to the west of the site. The impact of devices on scour and SSC is assessed in chapter 5: Coastal Processes. Those structures most prone to scour are long term installations such as piles, which are not proposed at Warrior Way (site 6), and therefore due to the limited nature of the installation and testing at Warrior Way (site 6) seabed scour was scoped out of the assessment presented in chapter 5: Coastal Processes. In terms of sediment mobilisation, the assessment presented in chapter 5: Coastal Processes considered that the finest material disturbed from installation activities would travel in the order of 100 m from the Warrior Way site (site 6) during an average tide, which is less than the distance to the nearest pipeline. This impact has therefore been scoped out of further assessment.
The East Pickard Bay site may interfere with operations in Military Practice Areas	The southern boundary of the East Pickard Bay site (site 8) is located adjacent to the northern boundary of the Castlemartin Military Practice Area D113A. The device deployments will not overlap with the Military Practice Area however there is potential for any Safety Zone or temporary advisory clearance distance associated with vessel activity to overlap with this area during installation or operational and maintenance activities. The seaward danger area provides a safety zone for overfire and shrapnel which may result from the striking of targets (RPS, 2010). Installation activities and operational and maintenance activities will not be permitted to enter the seaward danger area when it is in use, as dictated by the Castlemartin RAC Range Byelaws 1986 (Statutory Instrument No 1834). The Castlemartin firing times are available on the MOD website (https://www.gov.uk/government/publications/castlemartin-firing-notice--2) which includes a description of the extent of the seaward danger area. This impact has therefore been scoped out of further assessment.
The META project will generate airborne noise that may affect receptors on commercial vessels and recreational receptors carrying out water-based activities or at the shore	Noise emissions from vessels and operational devices are expected to be minimal, and not above background levels already occurring in the Waterway (RPS, 2018a). This impact has therefore been scoped out of further assessment.
The META project may affect air quality	Due to the scale and nature of activities proposed at the META project below MHWS, there is a low risk of impact on air pollution. Emissions from vessels associated with the project are anticipated to fall within background levels experienced in the Waterway and immediate surroundings. This impact has therefore been scoped out of further assessment.

16.9 Impact assessment methodology

16.9.1 Overview

16.9.1.1 The Other Users EIA has followed the methodology set out in chapter 4: Environmental Impact Assessment Methodology. Specific to the Other Users EIA, the following guidance documents have also been considered:

- The RYA's Position on Offshore Renewable Energy Developments: Paper 2 (of 4) – Wave Energy, September 2015 (RYA, 2015a);
- The RYA's Position on Offshore Renewable Energy Developments: Paper 3 (of 4) – Tidal Energy, September 2015 (RYA, 2015b); and
- Guidance on Environmental Impact Assessment of Offshore Renewable Energy Development on Surfing Resources and Recreation (SAS, 2009).

16.9.2 Impact assessment criteria

16.9.2.1 The criteria for determining the significance of effects is a two-stage process that involves defining the sensitivity of the receptors and the magnitude of the impacts. This section describes the criteria applied in this chapter to assign values to the sensitivity of receptors and the magnitude of potential impacts. The terms used to define sensitivity and magnitude are based on those which are described in further detail in chapter 4: Environmental Assessment Methodology.

16.9.2.2 The criteria for defining magnitude in this chapter are outlined in Table 16.7~~Table 16.7~~ below.

Table 16.7: Definition of terms relating to the magnitude of an impact.

Magnitude of impact	Definition
Major	Total loss of ability to carry on activities and/or impact is of extended physical extent and/or long-term duration and/or frequency of repetition is continuous and/or effect is not reversible (adverse).
Moderate	Loss or alteration to significant portions of key components of current activity and/or physical extent of impact is moderate and/or medium-term duration and/or frequency of repetition is medium to continuous and/or effect is not reversible (adverse).
Minor	Minor shift away from baseline conditions, leading to a reduction in level of activity that may be undertaken, and/or physical extent of impact is low and/or short to medium-term duration and/or frequency of repetition is low to continuous and/or effect is not reversible (adverse).
Negligible	Very slight change from baseline conditions and/or physical extent of impact is negligible and/or short-term duration and/or frequency of repetition is negligible to continuous and/or effect is reversible (adverse).
No change	No change from baseline conditions.

16.9.2.3 The criteria for defining sensitivity in this chapter are outlined in Table 16.8~~Table 16.8~~ below.

Table 16.8: Definition of terms relating to the sensitivity of the receptor.

Sensitivity	Definition
Very High	Receptor or the activities of the receptor is of critical importance to the local, regional or national economy and/or the receptor or the activities of the receptor is highly vulnerable to impacts that may arise from the project and/or recoverability is long term or not possible.
High	Receptor or the activities of the receptor is of high value to the local, regional or national economy and/or the receptor or the activities of the receptor is generally vulnerable to impacts that may arise from the project and/or recoverability is slow and/or costly.
Medium	Receptor or the activities of the receptor is of moderate value to the local, regional or national economy and/or the receptor or the activities of the receptor is somewhat vulnerable to impacts that may arise from the project and/or has moderate to high levels of recoverability.
Low	Receptor or the activities of the receptor is of low value to the local, regional or national economy and/or the receptor or the activities of the receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability.
Negligible	Receptor or the activities of the receptor is of negligible value to the local, regional or national economy and/or the receptor or the activities of the receptor is not vulnerable to impacts that may arise from the project and/or has high recoverability.

16.9.2.4 The significance of the effect upon Other Users is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented in Table 16.9~~Table 16.9~~. Where a range of significance of effect is presented in Table 16.9~~Table 16.9~~, the final assessment for each effect is based upon expert judgement.

16.9.2.5 For the purposes of this assessment, any effects with a significance level of minor or less have been concluded to be not significant in terms of the EIA Regulations.

Table 16.9: Matrix used for the assessment of the significance of the effect.

Sensitivity of receptor	Magnitude of impact: No change	Negligible	Minor	Moderate	Major
Negligible	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible	Negligible or minor	Minor	Moderate	Moderate or major
High	Negligible	Minor	Minor or moderate	Moderate or major	Major or substantial
Very high	Negligible	Minor	Moderate or major	Major or substantial	Substantial

16.10 Measures adopted as part of the META Project

16.10.1.1 As part of the project design process, a number of designed-in measures have been proposed to reduce the potential for impacts on Other Users (see Table 16.10~~Table 16.10~~). As there is a commitment to implementing these measures, they are considered inherently part of the design of the META project and have therefore been considered in the assessment presented in section 16.11~~16.11~~ below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development.

Table 16.10: Designed-in measures adopted as part of the META project.

Measures adopted as part of the META project	Justification
Promulgation of information including regular Notices to Mariners issued before and during every device deployment, advising on the location, timings and other relevant information. Information and notices will also be posted at onshore locations, this may include signage if appropriate/possible. MEW plans to create a database of known users (including yacht clubs and local activity centres) to act as a mailing list for direct issue of Notices to Mariners.	Notices to mariners will be issued on a specific device-deployment basis and will be sent directly to an email list of registered interested parties to help ensure that as many interested parties as possible are aware of the presence of infrastructure and the need to avoid the area during the period of specific device deployments.
Safety Zones may be applied for (as per the 2007 Safety Zone regulations cited in the justification column), around any pin piling activities during the installation phase.	Safety zones are established in the interests of safety to other users receptors, in accordance with The Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007.
Advisory clearance distances are likely to be recommended around vessels undertaking installation, maintenance and decommissioning activities. The nature of the advisory clearance distances will be discussed and agreed with the MHPA on a case-by-case basis.	Advisory clearance distances are recommended in the interests of safety to other users, particularly navigational safety.
Navigational marker buoys will be deployed to demarcate testing activities, to include full extent of device footprint including mooring lines. Navigational marker buoys will only be deployed when required to mark active testing activities and will not be deployed for the duration of the site consent.	Devices will be appropriately marked for navigational safety. Navigational marker buoys will only be deployed when required to mark active testing activities, to minimise the footprint of the development and therefore impact on recreational resource.
Installation works will be undertaken in accordance with the Environmental Mitigation and Monitoring Plan (EMMP).	The EMMP sets out the key management measures that contractors and clients will be required to adopt and implement. These measures include strategies and control measures for managing the potential environmental effects of installation and limiting disturbance from installation activities as far as reasonably practicable.
MEW will consider the use of safety vessels/guard boats during short-term installation/decommissioning activities and during short-term deployments.	To ensure other traffic does not encroach on the test device.
META project Operational Management Plan (including Emergency Response).	This will be developed and implemented for the installation and operation and maintenance phases of the META project, in consultation with the MHPA and the Coastguard. To include for emergency shut down of devices in the event of an emergency situation.

16.11 Assessment of significance

16.11.1 Installation phase

16.11.1.1 The impacts of the installation of the META project have been assessed on Other Users. The potential impacts arising from the installation of the META project are listed in Table 16.5~~Table 16.5~~, along with the maximum and most likely design scenarios against which each installation phase impact has been assessed. A conclusion of significance of effect will be made for the META project and for each META Phase 2 site individually where appropriate (Warrior Way (site 6), Dale Roads (site 7); East Pickard Bay (site 8)).

16.11.1.2 A description of the potential effect on Other Users receptors caused by each identified impact is given below.

Installation of the META project may displace recreational activities resulting in a loss of recreational resource

Magnitude of impact

Warrior Way

16.11.1.3 The installation of tidal devices at Warrior Way (site 6) may displace recreational activities from the footprint of the development and from any areas subject to temporary advisory clearance distances, resulting in a loss of recreational resource.

16.11.1.4 The maximum design scenario for Warrior Way (site 6) is represented by a single floating device deployment which may have a total area of up to 350 m^2 including the mooring spread. The most likely design scenario is represented by a single floating device deployment which may have a total area of up to 175 m^2 including the mooring spread. The device and associated moorings will be demarked by up to four navigational marker buoys. Any temporary advisory clearance distance may extend beyond the device footprints of the respective areas. The spatial extent of a single device at Warrior Way (site 6) for both the maximum design scenario (0.00035 km^2) and most likely design scenario (0.000175 km^2) is small in the context of the proposed test area (0.093 km^2) and in the wider context of the available recreational resource in the upper Waterway. The impact of any temporary advisory clearance distances would be reversible as once each device has been installed these will be removed. Installation of single devices at any one time may take place throughout the 15-year consent period therefore there may be periodic vessel activity and associated temporary advisory clearance distances during this timeframe.

16.11.1.5 The Warrior Way site (site 6) is located in a relatively narrow section of the Waterway measuring approximately 340 m in width (from/to mean low water). The site boundaries encompass the deep-water channel to the east of Neyland bridge, and during consultation stakeholders expressed concern that vessels may be deviated to shallower water to the north (see Table 16.3~~Table 16.3~~). However, in practice, only a small part of the test area will be used at any one time, and this will have minimal impact on vessel routing (see chapter 12: Shipping and Navigation). It is considered that there will still be sufficient passing distance for recreational vessels particularly considering that AIS tracks for recreational vessels were predominantly recorded transiting to the north of the test site boundary (see Appendix 12.1: NRA). Other activities such as jet skiing and kayaking will be excluded from the device deployment area and any temporary advisory clearance distance however the total area of displacement is small in the context of the remaining recreational resource available.

16.11.1.6 The impact at Warrior Way (site 6) for both the maximum and most likely design scenario is predicted to be of local spatial extent, long-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be minor.

Dale Roads

16.11.1.7 The installation of wave energy devices at Dale Roads (site 7) may displace recreational activities from the footprint of the development and from any areas subject to Safety Zones and temporary advisory clearance distances, resulting in a loss of recreational resource.

16.11.1.8 The maximum design scenario for Dale Roads (site 7) is represented by a single floating device deployment which may have a total area of up to 800 m^2 including the mooring spread. The most likely design scenario is represented by a single floating device deployment which may have a total area of up to 300 m^2 including the mooring spread. The device and associated moorings will be demarked by up to four navigational marker buoys. A Safety Zone is likely to be applied for around any pin pile drilling activities (maximum design scenario only), and any temporary advisory clearance distance may extend beyond the device footprints of the respective areas. The spatial extent of a single device at Dale Roads (site 7) for both the maximum design scenario and most likely design scenario is small in the context of the proposed test area (0.195 km^2) and in the wider context of the available recreational resource in the lower Waterway. The impact of Safety Zones (maximum design scenario only) and temporary advisory clearance distances is reversible as once each device has been installed these will be removed. Installation of single devices at any one time may take place throughout the 15-year consent period therefore there may be periodic vessel activity and associated Safety Zones and/or temporary advisory clearance distances during this timeframe.

16.11.1.9 The Dale Roads site (site 7) is located in an area which is not regularly transited by recreational vessels (as recorded by AIS) and stakeholder consultation also confirmed that the density of recreational vessel traffic was much lower than at Warrior Way (site 8), although the area is occasionally used for power boat training (see chapter 12: Shipping and Navigation). Recreational vessels and activities such as rowing and windsurfing will be excluded from the device deployment area and any associated Safety Zones and/or temporary advisory clearance distances however the total area of displacement is small in the context of the remaining recreational resource available. Coasteering activities (if any) may be restricted during installation due to the presence of Safety Zones or temporary advisory clearance distances.

16.11.1.10 The impact at Dale Roads (site 7) for both the maximum and most likely design scenario is predicted to be of local spatial extent, long-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be minor.

East Pickard Bay

16.11.1.11 The installation of wave energy devices and floating offshore wind components may displace recreational activities from the footprint of the development and from any areas subject to Safety Zones and recommended temporary advisory clearance distances, resulting in a loss of recreational resource.

16.11.1.12 The maximum design scenario for East Pickard Bay (site 8) is represented by up to two floating device deployments which may have a total area of up to 533,910 m^2 including the mooring spread (the vast majority of this area being represented by the Wave Dragon device). The most likely design scenario is represented by a single device deployment which may have a total area of up to 2,325 m^2 including the mooring spread. The device and associated moorings will be demarked by up to four navigational marker buoys per device. The maximum spatial extent of the device deployments and associated moorings at East Pickard Bay would occupy less than half of the area within the proposed test area boundary (approximately 1.2 km^2). A Safety Zone is likely to be applied for around any pin pile drilling activities (maximum design scenario only), and any temporary advisory clearance distances may extend beyond the device footprints of the respective areas. The impact of Safety Zones (maximum design scenario only) and temporary advisory clearance distances is reversible as these will be removed upon completion of the installation activities.

16.11.1.13 Installation of devices may take place throughout the 15-year consent period therefore there may be periodic vessel activity and associated Safety Zones and/or temporary advisory clearance distances during this timeframe.

16.11.1.14 The East Pickard Bay site (site 8) is located just before the entrance to the Waterway, between Sheep Island and Freshwater West. Activities taking place in the immediate vicinity of the site such as kite surfing, windsurfing and power boating will be excluded from the device deployment area and any associated Safety Zones and/or temporary advisory clearance distances. Activities taking place closer to shore and on the beach at Freshwater West such as surfing, body-boarding and kite boarding are not expected to be displaced during most device installation activities however there may be some short-term displacement during any pin piling activities which are likely to be subject to a temporary Safety Zone. The total loss of recreational resource is relatively small in the context of the available resource in the wider area.

16.11.1.15 The impact at East Pickard Bay (site 8) for both the maximum and most likely design scenario is predicted to be of local spatial extent, long-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be minor.

Sensitivity of the receptor

Warrior Way

16.11.1.16 It is anticipated that recreational vessels will be able to transit past installation activities associated with a single device within the overall Warrior Way (site 6) site boundaries. There are a variety of locations available for jet skiing, wake boarding, kayaking and rowing activities within the Waterway such that alternatives are available if required during installation works. Installation activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.11.1.17 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be medium.

Dale Roads

16.11.1.18 The Dale Roads site (site 7) is located in an area which is not regularly transited by recreational vessels although the area is occasionally used for power boat training (see paragraph 16.11.1.9). There are other locations available for sailing, power boating, rowing, windsurfing and coasteering activities within the Waterway and across south and west Pembrokeshire such that alternatives are available if required during installation works. Installation activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.11.1.19 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be medium.

East Pickard Bay

16.11.1.20 It is anticipated that water sports activities will be able to continue take place in other areas of the bay not affected by installation activities. Within the bay there are other locations available for kite surfing, windsurfing, power boating and kayaking. Alternative locations are also available, if required, within the Waterway and across south and west Pembrokeshire. It is anticipated that there will be no restrictions on activities closer to shore and on the beach at Freshwater West including surfing, body boarding and kite boarding during most device installation activities, with any short-term displacement during any pin piling activities managed to minimise disruption. This will be subject to agreement with appropriate authorities regarding potential health and safety measures required. Installation activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.11.1.21 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the effect

16.11.1.22 Overall, for Warrior Way (site 6), Dale Roads (site 7) and East Pickard Bay (site 8), and considering each respective maximum and most likely design scenario, the sensitivity of the receptor is considered to be medium and the magnitude of the impact is deemed to be minor. The effect will, therefore, be of **minor (adverse) significance**, which is not significant in EIA terms.

16.11.2 Operation and maintenance phase

16.11.2.1 The impacts of the operation and maintenance of the META project have been assessed on Other Users. The environmental impacts arising from the operation and maintenance of the META Project are listed in Table 16.5~~Table 16.5~~ along with the maximum and most likely design scenarios against which each operation and maintenance phase impact has been assessed. A conclusion of significance of effect will be made for the META project as a whole, and for each META phase 2 site individually where appropriate (Warrior Way (site 6), Dale Roads (site 7); East Pickard Bay (site 8)).

16.11.2.2 A description of the potential effect on Other Users receptors caused by each identified impact is given below.

Operation and maintenance of the META project may displace recreational activities resulting in a loss of recreational resource

Magnitude of impact

Warrior Way

16.11.2.3 The presence of tidal devices at Warrior Way (site 6) and associated operation and maintenance activities may displace recreational activities from the footprint of the development and from any areas subject to temporary advisory clearance distances, resulting in a loss of recreational resource.

16.11.2.4 The maximum design scenario is for up to four device deployments within a 12-month period at Warrior Way (site 6), based on a floating device deployment, with up to five vessels being utilised at any one time, with up to 104 vessel movements for operation and maintenance activities in any one year. The most likely design scenario is for up to two device deployments within a 12-month period, with up to three vessels utilised at any one time, with up to 52 vessel movements for operation and maintenance activities in any one year. The maximum footprint of a single device at Warrior Way (site 6) for both the maximum and most likely design scenario has been described in paragraph 16.11.1.4 and is small in the context of the proposed test area and in the wider context of the available recreational resource in the upper Waterway. Any temporary advisory clearance distance would be removed upon completion of the maintenance activity.

16.11.2.5 The Warrior Way site (site 6) is located in a relatively narrow section of the Waterway measuring approximately 340 m in width (from/to mean low water), however only a small part of the test area will be used at any one time and it is considered that there will still be sufficient passing distance for recreational vessels, as described in paragraph 16.11.1.5. Other activities such as jet skiing and kayaking will be excluded from the device deployment area and any advisory clearance distance however the total area of displacement is small in the context of the remaining recreational resource available.

16.11.2.6 The impact at Warrior Way (site 6) for both the maximum and most likely design scenario is predicted to be of local spatial extent, long-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be minor.

Dale Roads

16.11.2.7 The presence of wave energy devices at Dale Roads (site 7) and associated operation and maintenance activities may displace recreational activities from the footprint of the development and from any areas subject to temporary advisory clearance distances, resulting in a loss of recreational resource.

16.11.2.8 The maximum design scenario is for up to two device deployments within a 12-month period at Dale Roads (site 7), based on a floating device deployment, with up to five vessels being utilised at any one time, with up to 104 vessel movements for operation and maintenance activities in any one year. The most likely design scenario is for up to one device deployment within a 12-month period, with up to three vessels utilised at any one time, and up to 52 vessel movements for operation and maintenance activities in any one year. The maximum footprint of a single device at Dale Roads (site 7) for both the maximum and most likely design scenario has been described in paragraph 16.11.1.8 and is small in the context of the proposed test area and in the wider context of the available recreational resource in the lower Waterway. Any temporary advisory clearance distance would be removed upon completion of the maintenance activity.

16.11.2.9 The Dale Roads site (site 7) is located in an area which is not regularly transited by recreational vessels although the area is occasionally used for power boat training (see paragraph 16.11.1.9). Recreational vessels and activities such as rowing and windsurfing will be excluded from the device deployment area and any temporary advisory clearance distances, however the total area of displacement is small in the context of the remaining recreational resource available. Coasteering activities (if any) may be restricted during maintenance activities due to the presence of temporary advisory clearance distances.

16.11.2.10 The impact at Dale Roads (site 7) for both the maximum and most likely design scenario is predicted to be of local spatial extent, long-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be minor.

East Pickard Bay

16.11.2.11 The presence of wave energy devices and floating offshore wind components at East Pickard Bay (site 8) together with associated operation and maintenance activities may displace recreational activities from the footprint of the development and from any areas subject to temporary advisory clearance distances, resulting in a loss of recreational resource.

16.11.2.12 The maximum design scenario is for up to four device deployments within a 12-month period at East Pickard Bay (up to two devices deployed at any one time for up to six months at each berth), with up to five vessels utilised at any one time, with up to 150 visits for operation and maintenance activities in any one year. The most likely design scenario is for up to one device deployment within a 12-month period, with up to three vessels utilised at any one time, with up to 104 vessel movements for operation and maintenance activities in any one year. The maximum footprint of up to two devices and associated infrastructure at East Pickard Bay (site 8) for both the maximum and most likely design scenario has been described in paragraph 16.11.1.12. Any temporary advisory clearance distance would be removed upon completion of the maintenance activity.

16.11.2.13 Activities such as kite surfing, windsurfing and power boating will be excluded from the device deployment area and any associated temporary advisory clearance distances. Activities taking place closer to shore and on the beach at Freshwater West such as surfing, body-boarding and kite boarding are not expected to be displaced during operation and maintenance activities. The total loss of recreational resource is relatively small in the context of the available resource in the wider area.

16.11.2.14 The impact at East Pickard Bay (site 8) for both the maximum and most likely design scenario is predicted to be of local spatial extent, long-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be minor.

Sensitivity of the receptor

Warrior Way

16.11.2.15 It is anticipated that recreational vessels will be able to transit past a single device within the overall Warrior Way (site 6) site boundaries during the operation and maintenance phase. There are a variety of alternative locations available for jet skiing, wake boarding, kayaking and rowing activities within the Waterway. The presence of the devices and associated operatiol and maintenance activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.11.2.16 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be medium.

Dale Roads

16.11.2.17 The Dale Roads (site 7) site is located in an area which is not regularly transited by recreational vessels although the area is occasionally used for power boat training (see paragraph 16.11.1.9). There are other locations available for sailing, power boating, rowing, windsurfing and coasteering activities within the Waterway and across south and west Pembrokeshire. The presence of the devices and associated operation and maintenance activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.11.2.18 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be medium.

East Pickard Bay

16.11.2.19 It is anticipated that water sports activities will be able to continue take place in other areas of the bay not affected by the presence of the devices and associated operation and maintenance activities. Within the bay there are other locations available for kite surfing, windsurfing, power boating and kayaking. Alternative locations are also available, if required, within the Waterway and across south and west Pembrokeshire. It is anticipated that there will be no restrictions on activities closer to shore and on the beach at Freshwater West including surfing, body boarding and kite boarding. This will be subject to agreement with appropriate authorities regarding potential health and safety measures required. The presence of the devices and associated operation and maintenance activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.11.2.20 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be medium.

Significance of the effect

16.11.2.21 Overall, for Warrior Way (site 6), Dale Roads (site 7) and East Pickard Bay (site 8), and considering each respective maximum and most likely design scenario, the sensitivity of the receptor is considered to be medium and the magnitude of the impact is deemed to be minor. The effect will, therefore, be of **minor (adverse) significance**, which is not significant in EIA terms.

Future monitoring

16.11.2.22 No Other Users monitoring to test the predictions made within the operation and maintenance phase impact assessment is considered necessary.

16.11.3 Decommissioning phase

16.11.3.1 The impacts of the decommissioning of the META project have been assessed on Other Users. The environmental effects arising from the decommissioning of the META project are listed in Table 16.5~~Table 16.5~~ along with the maximum and most likely design scenarios against which each decommissioning phase impact has been assessed. A conclusion of significance of effect will be made for the META project as a whole, and for each META phase 2 site individually where appropriate (Warrior Way (site 6), Dale Roads (site 7); East Pickard Bay (site 8)).

16.11.3.2 A description of the potential effect on Other Users receptors caused by each identified impact is given below.

Decommissioning of the META project may displace recreational activities resulting in a loss of recreational resource

16.11.3.3 The effects of decommissioning activities are expected to be the same or similar to the effects from installation. The significance of effect is therefore **minor (adverse)** (see paragraph 16.11.1.22).

Future monitoring

16.11.3.4 No Other Users monitoring to test the predictions made within the decommissioning phase impact assessment is considered necessary.

16.12 Cumulative Impact Assessment Methodology

16.12.1 Screening of other projects and plans into the Cumulative Impact Assessment

16.12.1.1 The Cumulative Impact Assessment (CIA) takes into account the impact associated with the META project together with other projects and plans. The projects and plans selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise. Each project has been considered on a case by case basis for scoping in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved. In undertaking the CIA for the META project, it is important to bear in mind that other projects and plans under consideration will have differing potential for proceeding to an operational stage and hence a differing potential to ultimately contribute to a cumulative impact alongside the META project. For example, relevant projects and plans that are already under construction are likely to contribute to cumulative impact with the META project (providing effect or spatial pathways exist), whereas projects and plans not yet approved or not yet submitted are less certain to contribute to such an impact, as some may not achieve approval or may not ultimately be built due to other factors. Table 16.11~~Table 16.11~~ presents the projects that have been considered for inclusion in the META project CIA.

Table 16.11: List of other projects and plans considered within the CIA.

Phase	Developer – Reference	Distance from Warrior Way (km)	Distance from Dale Roads (km)	Distance from East Pickard Bay (km)	Spatial/temporal overlap with the META project	Details	Installation/ deployment dates	Further Assessment required?	Justification
Dredging sites									
Installation/ Operation and Maintenance	Neyland Yacht Haven Ltd. - DML1743	1.1	12.3	10.5	No spatial overlap with consented areas. Potential for temporal overlap.	Dredge and disposal from Neyland Marina – annual volume 5,500 m^3.	13/12/2017-12/12/2020	No	Dredging activities are included as part of the topic baseline and this additional project and proposed dredge volume is not considered to materially affect the baseline.
Installation/ Operation and Maintenance	Milford Haven Port Authority - DML1646	1.3	1.5	2.5	No spatial overlap with consented areas. Potential for temporal overlap.	Maintenance dredging throughout the Milford Haven. Annual volume 362,500 m^3.	09/03/2017-08/03/2022	No	Included as part of the topic baseline and hence not considered within the cumulative impact assessment.
Dredge disposal sites									
Installation/ Operation and Maintenance	Neyland dredge disposal site - LU190	0.5	12.4	10.5	No spatial overlap with any of the consented areas. Temporal overlap	Location: South of Neyland within the central channel of the Milford Haven, 0.22 NM diameter x 5 m depth. Status: Open	Not applicable	No	Included as part of the topic baseline and hence not considered within the cumulative impact assessment.
Installation/ Operation and Maintenance	Milford Haven Two dredge disposal site - LU169	26.7	20	15	No spatial overlap with any of the consented areas. No temporal overlap.	Location: To the south of Milford Haven dredge disposal grounds, unknown diameter x 50 m depth. Status: Open	Not applicable	No	Dredge disposal site is located at its closest 15 km from the META project, therefore no physical effect-receptor overlap.
Installation/ Operation and Maintenance	Milford Haven Three dredge disposal site - LU169	48.9	36	34.7	No spatial overlap with any of the consented areas. No temporal overlap.	Location: To the west of Milford Haven dredge disposal grounds, 1 nm diameter x unknown depth. Status: Open	Not applicable	No	Dredge disposal site is located at its closest 34.7 km from the META project, therefore no physical effect-receptor overlap.
Research									
Installation	Greenlink Interconnector Ltd. - RML1827	10.4	6	0	Spatial overlap with East Pickard Bay (site 8). Temporal overlap with East Pickard Bay.	Ground investigations. ML application submission anticipated Q2 2019.	Works to commence 2019	Yes	Survey operations are likely to involve vessels with associated equipment, which may displace recreational activities resulting in a loss of recreational resource. Applicable to East Pickard Bay only.
Installation	University College of Swansea - DEML1861	~4-5	~8-9	~6-7	Location is assumed to be by the Pembroke Power station. No spatial overlap with any of the consented areas. Temporal overlap.	Pembroke Power bubble barrier experiment. Investigation into the effectiveness of bubble curtains in sediment management.	Band 2 Marine Licence issued 12/12/2018 - three-year study	No	Screened out due to no physical effect-receptor overlap with the META project.
Installation	University College of Swansea - DEML1845	12.7	5.4	0	Spatial overlap with East Pickard Bay (site 8). No temporal overlap.	Deposition and subsequent removal of marker buoys with environmental monitoring and mid-water settlement plates.	30/08/2018-29/08/2019	No	Screened out due to no temporal overlap with the META project.
Infrastructure									
Installation/ Operation and Maintenance	Neyland Yacht Haven Ltd - CML1658	1.1	12.3	10.5	No spatial overlap with consented areas. No temporal overlap.	Pile replacement in Neyland Marina.	21/11/2016-20/11/2019	No	Pile replacement is currently ongoing until 2019, therefore no temporal overlap.
Installation/ Operation and Maintenance	Mixed use developments - Local Planning Authority	7.3	5.3	5.6	No spatial overlap with any consented areas. Temporal overlap remains	Undetermined planning application. Demolition of several existing buildings and the mixed-use redevelopment of Milford Waterfront comprising up to	EIA screening decision was returned on the 30/04/2018 - no further	No	Screened out due to distance of the project from the META sites.

Phase	Developer – Reference	Distance from Warrior Way (km)	Distance from Dale Roads (km)	Distance from East Pickard Bay (km)	Spatial/temporal overlap with the META project	Details	Installation/ deployment dates	Further Assessment required?	Justification
	Reference: 14/0158/PA				unknown due to insufficient information on start and end dates.	26,266 m^2 of commercial, hotel, leisure, retail and fishery related floorspace. Up to 190 residential properties, up to 70 additional marina berths, replacement boat yards, landscaping, public realm enhancements, access and ancillary works. A decision on this application is yet to be made by the local planning authority.	information has been provided		
Installation/ Operation and Maintenance/ Decommissioning	Greenlink Interconnector Ltd. - Government reference: qA1296053	10.4	6	0	Spatial overlap with East Pickard Bay (site 8). Temporal overlap will occur throughout the duration of the META project.	The Project is a 500 MW subsea electricity interconnector linking the power markets in Ireland and Great Britain and is planned for commissioning in 2023. As an EU Project of Common Interest, it is one of Europe's most important energy infrastructure projects. The interconnector is planned to make landfall at Freshwater West beach to the south of the mouth of the Waterway.	2020-2023 (installation dates)	Yes	There is the potential for cumulative impacts on recreational receptors. Applicable to East Pickard Bay only.
Installation/ Operation and Maintenance/ Decommissioning	Valero - Welsh Government reference: qA1312073	-	-	-	No overlap with the META project as project is assumed to have no marine components.	Development of a cogeneration facility to supplement electrical power and steam demands of the refinery all within the refinery boundaries on land.	07/12/2017 - Nationally significant project (ongoing)	No	Project is assumed to have no marine elements, therefore no conceptual effect-receptor pathway.
Installation/ Operation and Maintenance/Decommissioning	Bombora Wave Energy	11.6	5.0	0	Spatial overlap with East Pickard Bay (site 8) within META test area. Potential for temporal overlap	Bombora on- and off-shore infrastructure and deployment of Bombora mWave device at East Pickard Bay. This is to include device deployment (mWave device), installation of temporary communications cable between mWave device and temporary onshore control station to be located above East Pickard Bay, and installation and operation of temporary control station onshore. Laying of marine cable to shore and through intertidal area at East Pickard Bay to involve up to 3 days cable laying below MHWS using cable lay vessel and up to four vessels, including guard boat. Cable to be laid on seabed (in sandy sediment) and through natural rock channel (where the marine cable traverses potential reefy habitat) and protected with rock bags. In the intertidal area, the cable will be laid through a natural gully, or up the vertical gully side and attached to the semi-vertical rock face with rock bolts using hand held tools. JCB will pull the cable through the intertidal area from a location above MHWS.	Q1 2020	Yes	There is the potential for spatial overlap in the META East Pickard Bay test area (site 8) and temporal overlap with all META project sites installation and operation and maintenance phases, therefore this project cannot be excluded from further consideration in the CIA.
Ministry of Defence sites									
Operation	Ministry of Defence	8.1	5.5	0	No spatial overlap with any consented areas but adjacent to southern boundary of the East Pickard Bay site. Potential for temporal overlap.	The Castlemartin Range is located immediately south of the entrance to the Waterway and extends for up to 12 NM from the coast between Little Furznip (at the southern extent of Freshwater West) and St Govan's Head (Milford Haven Port Authority 2019). The southern boundary of the East Pickard Bay (Site 8) site is located adjacent to the northern boundary of the Castlemartin Military Practice Area D113A. The range at Castlemartin supports the training of military personnel (Army) in the firing of a range of munitions at land-based targets. The seaward danger area provides a safety zone for overfire and shrapnel which may result from the striking of targets (RPS, 2010). The Castlemartin firing times are	Ongoing	Yes	Part of the baseline but has an ongoing impact and is therefore considered relevant to the cumulative impact assessment. Applicable to East Pickard Bay (site 8) only.

Phase	Developer – Reference	Distance from Warrior Way (km)	Distance from Dale Roads (km)	Distance from East Pickard Bay (km)	Spatial/temporal overlap with the META project	Details	Installation/ deployment dates	Further Assessment required?	Justification
						available on the MOD website which includes a description of the extent of the seaward danger area.			
Aquaculture projects									
Installation/ Operation and Maintenance	Tethys Oysters	8.9	5.1	2.6	Temporal overlap.	The oyster farm is located on the eastern side of Angle Bay, whereby oysters are grown in baskets on metal supports. The farm will be serviced from the shore by foot.	Oct 2017 – Oct 2020 (possible renewal of licence)	No	Screened out due to distance of the project from the META sites.
Installation/ Operation and Maintenance	Pembrokeshire Scallops	15.3	1.8	3.9	Temporal overlap.	The scallop farm is located within Castlebeach Bay, whereby a system of weighted ropes will be deployed for growing scallops and mix species of native algae. The farm will be serviced by vessels and divers.	Jan 2019 – Q4 2020 (possible renewal of licence)	No	Screened out due to distance of the project from the META sites.
Pembroke Dock Marine Projects									
Installation/ Operation and Maintenance	Milford Haven Port Authority - SC1810 (Pembroke Dock infrastructure)	2	11.3	8.8	No spatial overlap with consented sites. Potential for temporal overlap.	Pembroke Dock redevelopment. Scoping Report submitted. The intention of the Project is to create a flexible and efficient port-related office, industrial, warehousing and distribution, and ancillary operations infrastructure. This will involve the redevelopment of its existing space to incorporate increased deep-water access, internal and external heavy fabrication areas, construction of MEECE and Education/Skills Facility and the construction of a heavy lift facility.	Q3 2019 – Q3 2023	Yes	Activities associated with the Pembroke Dock infrastructure redevelopment may displace recreational activities resulting in a loss of recreational resource. Applicable to Warrior Way (site 6) only.
Installation/ Operation and Maintenance/Decommissioning	Marine Energy Wales - DEML1875	1.7	11.7	9.4	No spatial overlap with any of the consented areas. Potential for temporal overlap.	Marine Energy Test Area – Phase 1. Band 2 Marine Licence application submitted. The Project aims to create pre-consented test areas within the Pembroke Dock area. The test areas will have licensable activities to suit testing of initial stage marine renewable devices. These include testing of non-operating components and subassemblies. No full-scale testing is to be supported within the test areas.	21/04/2019-21/04/2029	Yes	Activities associated with the META Phase 1 sites may displace recreational activities resulting in a loss of recreational resource. Applicable to Warrior Way (site 6) only.
Installation/ Operation and Maintenance/Decommissioning	Wave Hub Ltd. - SC1082	31.4	31.1	25.8	No spatial overlap with any consented areas. Potential for temporal overlap as the projects are linked.	Pembroke Demonstration zone. Scoping Report submitted. The Project entails the development of 90 km^2 of seabed with water depths of approximately 50 m and a wave resource of approximately 19 kW/m; to support the demonstration of wave arrays with a generating capacity of up to 30 MW for each project. Consent for this Project could be achieved in 2022, infrastructure could be built by 2024 and the first technology could be installed in 2025.	Jul-18	No	Screened out due to distance of the project from the META sites.

16.12.1.2 The potential impacts identified for assessment as part of the Other Users cumulative impact assessment (CIA) are:

- Displacement of recreational activities resulting in a loss of recreational resource.

16.13 Cumulative Impact Assessment

16.13.1.1 A description of the significance of cumulative impacts upon Other Users receptors arising from each identified impact is given below. As no cumulative impacts are predicted for Dale Roads (site 7) (see Table 16.11~~Table 16.11~~), the following assessments consider only Warrior Way (site 6) and East Pickard Bay (site 8).

Cumulative displacement of recreational activities resulting in a loss of recreational resource during installation or operational and maintenance activities

Magnitude of impact

Warrior Way

16.13.1.2 The installation of tidal devices at Warrior Way (site 6), together with the projects and plans identified in Table 16.11~~Table 16.11~~, may displace recreational activities, resulting in a loss of recreational resource.

16.13.1.3 Other projects and plans screened into the assessment in proximity to the Warrior Way site (site 6) include the Pembroke Dock infrastructure redevelopment and the META Phase 1 sites, which are located further to the west. Recreational vessels displaced by activities at the Warrior Way site (site 6) may also be displaced by activities at these projects as they transit through the Waterway. The spatial extent of any impact will be small in the context of the available recreational resource in the Waterway and considering background levels of vessel and port-related activity in the vicinity. The Pembroke Dock redevelopment infrastructure project is scheduled to commence in Q3 2019, and the META Phase 1 sites may be installed and operational over a period of up to ten years from 2019.

16.13.1.4 The impact is predicted to be of local spatial extent, medium-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **minor**.

East Pickard Bay

16.13.1.5 The installation of wave energy devices and floating offshore wind components may displace recreational activities, resulting in a loss of recreational resource.

16.13.1.6 Other projects and plans screened into the assessment in proximity to the East Pickard Bay (site 8) site include the Greenlink Interconnector (surveys and cable installation), installation of marine cable and mWave device associated with the proposed Bombora project (including the installation and operation of onshore infrastructure associated with the mWave device), and the Castlemartin Military Practice Area. Recreational activities displaced by device deployments at the East Pickard Bay (site 8) site may also be displaced by activities and operations at these projects and plans.

16.13.1.7 The Greenlink Interconnector makes landfall at Freshwater West beach. Ground investigations were planned for 2018 and may involve vessels and associated equipment, however survey activity is likely to be completed prior to the deployment of devices associated with the META project at East Pickard Bay (site 8). Installation of the Greenlink Interconnector cable is anticipated to commence in 2020 and be complete in 2023 (Element Power, 2018), with works at the landfall likely to take place over a much shorter period. The Bombora project will include deployment of the mWave device within the East Pickard Bay (site 8) site and installation of a surface-laid cable between the mWave device and the shore. Installation is likely to take place in Q1/Q2 2020. Marine cabling works and intertidal cabling works are predicted to take up to three days each, and installation of the mWave device is likely to take place over a period of five days and involve up to four vessels, including a guard vessel.

16.13.1.8 Activities such as kayaking, kite surfing, windsurfing and power boating may be displaced by device deployments at East Pickard Bay (site 8) (which may occupy less than half of the area within the proposed test area boundary) and by the installation of the Greenlink Interconnector and the Bombora mWave device and associated marine cable installation activities. There may be limited remaining area for these activities during the installation phase of the Greenlink Interconnector, however the cumulative impact would be reduced once the Interconnector has been installed, following which only occasional access may be necessary for repair and/or maintenance. The Bombora marine cable laying works is predicted to be very short-term (three days) and will not require operation or maintenance checks during its temporary use (up to 1.5 years). Similarly, deployment of the mWave device is predicted to occur over two days and will require minimal checks during the operational and maintenance phase, therefore it is considered that this project will have a negligible contribution towards any cumulative impact. Activities may be further displaced when the seaward danger area of the Castlemartin Military Practice Area is in use.

16.13.1.9 Activities taking place closer to shore and on the beach at Freshwater West such as surfing, body boarding and kite boarding may be displaced during any pin piling activities at East Pickard Bay (site 8) and by the installation of the Greenlink Interconnector at the landfall (currently proposed to be installed via horizontal directional drilling under the beach; Element Power, 2018). Pin piling activities at East Pickard Bay (site 8) will be short-term and temporary. No beach access is required for the onshore installation activities associated with the mWave device.

16.13.1.10 The total loss of recreational resource is relatively small in the context of the available resource in the wider Waterway and south and west Pembrokeshire. Any cumulative displacement will be temporary and will occur over a relatively short duration.

16.13.1.11 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **minor**.

Sensitivity of receptor

Warrior Way

16.13.1.12 It is anticipated that recreational vessels will be able to transit past a single device within the overall Warrior Way (site 6) site boundaries and other projects and plans during installation and operation and maintenance activities. There are a variety of locations available for jet skiing, wake boarding, kayaking and rowing activities within the Waterway such that alternatives are available if required. The presence of the META Phase 1 and Phase 2 devices and associated installation and operation and maintenance activities would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly.

16.13.1.13 The recreational receptor is deemed to be of low vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be **medium**.

East Pickard Bay

16.13.1.14 Alternative locations are available, if required, for kayaking, kite surfing, windsurfing and power boating within the Waterway and across south and west Pembrokeshire during installation of the META devices, the Greenlink Interconnector project and the Bombora project. Installation activities associated with the META project would be communicated in advance to an email list of registered interested parties as described in Table 16.10~~Table 16.10~~, ensuring that recreational activities can be planned accordingly. Any short-term displacement of recreational activities closer to shore during any pin piling events will be managed to minimise disruption. Recreational receptors carrying out activities in the vicinity of the East Pickard Bay (site 8) site will likely be accustomed to altering activities in accordance with operations at the danger area.

16.13.1.15 The recreational receptor is deemed to be of medium vulnerability, high recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be **medium**.

Significance of effect

16.13.1.16 Overall, for Warrior Way (site 6) and East Pickard Bay (site 8), the sensitivity of the receptor is considered to be medium and the magnitude is deemed to be minor. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Future monitoring

16.13.1.17 No Other Users monitoring to test the predictions made within the cumulative impact assessment is considered necessary.

16.14 Transboundary effects

16.14.1.1 A screening of transboundary impacts has been carried out and has identified that there is no potential for significant transboundary effects with regard to Other Users from the META project upon the interests of other European Economic Area (EEA) States.

16.15 Inter-related effects

16.15.1.1 Inter-related effects are considered to be the impacts and associated effects of different aspects of the proposal on the same receptor. These are considered to be:

- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the project (installation, operation and maintenance, decommissioning) to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three key project stages (e.g. displacement of recreational activities over the installation, operation and maintenance and decommissioning phases); and
- Receptor led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on Other Users receptors may interact to produce a different or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

16.15.1.2 A description of the likely inter-related effects arising from the META project on Other Users is provided here. Across the project lifetime, the effects on recreational receptors are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phase. No receptor led effects have been identified.

16.16 Conclusion and summary

16.16.1.1 Table 16.12~~Table 16.12~~ summarises the assessment of effects on Other Users associated with the installation, operation and maintenance, and decommissioning of the META project.

Table 16.12: Summary of potential environment effects, mitigation and monitoring at the META project.

Description of impact	Measures adopted as part of the project	Magnitude of impact	Sensitivity of receptor	Significance of effect	Additional measures	Residual effect	Proposed monitoring
Installation phase							
Installation of the META project may displace recreational activities resulting in a loss of recreational resource	Promulgation of information including regular Notices to Mariners. Information and notices posted at onshore locations, signage if appropriate/possible	Warrior Way – Minor Dale Roads – Minor East Pickard Bay – Minor	Warrior Way – Medium Dale Roads – Medium East Pickard Bay – Medium	Minor (not significant in EIA terms)	None	N/A	None
Operation and maintenance phase							
Operation and maintenance of the META project may displace recreational activities resulting in a loss of recreational resource	Promulgation of information including regular Notices to Mariners. Information and notices posted at onshore locations, signage if appropriate/possible	Warrior Way – Minor Dale Roads – Minor East Pickard Bay – Minor	Warrior Way – Medium Dale Roads – Medium East Pickard Bay – Medium	Minor (not significant in EIA terms)	None	N/A	None
Decommissioning phase							
Decommissioning of the META project may displace recreational activities resulting in a loss of recreational resource	Promulgation of information including regular Notices to Mariners. Information and notices posted at onshore locations, signage if appropriate/possible Advisory clearance distances	Warrior Way – Minor Dale Roads – Minor East Pickard Bay – Minor	Warrior Way – Medium Dale Roads – Medium East Pickard Bay – Medium	Minor (not significant in EIA terms)	None	N/A	None

16.17 References

DECC (2011a) Overarching National Policy Statement for Energy (NPS EN-1). Department of Energy and Climate Change. July 2011. 121pp.

DECC (2011b) National Policy Statement for Renewable Energy Infrastructure (NPS EN-3). Department of Energy and Climate Change. July 2011. 82pp.

Element Power (2018) Greenlink Interconnector, TEN-E Regulation Information Brochure, Available at: https://www.greenlink.ie/resources.

Milford Haven Port Authority (2019) Castlemartin Range, Available at: https://www.milfordmarina.com/castlemartin-range-1/.

Natural Resources Wales (2018) Open data from Natural Resources Wales, Available at: https://environment.data.gov.uk/wales/bathing-waters/profiles/.

Pembroke Port (2019) Port Services and Infrastructure, Available at: https://www.pembrokeport.com/.

Pembrokeshire County Council (2014a) Visit Pembrokeshire, Milford Haven, Available at: http://www.visitpembrokeshire.com/explore-pembrokeshire/towns-and-villages/milford-haven/.

Pembrokeshire County Council (2014b) Visit Pembrokeshire, Lindsway Bay, Available at http://www.visitpembrokeshire.com/explore-pembrokeshire/beaches/lindsway-bay/.

Pembrokeshire County Council (2018) Newsroom, 2017 – "A Great Year For Tourism", Available at: https://www.pembrokeshire.gov.uk/newsroom/2017-and8211-a-great-year-for-tourism.

Port of Milford Haven (2016) Milford haven Waterway, 5 Year Recreation Management Plan, Available at: https://www.mhpa.co.uk/uploads/Marine_docs/P9_single_5year_recreation_plan.indd.pdf.

Port of Milford Haven (2019) About the Port, Available at: https://www.mhpa.co.uk/the-port/.

RPS (2018a) Marine Energy Test Area (META), Environmental Impact Assessment, Scoping Report, 16th November 2018, Rev03.

RPS (2018b) Marine Energy Test Area (META) Environmental Appraisal Phase 1 sites, 21st December 2018, Rev02.

RPS (2010) The Potential for Interaction between Wave and Tidal Stream Devices with Military Interests in Welsh Waters, On behalf of The Welsh Assembly Government, 16 November 2010.

RYA (2015a) The RYA's Position on Offshore Renewable Energy Developments: Paper 2 (of 4) – Wave Energy, September 2015, Available at: https://www.rya.org.uk/knowledge-advice/offshore-renewables/Pages/wave-energy.aspx.

RYA (2015b) The RYA's Position on Offshore Renewable Energy Developments: Paper 3 (of 4) – Tidal Energy, September 2015, Available at: https://www.rya.org.uk/knowledge-advice/offshore-renewables/Pages/tidal-energy.aspx.

SAS (2009) Surfers Against Sewage (SAS) Guidance on environmental impact assessment of offshore renewable energy development on surfing resources and recreation, Available at: https://www.sas.org.uk/wp-content/uploads/sas-guidance-on-environmental-impact-assessment.pdf