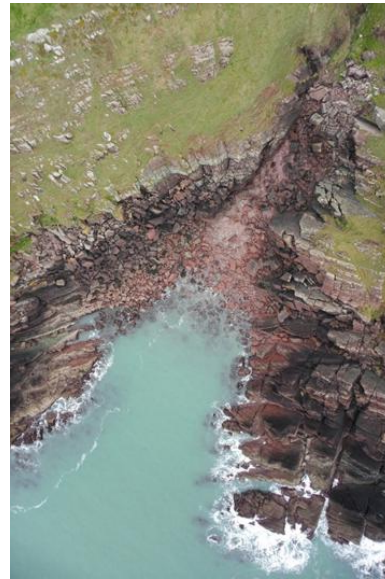




mWave Marine Energy Device and Onshore Infrastructure

ENVIRONMENTAL STATEMENT



June 2019

CHAPTER 3: Needs and Alternatives

Table of Contents

Glossary	ii
Acronyms	ii
Units	ii
3. NEEDS AND ALTERNATIVES	1
3.1 Introduction	1
3.2 Need for the development	1
3.2.1 National Policy context	1
3.2.2 Local policy context	4
3.3 Alternatives Considered	6
3.3.1 Introduction	6
3.3.2 Summary of wider META Site 8 Selection Process	6
3.3.3 Cable route and onshore control station site selection	9
3.3.4 Offshore cable route	9
3.3.5 Overview of onshore cable route and control station options	12
3.4 References	14

Table of Tables

Table 3.1: Consideration of the UK Marine Policy Statement in relation to the mWave project	1
Table 3.2: Consideration of the draft Welsh National Marine Plan in relation to the mWave project	3
Table 3.3: Preliminary Consideration of the PCNPA Policy in relation to the mWave project	5
Table 3.4: Data sources included in the constraints assessment	6
Table 3.5: Review of alternative onshore control station sites	10

Table of Figures

Figure 3.1: Proposed cable route corridor (up to MHWS) and potential temporary onshore control station options	8
Figure 3.2: Overview of Cable Route and control station options	13

Glossary

Term	Definition
ABPmer	A marine consultancy.
Bombora Wave Power	The applicant and a wave energy converter developer
CADW	Welsh government's historic environment service.
European Marine Energy Centre	Accredited wave and tidal stream testing facility in Orkney, with 13 grid-connected test berths and two non-grid connected scale test sites.
mWave	Bombora Wave Power's wave energy generating device .
Natura 2000	Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types. It stretches across all 28 EU countries, both on land and at sea. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats, listed under both the Birds Directive and the Habitats Directive.
SEACAMS	Partnership project between Bangor and Swansea Universities to assist in the development of opportunities in Low carbon, Energy and Environment in the convergence regions of Wales.
The Crown Estate	The Crown Estate is a collection of lands and holdings in the United Kingdom belonging to the British monarch as a corporation sole, making it the "Sovereign's public estate", which is neither government property nor part of the monarch's private estate.
The META project	The META project, located in Pembrokeshire, consists of eight test sites where marine energy testing activities will be permitted. The licensing and consenting of the mWave project was originally intended to be undertaken within the consenting and licensing of the META project, with mWave being deployed within META Site 8.
The Waterway	The Milford Haven Waterway.

Acronyms

Acronym	Description
AIS	Automatic Identification System
AONB	Area of Outstanding Natural Beauty
CIA	Cumulative Impact Assessment
dWNMP	draft Welsh National Marine Plan
EIA	Environmental Impact Assessment
LDP	Local Development Plan
LNR	Local Nature Reserve
MEW	Marine Energy Wales
MHPA	Milford Haven Port Authority
MHWS	Mean High Water Springs
ML	Marine Licence
MLWS	Mean Low Water Spring
MPA	Marine Protected Area
MPS	Marine Policy Statement

Acronym	Description
NDF	National Development Framework
NNR	National Nature Reserve
NPS	National Policy Statement
NRP	Natural Resources Policy
NSER	No Significant Effects Report
NRWa	Natural Resources Wales Advisory
NRW-PS	Natural Resources Wales Permitting Service
NSIP	Nationally Significant Infrastructure Project
PDM	Pembroke Dock Marine
SAC	Special Area of Conservation
SMNR	Sustainable Management of Natural Resources
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TRL	Technology Readiness Level
WBFGA	Well-being and Future Generations Act 2015

Units

Unit	Description
month	calendar month
mi	miles
km	kilometres

3. NEEDS AND ALTERNATIVES

3.1 Introduction

- 3.1.1.1 This chapter of the Environmental Statement provides a summary of the need for the project and the main alternatives considered by the Applicant (Bombora Wave Power Ltd (Bombora)) during the Environmental Impact Assessment (EIA) process. It includes a summary of the reasons for the selection of the offshore and onshore sites, together with a description of the alternative marine cable route options that have been considered.

3.2 Need for the development

3.2.1 National Policy context

- 3.2.1.1 The UK and Welsh Government has made clear the urgent need for new energy generating capacity in the Overarching National Policy Statement (NPS) for Energy (EN-1) and the UK Marine Policy Statement.

National Policy Statement for Energy (EN-1)

- 3.2.1.2 EN-1 (paragraph 3.3.10) states that ‘*there is a need to diversify and decarbonise electricity generation*’ and that ‘*the Government is committed to increasing dramatically the amount of renewable generation capacity*’. This is particularly relevant to the development of the mWave project as this paragraph also states an expectation that this new capacity will move towards the generation of electricity from wave and tidal power.

UK Marine Policy Statement

- 3.2.1.3 The UK Marine Policy Statement (MPS) framework has been adopted by The Secretary of State, Scottish Ministers, Welsh Ministers and the Department of the Environment in Northern Ireland, which is a key step towards achieving the vision of a ‘*clean, healthy, safe, productive and biologically diverse oceans and seas*’; to ‘*Enable the UK’s move towards a low-carbon economy, to mitigate the causes of climate change and ocean acidification*’; and to ‘*Promote sustainable economic development*.’
- 3.2.1.4 The mWave project has been developed considering the UK Marine Policy Statement as per the following summary provided in Table 3.1.

Table 3.1: Consideration of the UK Marine Policy Statement in relation to the mWave project.

UK Marine Policy Statement section and reference	Where addressed
Section 2.3.2 - The level of assessment undertaken for any project should be proportionate to the scale and impact of the project as well as the sensitivity of the environment concerned and in accordance with the Environmental Impact Assessment (EIA).	This document (Environmental Statement) presents an assessment of potential impacts proportionate to the scale of development proposed while taking into account that the mWave project lies within sites designated for environmental interests. The assessment is presented in technical Chapters 5 – 17.
Section 2.3.2.2 An Appropriate Assessment in accordance with the Habitats Directive (Directive 92/43/EC) may also be required, in accordance with relevant national legislation and Government circulars or guidance.	A No Significant Effects Report (NSER) has been developed in accordance with this document and will be submitted alongside the Environmental Statement to inform consideration of the mWave project.
Section 2.3.2.2 Be conducted in a manner that meets requirements under UK and EU legislation and is consistent with our obligations under international law.	Reference to relevant legislation is provided in Chapter 3 – Need and Alternatives, Chapter 1: Introduction, and in each technical chapter (Chapters 5 – 17) where relevant to specific receptor groups.
Section 2.3.2.2 Be conducted in a manner that takes account of other relevant projects, programmes, plans and national policies and guidance.	An assessment of potential cumulative impacts from the mWave project together with a consideration of other plans and projects is provided in each technical chapter (Chapters 5-17). The projects that have been considered as part of the cumulative impact assessment (CIA) are presented in Table 4.6, Chapter 4: Environmental Assessment Methodology along with the approach to CIA (section 4.4.2).
Section 2.3.2.2 Be taken using a risk-based approach that allows for uncertainty, recognising the need to use sound science responsibly as set out in the high-level objectives.	The method to the risk-based approach adopted in this assessment is provided in each technical chapter (Chapters 5-17). Each chapter sets out the scientific baseline used to inform the assessment and identifies data limitations where these exist.
Section 2.3.2.2 Be sensitive to any potential impacts on sites of particular significance including those: protected under environmental legislation or designated in relation to cultural heritage;	A NSER has been developed in accordance with this document and will be submitted alongside the Environmental Statement to inform consideration of the mWave project in relation to sites protected under environmental legislation. Environmentally designated sites are identified in each topic chapter where relevant and assessed within the NSER. Potential impacts on cultural heritage designations are identified and assessed within Chapter 13: Marine Archaeology. An archaeological desk based assessment has been undertaken for the onshore works and will be submitted with the planning application (see section 2.6.5).
Section 2.3.2.2 Look to avoid and then mitigate negative impacts where possible at various stages of development, including appropriate conditions in line with legal obligations, in a manner that is proportionate to the potential impacts of the proposal under consideration. Where alternative site selection or design could mitigate negative effects whilst retaining benefits, this should be considered, where appropriate.	Embedded mitigation is outlined in Chapter 2: Project Description (section 2.6). Where there is a potential impact that requires additional mitigation measures to be implemented, proposed mitigation is provided in each technical chapter (Chapters 5-17).
Section 2.4.1 The marine plan authority will need to assess the impacts of their proposals for the marine plan area. These may be identified as anticipated benefits, including the contribution that the proposals would make to policy objectives, or anticipated adverse effects. These benefits and adverse effects may be economic, social and environmental in nature.	Impacts from the mWave project on marine environmental receptors are assessed in each technical chapter (Chapters 5-17).

UK Marine Policy Statement section and reference	Where addressed
Section 2.4.3 The marine plan authority will need to consider the potential cumulative impact of activities and, using best available techniques.	An assessment of potential cumulative impacts from the mWave project together with a consideration of other plans and projects is provided in each technical chapter (Chapters 5-17). The projects that have been considered as part of the CIA are presented in Table 4.6, in Chapter 4: Environmental Assessment Methodology along with the approach to CIA (section 4.4.2).
Section 2.6.1.1 A halting and, if possible, a reversal of biodiversity loss with species and habitats operating as a part of healthy, functioning ecosystems.	Impacts from the mWave project on marine and terrestrial ecology are assessed in Chapter 7: Benthic Subtidal and Intertidal Ecology, Chapter 8: Fish and Shellfish, Chapter 9: Marine Mammals, Chapter 10: Marine Ornithology and Chapter 17 Terrestrial Ecology.
Section 2.6.1.3 As a general principle, development should aim to avoid harm to marine ecology, biodiversity and geological conservation interests (including geological and morphological features), including through location, mitigation and consideration of reasonable alternatives.	Impacts from the mWave project on marine ecology are assessed in Chapter 7: Benthic Subtidal and Intertidal Ecology, Chapter 8: Fish and Shellfish, Chapter 9: Marine Mammals and Chapter 10: Marine Ornithology. An assessment of the effect on onshore geological and morphological features is provided in Chapter 16 Onshore Geology, Hydrology and Land Quality. Embedded mitigation is outlined in Chapter 2: Project Description (section 2.6). Where there is a potential impact that requires additional mitigation measures to be implemented, proposed mitigation is provided in each technical chapter (Chapters 5-17)
Section 2.6.1.5 Marine plan authorities should apply precaution within an overall risk-based approach, in accordance with the sustainable development policies of the UK Administrations. The marine plan authority should ensure that appropriate weight is attached to designated sites; to protected species; habitats and other species of principal importance for the conservation of biodiversity; and to geological interests within the wider environment.	The method to the risk-based approach adopted in this assessment is provided in each technical chapter (Chapters 5-17). Each chapter sets out the scientific baseline used to inform the assessment and identifies data limitations where these exist.
Section 2.6.1.6 The marine plan authority should ensure that development does not result in a significant adverse effect on the conservation of habitats or the populations of species of conservation concern and that wildlife species and habitats enjoying statutory protection are protected from the adverse effects of development in accordance with applicable legislation.	This document (Environmental Statement) presents an assessment of potential impacts proportionate to the scale of development proposed while taking into account that the mWave project lies within sites designated for environmental interests. The assessment is presented in each technical chapter (Chapters 5 – 17). A NSER has been developed in accordance with this document and will be submitted alongside the Environmental Statement to inform consideration of the mWave project.
Section 2.6.4.2 When developing Marine Plans, the marine plan authority should ensure it has regard to any relevant River Basin Management Plan (RBMP) or supplementary plan and the programme of measures devised for the river basin district which is summarised in each plan.	A Water Framework Directive (WFD) assessment has been undertaken for the mWave project and has been submitted with the Marine Licence application.
Section 2.6.4.3 The marine plan authority should satisfy itself where relevant that any development will not cause a deterioration in status of any water to which the WFD applies, subject to the provision of Article 4.7 of that Directive or prevent compliance with any WFD obligation and is consistent with the requirements of daughter directives of the WFD including those on priority substances and groundwater. Decision makers should also take into account impacts on the quality of designated bathing waters and shellfish waters from any proposed development.	A Water Framework Directive (WFD) assessment has been undertaken for the mWave project and has been submitted with the Marine Licence application.

UK Marine Policy Statement section and reference	Where addressed
Section 2.6.4.4 Marine plan authorities will also need to take into account, once developed, any relevant targets, indicators or measures aimed at achieving good environmental status under the Marine Strategy Framework Directive (MSFD). One element of good environmental status involves ensuring that concentrations and effects of contaminants are kept within acceptable limits, so as to ensure that there are no significant impacts on, or risks to, the wider marine environment.	Impacts from the proposals on marine ecology and biodiversity including effects from changes in marine water quality as a result of the proposals are assessed in chapter 5: Coastal Processes, Chapter 7: Benthic Subtidal and Intertidal Ecology, Chapter 8: Fish and Shellfish, Chapter 9: Marine Mammals Chapter 10: Marine Ornithology and Chapter 16 Geology, Hydrology and Land Quality.

Draft Welsh National Marine Plan

- 3.2.1.5 Welsh Government have now completed reviewing responses to the consultation on the draft Welsh National Marine Plan (dWNMP) (Welsh Government, 2017) which ended 29 March 2018. The draft Welsh National Marine Plan introduces a framework to support sustainable decision-making for the marine environment and includes policies specific to the ports and renewables sectors. The relevant policies associated with the dWNMP have been considered in Table 3.2 below as appropriate, noting that this plan is still in draft. Relevant policies include the UK Marine Policy Statement, Natural Resources Policy and National Policy Statements.
- 3.2.1.6 The dWNMP represents the start of a planning process in order to shape Wales' seas to support economic, social and environmental objectives. The purpose of the plan is to *"guide the sustainable development of our marine area by setting out how proposals for use will be considered by decision makers"*.
- 3.2.1.7 The dWNMP sets out key objectives in achieving a sustainable marine economy, namely:
1. Contribute to a thriving Welsh economy by encouraging economically productive activities and profitable and sustainable businesses that create long-term employment at all skill levels;
 2. Maximise the opportunity to sustainably develop marine renewable energy resources, helping to achieve the UK's energy security and carbon reduction objectives, whilst fully considering other's interests and ecosystem resilience; and
 3. Provide space to support existing and future sustainable economic activity through managing multiple uses, encouraging the coexistence of compatible activities, the mitigation of conflicts between users and, where possible, by reducing the displacement of existing opportunities.

Table 3.2: Consideration of the draft Welsh National Marine Plan in relation to the mWave project.

Draft Welsh National Marine Plan section and reference	Where addressed
Table 1 Point 9. Protect, conserve, restore and enhance marine biodiversity to halt and reverse its decline.	Embedded mitigation is outlined in Chapter 2: Project Description (section 2.6). Where there is a potential impact that requires additional mitigation measures to be implemented, proposed mitigation is provided in each technical chapter (Chapters 5-17).
Table 2 Consider the relevant policy framework – this plan, the MPS, relevant terrestrial planning plans, relevant National Policy Statements, neighbouring marine plans, Natural Resource Policy (NRP) and Sustainable Management of Natural Resources (SMNR) principles.	Reference to relevant legislation is provided in Chapter 3: Needs and Alternatives, Chapter 1: Introduction, and in each technical chapter (Chapters 5-17) where relevant to specific receptor groups.
Table 2 Consider the relevant regulatory regime – marine licensing (NRW-PS), Environmental Impact Assessment (EIA), terrestrial planning, mid-size terrestrial project National Development Framework (NDF) and NSIP (NPSs).	Regulatory regime associated with the mWave project is provided Chapter 1: Introduction.
Table 2 Consider spatial opportunities and potential constraints – this plan's general policies, supporting and safeguarding sector policies and policy implementation guidance, marine planning portal (natural resources, sea users, current authorisations) and relevant sectoral planning. Other relevant considerations.	The plan has been considered through the sections of this document as per the references provided in this table.
Table 2 Assess existing evidence, identify key issues and further evidence needs, collect and apply evidence – marine planning portal (natural resources, sea users, current authorisations), other evidence sources, locational guidance where available.	The method to the risk-based approach adopted in this assessment is provided in each technical chapter (Chapters 5-17). Each chapter sets out the scientific baseline used to inform the assessment and identifies data limitations where these exist.
Table 2 Consider relevant advice and guidance produced by public authorities and / or industry bodies.	Consultation associated with the mWave project relating to the marine environment are outlined in each chapter, where relevant (Chapters 1-17).
Table 2 Gather any outstanding evidence including, if necessary, desk or site study.	Each technical chapter (Chapters 5-17) sets out the scientific baseline used to inform the assessment and identifies data limitations where these exist.
Policy 65 The level of detail required to demonstrate compliance should be proportionate to the project's scale, potential impacts and thus risk (in accordance with policy GEN_02 of this plan).	This document (Environmental Statement) presents an assessment of potential impacts proportionate to the scale of development proposed while taking into account that the mWave project lies within sites designated for environmental interests. The assessment is presented in each technical chapter (Chapters 5 – 17). The level of detail provided has been written with the objective of ensuring proportionality across the mWave project design, activities and environmental and social receptors that could be affected.
Policy 66 Similarly, the level of assessment and engagement undertaken for any project should be proportionate to the scale and impact of the project as well as the sensitivity of the environment concerned and undertaken in accordance with any relevant project assessment requirements.	This document (Environmental Statement) presents an assessment of potential impacts proportionate to the scale of development proposed while taking into account that the mWave project lies within sites designated for environmental interests. The assessment is presented in each technical chapter (Chapters 5 – 17).
Table 3 ECON_02: Coexistence	Third parties and other users that could be affected by

Draft Welsh National Marine Plan section and reference	Where addressed
Proposals that consider opportunities for coexistence with other compatible sectors are encouraged in order to optimise the value and use of the marine area and marine natural resources	the proposals have been considered as part of Chapter 15: Other Users.
Table 3 SOC_03: Marine pollution incidents Proposals should minimise their risk of marine pollution incidents.	Embedded mitigation is outlined in Chapter 2: Project Description (section 2.6). Mitigation to reduce the risk of marine pollution has been described in Chapter 2: Project Description (section 2.6).
Table 3 SOC_05: Historic assets Proposals should demonstrate how potential impacts on historic assets and their settings have been taken into consideration at an early stage and should, in order of preference: a) avoid adverse impacts on historic assets and their settings; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised.	Potential impacts on historic assets and their settings are identified and assessed within Chapter 13: Marine Archaeology. An archaeological desk based assessment has been undertaken for the onshore works and will be submitted with the planning application (see section 2.6.5).
If significant adverse impacts cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding. Opportunities to enhance historic assets are encouraged.	
Table 3 SOC_06: Designated landscapes Proposals that demonstrate that they are compatible with the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated are encouraged.	The Proposals demonstrate that they are compatible with the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated is provided in Chapter 14: Seascape, Landscape Assessment.
Table 3 SOC_08: Resilience to coastal change and flooding Proposals should demonstrate how they are resilient to coastal change and flooding over their lifetime.	Chapter 4: Environmental Assessment Methodology (section 4.3.4) outlines the consideration of climate change resilience, including changes to future environmental conditions.
Table 3 SOC_11: Resilience to climate change Proposals should demonstrate that they have considered the impacts of climate change and have incorporated appropriate adaption measures, taking into account Climate Change Risk Assessments for Wales.	Chapter 4: Environmental Assessment Methodology (section 4.3.4) outlines the consideration of climate change resilience, including changes to future environmental conditions and effects of the project on climate.
Table 3 ENV_02: Marine Protected Areas Proposals should demonstrate how they: - avoid adverse impacts on individual Marine Protected Areas (MPAs) and the coherence of the network as a whole; - have regard to the measures to manage MPAs; and - avoid adverse impacts on non-marine designated sites.	A review of designated sites has been completed as part of each ecological technical Chapter and is presented in each chapter (Chapter 7: Benthic Subtidal and Intertidal Ecology, Chapter 8: Fish and Shellfish, Chapter 9: Marine Mammals and Chapter 10: Marine Ornithology) and for Natura 2000 sites also in the NSER (RPS, 2019a).
Table 3 ENV_04: Marine litter Proposals should demonstrate that they: - avoid the deliberate introduction of litter into the marine plan area; and - minimise the risk of accidental release.	Chapter 2: Project Description outlines the approach to waste management (section 2.5.4).
Table 3 ENV_05: Underwater noise Proposals should demonstrate that they have considered man-made noise impacts on the marine environment and, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised.	Impacts from underwater noise emissions have been considered in Chapter 6: Underwater Noise, and this assessment has been used to inform Chapter 8: Fish and Shellfish and Chapter 9: Marine Mammals.

Draft Welsh National Marine Plan section and reference	Where addressed
If significant adverse impacts cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding	
Table 3 ENV_06: Air and water quality Proposals should demonstrate that they have considered their potential air and water quality impacts and should, in order of preference: a) avoid adverse impacts; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised.	Air quality impacts have been assessed as part of Chapter 16: Other Users, while impacts on marine water quality have been assessed in Chapter 5: Coastal Processes and Chapter 7: Benthic Intertidal and Subtidal Ecology. Potential impacts on onshore water quality are discussed in Chapter 16 Onshore Geology, Hydrology and Land Quality.
If significant adverse impacts cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding.	
Table 3 GOV_01: Cumulative effects Proposals should demonstrate that they have assessed potential cumulative effects and, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised.	An assessment of potential cumulative impacts from the mWave project together with a consideration of other plans and projects is provided in each technical chapter (Chapters 5-17). The projects that have been considered as part of the CIA are presented in Table 4.6, in Chapter 4: Environmental Assessment Methodology along with the approach to CIA (section 4.4.2).
If significant adverse effects cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding. Proposals that contribute to positive cumulative effects are encouraged.	
Table 4 D_02: Dredging and disposal (safeguarding) Proposals potentially affecting areas where a consent or authorisation for: navigation dredging; or at-sea disposal of dredged material has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed dredging or disposal activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through: a) avoiding adverse impacts on those activities; and/or b) minimising impacts where they cannot be avoided; and/or c) mitigating impacts where they cannot be minimised.	No dredging or disposal is proposed as part of the mWave project therefore these have not been assessed.

- 3.2.1.8 It is noted that the Habitats Regulation Assessment (HRA) of the draft Wales Marine Plan was unable to rule out no adverse effect on site integrity for a number of Natura sites. An assessment of the effects of the mWave project has been prepared and the finding have been presented in a No Significant Effects Report (NSER).

The Well-being of Future Generations (Wales) Act 2015

- 3.2.1.9 The Well-being and Future Generations (Wales) Act 2015 (WBFGA, 2015) places a duty on public bodies to place the principles of sustainability and sustainable development at the heart of its decision-making processes. The relevant objectives of the WBFGA 2015 include:
- **A Resilient Wales** - contributing to the protection and improvement of the environment, to improve the quality of life and protect local and global ecosystems;

- **A Healthier Wales** - Contribute to the protection and, where possible, the improvement of people's health and wellbeing as a core component of achieving the well-being goals and responding to climate change; and
- **A Globally Responsive Wales** - Support the need to tackle the causes of climate change by moving towards a low carbon economy.

The Environment (Wales) Act 2016

- 3.2.1.10 The Environment (Wales) Act 2016 puts in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined-up way. A key part of the Environment (Wales) Act 2016 focuses on climate change with the aim to reduce emissions by at least 80% by 2050 and sets a clear path for decarbonisation.
- 3.2.1.11 The Environment (Wales) Act 2016 is supported by the Natural Resources Policy (NRP) which focuses on the sustainable management of Wales' natural resources to maximise their contribution to achieving goals within the Well-being Future Generations Act. The NRP sets out three National Priorities including '*Increasing renewable energy and resource efficiency*'.
- ### 3.2.2 Local policy context
- 3.2.2.1 The Wales Spatial Plan identifies 'Pembrokeshire - The Haven', comprising the 'Haven Towns' of Haverfordwest (including Merlin's Bridge), Milford Haven, Neyland, Pembroke and Pembroke Dock, as a strategic hub that performs an important regional role and should be a focus for future investment.
- 3.2.2.2 The Pembrokeshire Coast National Park Local Development Plan (end date 2021) was adopted September 2010. The plan identifies the special qualities of the Pembrokeshire Coast National Park will be protected and enhanced through a range of policies. Details of the relevant policies can be found in Appendix 3.1 and a summary of key ones is provided below.

Table 3.3: Preliminary Consideration of the PCNPA Policy in relation to the mWave project

PCNPA Local Development Plan section and reference	Where addressed and findings
Policy 1 'National Park Purposes and Duty (Strategy Policy)' states all development within the National Park must be compatible with: • The conservation or enhancement of the natural beauty, wildlife and cultural heritage of the Park; and • The public understanding and enjoyment of those qualities.	Whilst site of the control station is within the National Park its location on agricultural land adjacent to a farm track and field boundary is distant from the more secluded areas of the Park. The control station location has natural screening which limits the views to the site, and thereby minimises the effect of receptors in the area. There are no views of the site from the main road (B4320), residential properties and only distant ones from recreation areas. The siting of the control station and the cable route choice (see section 3.3) minimises the potential effects on wildlife. The installation methods for the cable (laying on the ground) and control station (units brought to site) results in no effect on cultural heritage. Whilst the control station will be visible to West Pickard Camp Hill Fort, these would only be glimpsed views (Chapter 14, Seascape Landscape Assessment, 14.12.3) and are assessed as minor and not significant. The cable route will cross the Wales Coast Path, and will be buried by hand tools for this small section. During works in the vicinity of the path a temporary diversion will be implemented when needed thereby allowing walker the continued enjoyment of the area.
Policy 8 Special Qualities (strategic policy) d) The historic environment is protected and where possible enhanced.	An archaeological desk based assessment has been undertaken for the onshore works and will be submitted with the planning application (see section 2.6.5). An assessment of the potential effect of the cable route on marine archaeology is assessed in Chapter 13. The cable will be laid on the surface of the ground thereby minimising the potential to have an effect on known or unknown buried archaeology. The control station is sited on agricultural land outside any Historic Landscape designation and is screened by field boundaries and topography. An assessment of potential effect on historic setting of West Pickard Bay Camp is provided in the archaeological desk based assessment, whilst Chapter 14 assesses the effect on visual amenity from the Hill Fort. The various assessments concluded that there would be no significant effect from the development on the historic environment.
Policy 10 Local Sites of Nature Conservation or Geological Interest Development that would be liable to significantly harm the nature conservation value of a Local Nature Reserve or other site of local nature conservation interest, or the main features of interest within a Regionally Important Geodiversity Site, will only be permitted if the importance of the development outweighs the local value of the site and mitigation, minimisation or off setting has been investigated.	An assessment of the potential effect of the cable route on geological interest is provided in Chapter 16. The cable route and installation method has been selected to avoid impact on RIGS. The cable will be laid on the surface of the intertidal area, but there will be a requirement to attach it to the rock face for approximately 50m. The route has been selected to minimise impacts on the superficial geology and any important features.
Policy 11 Protection of Biodiversity Development that would disturb or otherwise harm protected species or their habitats or the integrity of other habitats, sites or features of importance to wildlife and individual species including Local Biodiversity Action Plan species and habitats will only be permitted where the effects will be acceptably minimised or mitigated through careful design, work scheduling or other measures.	An assessment of the potential effect of the cable route on marine ecology in the intertidal area is provided in Chapter 7, Benthic Subtidal and Intertidal Ecology, and an assessment of effect on Terrestrial Ecology is provided in Chapter 17. The cable will be laid on the surface of the ground thereby minimising the potential to have a detrimental effect on ecology. Up to date Phase 1 survey data and a search for protect species has been used to optimise the cable route such that any effects on biodiversity are minimised (section 3.3.5).
Policy 15 Conservation of the Pembrokeshire Coast National Park Development will not be permitted where this would adversely affect the qualities and special character of the Pembrokeshire Coast National Park by: a) causing significant visual intrusion; and/or, b) being insensitively and unsympathetically sited within the landscape; and/or c) introducing or intensifying a use which is incompatible with its location; and/or d) failing to harmonise with, or enhance the landform and landscape character of the National Park; and/or e) losing or failing to incorporate important traditional features. 4.74 The purpose of this policy is to ensure that the qualities of the Pembrokeshire Coast National Park landscape are not lost to future generations.	The assessment of potential effect of the onshore and offshore elements of the mWave project on seascape and landscape is provided in Chapter 14 Seascape Landscape Assessment. The location of the temporary onshore control station on agricultural land has been selected to minimise potential effects on the surrounding area by use of topography and natural screening. In addition, with the control station being remote from the coastal path (275m) and away from public areas, the potential effects on visitors to the area is also reduced. Whilst the temporary cable will be laid on the surface to minimise potential effects on biodiversity, geology and archaeology, its route will follow features such as stone walls and field boundaries and where possible natural vegetation will be used as screening. The cable will be in a conduit within East Pickard Bay gully and it is expected that the conduit will be black in colour to reduce visual intrusion. An assessment of potential effect of the onshore works is provided in Chapter 14 Seascape Landscape Assessment. The assessment looked at the temporary development in terms of seascape and landscape character as well as visual amenity. Overall it was concluded that there would be no significant effects. Once offshore testing of mWave is completed the control station and cable will be removed.
Policy 17 'Shore Based Facilities' states that development of shore-based facilities including those linked to proposals below mean low water, will be permitted within the developed areas of the coast where compatible with adjacent uses.	The temporary onshore control station is located on agricultural land. The control station will use an existing farm access and it is compatible with the continued use of the field for grazing or crops. The agricultural site has been selected over other sites closer to Freshwater West Beach and visitor facilities to minimise impacts on coastal users in the wider area. (See Chapter 15 Other Users)
Policy 33 'Renewable energy (Strategy Policy)' states that small scale renewable energy schemes will be considered favourably, subject to there being no over-riding environmental and amenity considerations. Medium scale schemes also offer some potential and will be permitted subject to the same considerations. Large scale renewable energy schemes will only be permitted where they do not compromise the special qualities of the National Park. Where there are other renewable energy schemes already in operation in the area, cumulative impacts will be an important consideration. Policy 33 also states that onshore connections to offshore renewable energy generators will also be permitted subject to there being no over-riding environmental and amenity considerations. Developers requiring an undeveloped coastal location for onshore connections to offshore renewable energy installations will need to clearly justify this need in relation to Policy 8i¹ with the least obtrusive approach to design being taken.	The proposed onshore works are small scale and temporary. The location of the temporary onshore control station on agricultural land has been selected to minimise potential effects on the surrounding area by use of topography and natural screening. In addition, with the control station being remote from the coastal path (275m) and away from public areas, the potential effects to visitors to the area is also reduced and as such there are no over-riding environmental issues. (See Chapter 2: Project Description and Chapter 15L Other Users). The temporary onshore cable connection will be laid on the surface to minimise potential effects on biodiversity, geology and archaeology. Its route will follow features such as stone walls and field boundaries and where possible natural vegetation will be used as screening. The cable will be in a conduit within East Pickard Bay gully and it is expected that the conduit will be black in colour to reduce visual intrusion. (See Chapters 14: Seascape Landscape Assessment).

¹ Policy 8i Special Qualities – Development of the undeveloped coast is avoided and sites within stretched of the developed coast are protected for uses that need a coastal location – see Policy 17, Policy 18, Policy 33 and Policy 35

3.3 Alternatives Considered

3.3.1 Introduction

3.3.1.1 The EIA Regulations require that an Environmental Statement should include:

‘A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option(s), including a comparison of the environmental effects’ (Schedule 4(2)).

3.3.1.2 As identified in Chapter 1 Introduction, it was originally intended that the licensing and consenting of the mWave project would be undertaken within the consenting and licensing of the META project Site 8. As such, the wider site selection process for the META, project which is presented in the EIA in support of consents for that project, is relevant to the mWave project. For completeness a summary of the key features of the site selection process for Site 8 is provided below.

3.3.1.3 In terms of the selection of Site 8, the siting of mWave within Site 8 and the other elements of the project, namely onshore control station and cable routes, the consideration of alternative sites has been carried out in accordance with Section 6 of Schedule 3 of The Marine Works (EIA) Regulations 2007 (as amended); and Section 2 of Schedule 5 of the Town and Country Planning (EIA) (Wales) 2017, which requires the Applicant to provide an outline of the main alternatives studied, and an indication of the main reasons for the Applicant’s choice.

3.3.2 Summary of wider META Site 8 Selection Process

3.3.2.1 The META project forms part of the Pembrokeshire Dock Marine project, a project devised to develop a world class centre for marine energy development, fabrication, testing and deployment, in Pembrokeshire (<http://www.marineenergywales.co.uk/marine-energy-in-wales/projects/pembroke-dock-marine/>).

3.3.2.2 One of the key drivers of the META site selection was wave and tidal resource, requiring a suite of sites to be identified in both benign as well as higher-energy at-sea environments. In addition, the sites were considered in relation to potential interface with shipping and navigation, other users and environmental designated sites and interests. As such the selection of the suite of META sites followed a rigorous site selection process incorporating a desktop review of available data, constraints analysis, and developer and stakeholder discussions. Key elements of the wider META selection process are given below.

Physical constraints

3.3.2.3 The physical constraints analysis looked at depth and resource in order to identify areas with potential capacity to accommodate test protocols detailed by prospective customers to the

META project. Data sources examined are highlighted in Table 3.4 below. Examination of these sources was supported by knowledge from local users, the supply chain, and developers’ individual in-house assessments of areas suitable for testing of their own devices.

Table 3.4: Data sources included in the constraints assessment

Data reviewed	Source
Bathymetry	Admiralty Chart data
Wave Resource	Renewable Energy Atlas (ABPMer, 2008)
Tidal Resource	MHPA Tidal Atlas Vols 1-4 data collected 1997-1999
Shipping & Navigation	MHPA & Automatic Identification System (AIS)
Industrial activities	MHPA

Offshore Environmental constraints

3.3.2.4 The environmental constraints that were assessed as part of the initial desktop review include:

- Environmental designations, such as Natura 2000 sites, National and Local Protected Areas, habitats, and species;
- Marine ecology factors, such as marine mammals, birds and benthos;
- Landscape and seascape constraints such as World Heritage sites, Coastal National Parks, and Coastal Areas of Outstanding Natural Beauty (AONB);
- Navigation constraints, such as the risk to existing marine traffic, including commercial shipping and recreational boating;
- Marine archaeological constraints, driven by the Protection of Wrecks Act 1973 and Protection of Military Remains Act 1986, which include wrecks and military remains; and
- Constraints of other users, covering those activities which require an area of seabed to be leased.

Identification of META sites

3.3.2.5 The constraints analysis resulted in a suite of 12 potential test sites which were looked at in detail. Of the 12 sites a further 4 were eliminated to give the final eight sites for the META project, namely:

- Carr Jetty (site 1);
- Mainstay Quay (site 2);
- Ferryside (site 3);
- Quay 1 (site 4);
- Criterion Jetty (site 5);
- Warrior Way (site 6);
- Dale Roads (site 7); and
- East Pickard Bay (site 8).

- 3.3.2.6 Further refinement to East Pickard Bay (Site 8) was also undertaken following feedback from NRW-Advisory (15 February 2019). Changes were made to Site 8 to remove overlap with known areas of Annex 1 reef habitat.
- 3.3.2.7 Through engagement with technology developers and key statutory stakeholders, refinement of the testing activities to be supported at each proposed test area was undertaken. Consequently, Site 8 was identified as being appropriate for testing of full-scale wave devices,. Site 8, East Pickard Bay, was therefore identified as an appropriate location for the first deployment of the full scale mWave device (see Chapter 1 Introduction, section 1.3 for further information).

Positioning of mWave within Site 8

- 3.3.2.8 To position mWave within the Site 8 area, certain site conditions were required namely,
- Appropriate substrate,
 - Depth of water,
 - Proximity to coast for cable connection, and
 - Appropriate site for onshore control station.
- 3.3.2.9 In terms of substrate, as discussed in Chapter 2 Project Description, mWave sits on the seabed using a gravity foundation. The gravity foundation needs to penetrate into sand to a depth of around 1m, to keep the device in place as waves pass overhead. In addition to this, the preferred depth of submergence of the device in most long-fetch wave climates, to allow for sufficient water pressure changes from waves to deflate/inflate the membranes, will be in the range of 8-15m at MLWS to mWave base. The precise submergence required depends on the wave resource in the area, with deeper depths being appropriate for sites with larger wave resource. Site 8 has a good wave resource and as such a location at a depth of around 11-12m would be appropriate.
- 3.3.2.10 Bathymetry survey data was obtained (Titan 2018) and the data confirmed that sandy substrate is present at the eastern end of Site 8. The bathymetry survey confirmed that was no evidence of rocks and that the site was flat with only minor sand ripples, and there would therefore be no requirement for pre-deployment site clearance or levelling. At the chosen deployment location appropriate water depths, which were within a suitable distance to the coast to allow cable route and onshore control station options, were also available. Figure 3.1, shows the potential onshore control station locations and cable route corridors which were originally considered during the early scoping stage. These are discussed further below.

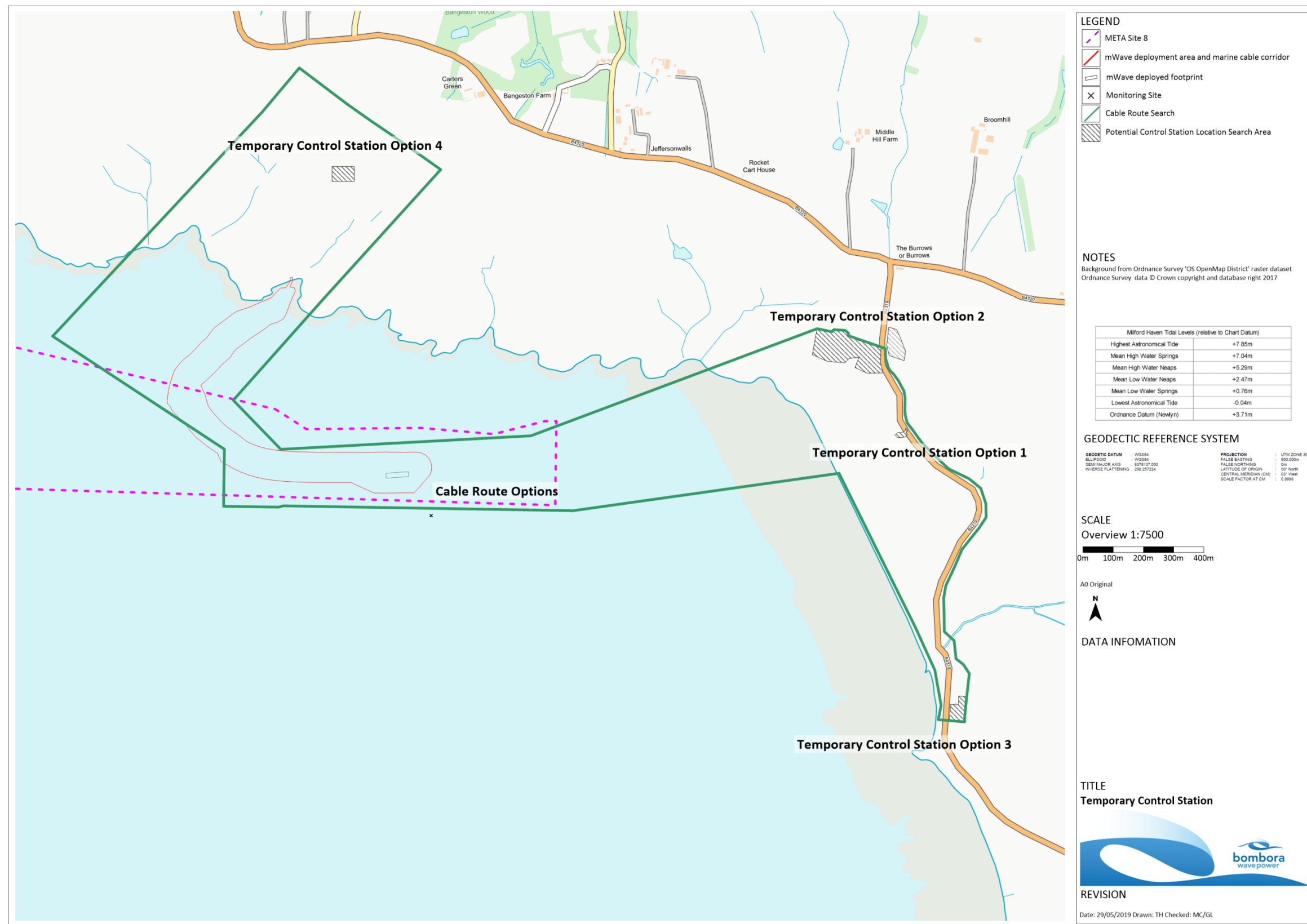


Figure 3.1: Proposed cable route corridor (up to MHWS) and potential temporary onshore control station options.

3.3.3 Cable route and onshore control station site selection

3.3.3.1 The cable route selection process considered both the route to shore and onshore and the location of temporary onshore control station required by Bombora Wave Power for testing of mWave. Factors taken into consideration for this process included:

- Risks to the cable;
- Risks to other users;
- Appropriate methods for cable burial;
- Designated sites;
- Distance from the offshore cable connection to shore;
- Ease of access to temporary onshore infrastructure; and
- Practicalities of installing the cable.

3.3.3.2 An indicative Cable Route Corridor Search Area was proposed, and four alternative control station options were identified (see Figure 3.1). For each control station site option a further subjective review was undertaken to identify the preferred option. The review is summarised in Table 3.5, and covers key subject areas, namely:

- Length of onshore cable
- Visibility
- Ecology
- Access and parking
- Archaeology/historic setting
- Noise
- Water courses

3.3.3.3 For each subject area a simple colour coding of green, amber or red is provided for none/low potential effect, medium potential effect and high potential effect. A pale green has also been used where overall a minor to moderate potential effect is anticipated.

3.3.4 Offshore cable route

3.3.4.1 In terms of the offshore cable route, through developer and stakeholder engagement, cable route option 4 (making landfall to the north of East Pickard Bay (Site 8) was identified as the most suitable (Table 3.5).

3.3.4.2 The main reasons cable route options 1, 2, and 3 were not selected for implementation are:

- Potential impacts on the Castlemartin coast Special Protection Area (SPA);
- Potential impacts on the Castlemartin range SSSI;
- Potential impacts on the Pembrokeshire Marine Special Area of Conservation (SAC);
- Potential impacts on Limestone Coast of South West Wales SAC;
- Potential impacts on landscape and visual impact;
- Potential impacts on identified historic sites; and
- Engineering constraints regarding length of marine cable.

3.3.4.3 The main reason cable route option 4 was selected is:

- Reduced potential for impact on environmentally designated sites;
- Reduced impact on visual receptors;
- Reduced impact on recreational receptors;
- Reduced potential for impact on historic sites; and
- Reduced marine cable length and associated engineering considerations.

3.3.4.4 The final cable route will be run to shore from the mWave offshore test area at East Pickard Bay. It will be laid on the seabed (with associated anchoring weights) from the offshore test area across the sandy seabed then to shore via a natural channel in the near shore rock seabed. A number of options were considered for the cable route between Mean Low Water Spring (MLWS) and MHWS, and further details are provided in section 3.3.5.

Table 3.5: Review of alternative onshore control station sites

Site name	Option 1. Freshwater West North car park	Option 1a. Hollow near to north car park	Option 2. Near gun emplacement, cable via road	Option 2a. Near gun emplacement with cable cross country	Option 3 Main Freshwater West car park, cable via road	Option 3a Main Freshwater West car park, cable via beach	Option 4 Agricultural land north of East Picard Bay
Description	Northern tarmac car park approximately half way along beach within sand dune system. Cable (~600m from MLW) buried along footpath through sand dune system.	Hollow near to northern car park with cable route (610m) buried within footpath through sand dune system.	Agricultural land north of beach with cable route (1km) buried across beach and via road verge.	Agricultural land north of beach with cable buried cross-country (1km).	Main southern car park with cable buried across foreshore and then via road verge. B4319 road would have to be crossed.	Main southern car park with cable buried along beach and then across B4319 road.	Agricultural land above East Pickard Bay. Cable route laid along natural gully. Small section across footpath buried/ covered.
Length of cable Onshore: offshore	1.6 km 0.6km:1.0km	1.6 km 0.61km:1.0km	2.13 km 1.13km:1.0km	1.74 km 0.74km:1.0km	2.71 km 1.71km:1km	2.33 km 1.33km:1km	1.8 km 0.4km:1.4km
Visibility	Situated off B4319 with views likely from the road approaching from south east due to lower lying ground and views on approach road from north west from approx 100m. Views also for visitors and users of the car park and wider area. Visual effect anticipated to be medium due to potential for visual receptors in the area. Cable route buried, so once installed no effect.	Situated off B4319 with views likely from the road approach from south east due to lower lying ground and views on approach road from north west from approx 100m. Views also for visitors and users of the parking and wider area. Position within hollow would reduce visual impact compared to option 1. Visual effect anticipated to be medium due to potential for visual receptors in the area. Cable route buried, so once installed no effect.	Situated on elevated ground in fields adjacent to B4319. Limited parking is available beside war memorial approx 130m to east. Depending on location within fields there may be potential to use natural screening, though approach road from north is elevated. Medium visual affect if natural screening used, medium to high if situated in area with no screening as it would be a more notable feature on the coast. Cable route buried. Once installed no effect.	Situated on elevated ground adjacent to B4319. Parking is available beside war memorial approx 130m to east. Depending on location within fields there may be potential to use natural screening, though road from north is elevated. Medium visual affect if natural screening used, medium to high if situated in area with no screening as it would be a more notable feature on the coast. Cable route buried. Once installed no effect.	Situated in main southern car park beside existing toilet facilities which are well screened from north approach of road by mound. Project would introduce more structures beyond the mound screening which are likely to be visible from approx 300m along north and south road approach. Also visible to visitors using the car park, café and local area. Medium effect anticipated as structures already present in area. Cable route buried. Once installed no effect.	Situated in main southern car park beside existing toilet facilities which are well screened from north approach of road by mound. Project would introduce more structures beyond mound screening which are likely to be visible from approx 300m along north and south road approach. Also visible to visitors using the car park, café and local area. Medium effect anticipated as structures already present in area. Cable route buried. Once installed no effect.	Situated away from visual receptors (roads/ visitors). Good natural screening anticipated from coastal footpath and B4320 road, as such low impact anticipated. Cable laid on surface using natural features/ vegetation to screen where possible. Some cable section would be attached to rock face. As in gully below footpath, low impact anticipated.
Ecology	International and national ecological designations in area. Control station would be situated on tarmac so would have low impact. Cable route would be buried through dune system and would have the potential to have medium impact through use of existing footpaths. Overall medium impact due to cable.	International and national ecological designations in area. Control station would be in hollow in sand dune system so would have potential to have higher impact than tarmac option 1. Cable route would be buried through dune system and would have the potential to have medium impact if existing footpaths routes are used. Overall medium.	International and national ecological designations in area. Cable route would be buried across beach and along road verge and would result in medium impact. There is limited space in some verge areas. Control station would be on agricultural land using existing gates for access giving low impact. Overall medium impact due to cable.	International and national ecological designations in area. Cable route would be buried and would result in high impact across dunes and coastal habitat. Control station would be in agricultural land using existing gates for access giving low impact. Overall medium impact due to cable.	International and national ecological designations in area. Cable route would be buried cross beach and the along the road verge. Limited space in some areas of verge. Control station would be in car park with minimum ecological impact. Overall medium impact due to cable.	International and national ecological designations in area. Cable route would be buried along the beach. Control station would be in car park with minimum ecological impact. Overall medium impact due to cable route.	International and national ecological designations in area. Cable route laid on surface up natural gully and along field boundaries to control station. Small section across footpath buried/covered. Control station on hard standing. Existing field gates used for access. Low impact anticipated.
Access /parking	Access to car park from B4319 about 600m from B4320. The B4319 is narrow in places with passing places and busy in summer. Medium local effect anticipated during installation. Medium effect during operation due to loss of car parking spaces.	Access to car park from B4319 about 600m. The B4319 is narrow with passing places and busy in summer. Section of wall at car park would need to be taken out or containers would have to be lifted down from car park into hollow. Medium local effect anticipated during installation. Minor effect during operation through use of car parking spaces for staff. Overall low/medium effect.	Access off B4319 about 250m from B4320. Existing gated access to farm track and then across fields. Some access track improvement likely to be needed. Cable route along road verge would affect users during installation as verge is narrow in places. High local short term effect during installation and minor during operation. Overall medium	Access off B4319 about 250m from B4320. Existing gated access to farm track and then across fields. Some access track improvement likely to be needed. Cable cross country. Medium local effect anticipated during installation. Minor during operation. Overall low/medium effect.	Access off B4319 about 1.75km from B4320 to the north or from east through Castlemartin. Listed bridge on approach to Castlemartin with minimal space. B4319 is narrow with passing places and busy in summer. Cable route along road verge would affect users during installation as verge is narrow in places. Cable to cross road. High local short term effect during installation. Loss of car parking	Access off B4319 about 1.75km from B4320 to the north or from east via Castlemartin. Listed bridge on approach to Castlemartin with minimal space. B4319 is narrow with passing places and busy in summer. Cable would need to cross road. High local short term effect during installation. Loss of car parking spaces in seasonally busy area, overall high effect.	Access off B4320 through existing field gate. Existing farm track runs to site and hard standing present. Cable route cross country. Low effect anticipated during installation and operation.

Site name	Option 1. Freshwater West North car park	Option 1a. Hollow near to north car park	Option 2. Near gun emplacement, cable via road	Option 2a. Near gun emplacement with cable cross country	Option 3 Main Freshwater West car park, cable via road	Option 3a Main Freshwater West car park, cable via beach	Option 4 Agricultural land north of East Picard Bay
			effect.		spaces in seasonally busy area, overall high effect.		
Archaeology/historic setting	Outside Historic landscape area. No known historic features within 500m of control station. Potential for buried remains on cable route, medium impact predicted.	Outside Historic landscape area. No known historic features within 500m of control station. Potential for buried remains on cable route, medium impact predicted.	Outside Historic landscape area. Gravel Bay anti-aircraft battery Scheduled Monument and World War II monument approx 60m-130m from control station. Potential for buried remains on cable route, medium impact predicted.	Outside Historic landscape area. Gravel Bay anti-aircraft battery Scheduled Monument and World War II monument approx 60m-130m from control station. Potential for buried remains on cable route, medium impact predicted.	Outside Historic landscape area. 'Corse Bridge and attached Walled Channel' and 'seaweed hut on foreshore' listed buildings near control station (approx 180m-250m). Potential for buried remains on cable route, medium impact predicted.	Outside Historic landscape area. 'Corse Bridge and attached Walled Channel' and 'seaweed hut on foreshore' listed buildings near control station (approx 180m-250m). Potential for buried remains on cable route, medium impact predicted.	Outside Historic landscape area. West Pickard Camp Scheduled monument on headland approx 200m from cable route and approx 500m from control station, although good natural screening anticipated. Small section of cable may be buried across coastal path. Minor impact predicted.
Noise	The nearest residential properties to control station approx 550m - 700m to north. Seasonal Café Môr and parking located 800m southeast. Short term noise effect during installation. Potential for localised low level noise during operation for limited visitors using parking in area from screened generator and compressor. Overall low effect predicted.	The nearest residential properties to control station approx 550m - 700m to north. Seasonal Café Môr and parking located 800m south-east. Short term noise effect during installation. Potential for localised low level noise during operation for limited visitors using parking in area from screened generator and compressor. Overall low effect predicted.	The nearest residential properties to control station approx 300m - 700m to north. Nearest parking at memorial (~80m) and north car (~330m). Short term noise effect during installation. Potential for localised low level noise during operation for limited visitors using monument parking from screened generator and compressor. Overall low effect predicted.	The nearest residential properties to control station approx 300m - 700m to north. Nearest parking at memorial (~80m) and north car (~330m). Short term noise effect during installation. Potential for localised low level noise during operation for limited visitors using monument parking from screened generator and compressor. Overall low effect predicted.	The nearest residential properties to control station approx 600m to north and 950m southeast. Parking adjacent and seasonal Café Môr 80m -southeast. Short term noise effect during installation. Potential for localised noise during operation for visitors using adjacent parking and café from screened generator and compressor. Overall low/medium effect.	The nearest residential properties to control station approx 600m to north and 950m southeast. Parking adjacent and seasonal Café Môr 80m -southeast. Short term noise effect during installation. Potential for localised noise during operation for visitors using adjacent parking and café from screened generator and compressor. Overall low/medium effect.	The nearest residential properties to control station are approx 470m north-east, approx 600m north. Coastal footpath approx 300m south. There would be localised short term noise disturbance during installation. Distance from receptors both residential and visitors should mean noise effect from screened compressor and generator should be minimal. Overall low effect predicted.
Water course	No water course	No water course	No water course	No water course	Possible impacts crossing water course	No water course	Laid on ground near to small water course at one point.

3.3.5 Overview of onshore cable route and control station options

3.3.5.1 East Pickard Bay, the cable landfall point, is a narrow gully which extends approximately 130m inland to where the Wales Coast Path bisects it. It has steep rocky cliff sides and a small stream runs down the top section of the gully into the intertidal area. The cliffs are topped with coastal grassland and inland it becomes agricultural land with field boundaries comprising hedges, banks and fence lines. A number of options were considered for different sections of the cable and two options were considered for the onshore control station. All options assumed the cable would be laid on the surface where possible and not buried.

Cable route MLWS to Wales Coast Path

3.3.5.2 From MLWS to the top of the gully two options were considered for the cable route, as shown on Figure 3.2. Option 1 would be laid across the surface of a small section of lower intertidal area and then up the vertical western side of the gully to the cliff top. A termination box and anchor point would be positioned between existing rock features and would be hidden using rock or turf. The cable would then head inland to bisect the coastal path at an existing gate. The cable would be buried across the coastal path near to the gate.

3.3.5.3 Option 2 would be placed on the surface of the intertidal area and would follow up the main East Pickard Bay gully. Approximately 30m from the end of the gully (where it would meet the coastal path) the cable would be taken up the rock face to the top of the western side of the gully before reaching the coastal path. As with Option 1 a termination box and anchor point would be positioned nearby and the cable would be buried across the coastal path near to the gate.

3.3.5.4 After engineering input and evaluation of ecological and geological constraints, Option 1 was chosen. Key issues with Option 2 included proximity to the stream which flows down the gully, and proximity to coastal path for siting termination box and anchor point. In addition to this, it was considered that a cable pull directly up and out of the gully would be more feasible than taking the cable up through the gully.

Cable route from Wales Coast Path to control station

3.3.5.5 From the coastal path the cable would be run up beside an existing stone wall within the upper part of the gully. When the cable reaches agricultural land two alignments were considered (blue and orange on Figure 3.2).

3.3.5.6 The blue route would cut out of the upper gully into agricultural fields. The cable would be laid along the eastern edge of the field boundary, passing through existing gateways to the control station site. The orange route would run up an area of dense scrub between two fields to the control station.

3.3.5.7 A site visit was undertaken by an ecologist to assess each route. It was confirmed that the blue route had no significant constraints. The orange route had a number of ecological

constraints including breeding birds and the presence of protected species. As such the blue route was identified as the preferred choice.

Control station site options

3.3.5.8 Two locations were identified for the control station (blue and orange on Figure 3.2), one in the western field and one in the eastern field, and both on the south-eastern edge of the old WWII Angle airfield. The orange site was identified by Bombora engineers and the blue site was identified by the landowner during consultation.

3.3.5.9 Both sites had an existing track which provided good access from the main road. Neither had any significant ecological constraints. The orange site had some area of hardstanding, remnants of the old airfield, but would require some site clearance. The blue site did not have any hardstanding and would require some limited site clearance. Both sites had hedges and banks nearby providing some natural screening. As neither site was significantly better than the other, the landowners option (blue) was identified as the preferred site.

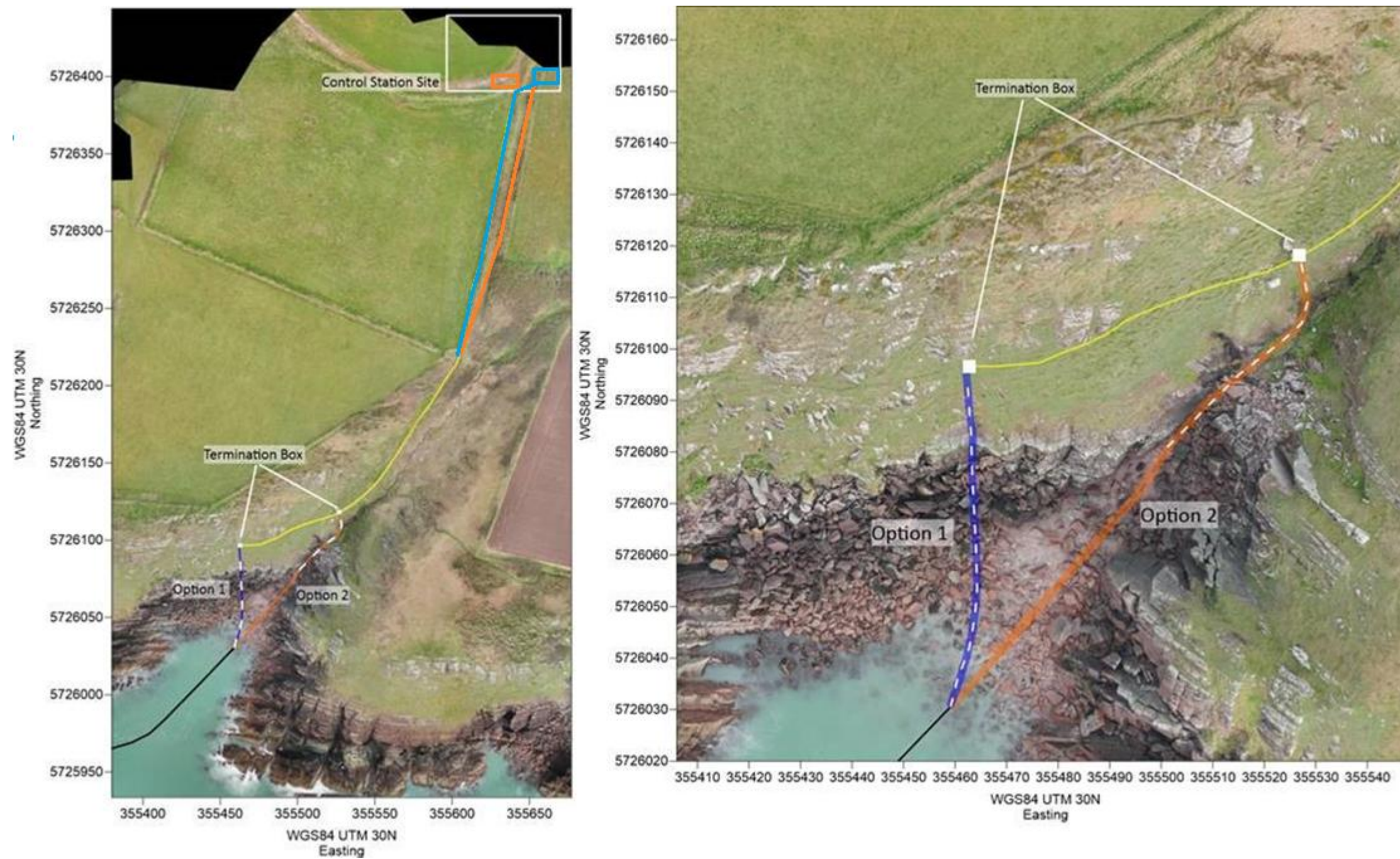


Figure 3.2: Overview of Cable Route and control station options

3.4 References

Llywodraeth Cymru Welsh Government (2008) The Wales Spatial Plan: People, Places, Futures (2008 update). Accessed: <https://gov.wales/docs/desh/publications/130701wales-spatial-plan-2008-update-en.pdf> 21 December 2018.

Llywodraeth Cymru Welsh Government (2017) The Natural Resources Policy (NRP) Accessed: <https://gov.wales/docs/desh/publications/170821-natural-resources-policy-en.PDF> 6 December 2018.

Overarching National Policy Statement for Energy (EN-1) (2011) Department of Energy and Climate Change. Presented to Parliament pursuant to Section 5(9) of the Planning Act 2008. July 2011. Accessed: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf 21 December 2018.

Parc Cenedlaethol Arfordir Penfro – Pembrokeshire Coast National Park (2010) Local Development Plan (Local Development Plan 1). Adopted Plan (end date 2021). Accessed: <https://www.pembrokeshirecoast.wales/files/files/dev%20plans/finalldp.pdf> 21 December 2018.

RPS (2018) Marine Energy Test Area (META), Environmental Impact Assessment. Scoping Report.

Titan Environmental Services Ltd (2018) Bombora Hydrographic - MetOcean Survey Geophysical & Oceanographic. June 2018. Project Number: CS0535

The Environment (Wales) Act (2016 SI No. anaw 3).

The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) (2007 SI No. 1518).

The Marine Works (Environmental Impact Assessment) (Amendment) Regulations 2017 (2017 SI No. 588).

The Well-being and Future Generations (Wales) Act 2015 (2015 SI No. anaw 2).

UK Marine Policy Statement (2011). HM Government; Northern Ireland Executive; Scottish Government; Welsh Assembly Government. March 2011. Accessed: <https://www.gov.uk/government/publications/uk-marine-policy-statement> 21 December 2018.