4 ENVIRONMENTAL ASSESSMENT METHODOLOGY

Introduction

4.1 This chapter of the ES sets out the approach taken to the environmental assessment of the proposed development. The chapter also includes details of the consultation undertaken to date and the overall approach to the assessment of the likely effects of the proposed development. Further details of topic specific methodologies, such as survey methods, are provided in each topic chapter of this ES.

Scoping

4.2 Scoping is the process of identifying the issues to be addressed during the EIA process. Scoping is an important preliminary procedure, which sets the context for the EIA process.

4.3 Regulation 14 of the EIA Regulations allows an applicant to request that the LPA sets out its opinion (known as a Scoping Opinion) as to the issues to be addressed in the ES. Whilst there is no formal requirement in the EIA Regulations to seek a Scoping Opinion prior to submission of an ES, it is recognised as best practice to do so.

4.4 A Scoping request was submitted to PCC and to NRW-MLT on 28th June 2018. The Scoping Report that comprised this request is included as **Appendix 4.1**.

4.5 The proposed scope of the assessment was informed by the nature and scale of the proposed development and its location. In summary, the topics listed below were proposed to be included in the ES (further details in relation to the approach to the individual chapters and assessments are provided in the Scoping Report (**Appendix 4.1**)).

- Chapter 1 Introduction
- Chapter 2 Project Description
- Chapter 3 Need and Alternatives Considered
- Chapter 4 Environmental Assessment Methodology
- Chapter 5 Planning Policy Context
- Chapter 6 Marine Environment – Marine Ecology
- Chapter 7 Marine Environment – Coastal Processes
- Chapter 8 Noise and Vibration
- Chapter 9 Air Quality
- Chapter 10 Historic Environment

- Chapter 11 Transportation
- Chapter 12 Socio-Economics
- Chapter 13 Ground Conditions
- Chapter 14 Landscape and Visual Impact
- Chapter 15 Flooding and Hydrology
- Chapter 16 Biodiversity

4.6 A Scoping Opinion was provided by PCC on 16th August 2018 and is included as **Appendix 4.2**. The consultees that responded to PCC as part of the scoping process were:

- Natural Resources Wales (NRW)
- Cadw

4.7 A Scoping Opinion was provided by NRW-MLT on 4 October 2018 and is included as **Appendix 4.3**. The consultees that responded to NRW-MLT as part of the scoping process were:

- Natural Resources Wales (NRW)
- Maritime and Coastguard Agency (MCA)
- Royal Yachting Association (RYA)
- Trinity House Lighthouse Service (THLS)
- Pembrokeshire County Council
- Cadw
- Centre for Environment, Fisheries and Aquaculture Science (Cefas)
- National Air Traffic Services (NATS)
- Dyfed Archaeology Trust

4.8 The ES topic chapters provide a summary of the key points raised during Scoping and how they have been addressed in the chapters.

4.9 The scoping exercise highlighted areas that consultees wished to see addressed within the ES. Considering the nature, size and location of the project, the information provided within the Scoping Opinion and other consultation responses provided throughout the EIA process, the following topics have been identified as requiring consideration within this ES:

- Chapter 1 Introduction
- Chapter 2 Project Description
- Chapter 3 Need and Alternatives Considered
- Chapter 4 Environmental Assessment Methodology
- Chapter 5 Planning Policy Context
- Chapter 6 Marine Ecology and Coastal Processes
- Chapter 7 Shipping and Navigation
- Chapter 8 Noise and Vibration
- Chapter 9 Air Quality
- Chapter 10 Historic Environment
- Chapter 11 Transportation
- Chapter 12 Socio-Economics
- Chapter 13 Ground Conditions
- Chapter 14 Landscape and Visual Impact
- Chapter 15 Flooding and Hydrology
- Chapter 16 Biodiversity

Topics Scoped Out of the EIA Process

4.10 The topics scoped out of the assessment are set out in the Scoping Report (**Appendix 4.1**) and summarised below.

Climate Change

4.11 The Scoping Report stated that an assessment of climate change and greenhouse gas emissions (GHGs) is required under the 2017 EIA Regulations where there is potential for likely significant effects. At present there is no single piece of methodological guidance accepted as standard, although IEMA's guidance on GHG emissions states that, in principle, any GHG emissions may be significant, and advocates as good practice that GHG emissions should always be reported at an appropriate, proportionate level of detail in an ES.

4.12 The proposed development will facilitate the development and advancement of marine renewable energy technologies and devices that would reduce reliance on fossil fuels, in turn reducing the emission of GHGs in response to the threat of climate change.

4.13 A sub-section on climate change will be included within the flooding and hydrology ES chapter, which would be relevant and proportionate to the development proposed. Therefore, no separate consideration of climate change is considered necessary.

Climate Change Resilience

4.14 Resilience to future climate change has been considered during the design process. The design has considered, for example, future flood risk and resilience to extreme weather events. The conceptual surface water drainage strategy for the project has been designed to consider the 1 in 100-year flood risk event, plus an allowance for climate change. Further details are provided in Chapter 15 (Flooding and Hydrology).

Effects of the Project on Climate

4.15 Atmospheric emissions associated with use of the proposed development are assessed within Chapter 9 (Air Quality) of the ES. These include emissions from construction and operational traffic.

Population and Human Health

4.16 The Scoping Report stated that an assessment of population and human health is required within the 2017 EIA Regulations where there is potential for likely significant effects. No guidance for assessment of health in EIA is available currently.

4.17 Population and human health have a broad scope and is in practice considered across a range of other topic areas within the ES, including socio-economic, noise and vibration, air quality, ground conditions and landscape and visual. These topics are proposed to be included within the ES. Therefore, no separate consideration of population and human health is considered necessary.

Material Assets

4.18 The Scoping Report stated that the EIA Regulations refer to ‘material assets’, including architectural and archaeological heritage. The phrase ‘material assets’ has a broad scope, which may include assets of human or natural origin, valued for socio-economic or heritage reasons. Material assets are in practice considered across a range of topic areas within an ES, including the historic environment and socio-economics chapters. These topics are included within this ES. Therefore, no separate consideration of material assets is considered necessary.

Environmental Assessment Methodology

Relevant EIA Guidance

4.19 The EIA process has considered relevant government or institute guidance, including:

- Welsh Office Circular 11/99: Environmental Impact Assessment;
- Department for Communities and Local Government (2014) Planning Practice Guidance at http://planningguidance.planningportal.gov.uk;
- Department of the Environment, Transport and the Regions (DETR) (1997) Mitigation Measures in Environmental Statements. HMSO;

- Highways Agency et al. (2008) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 5. HA 205/08;
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment;
- Institute of Environmental Management and Assessment (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report;
- Institute of Environmental Management and Assessment (2015a) Environmental Impact Assessment Guide to Shaping Quality Development;
- Institute of Environmental Management and Assessment (2015b) Climate Change Resilience and Adaptation;
- Institute of Environmental Management and Assessment (2016) Guide to Delivering Quality Development;
- Institute of Environmental Management and Assessment (2017) Environmental Impact Assessment: Assessing Greenhouse Gas Emissions and Evaluating their Significance; and
- Institute of Environmental Management and Assessment (2017) Health in Environmental Impact Assessment: A Primer for a Proportional Approach.

4.20 Other topic specific legislation and good practice guidance, including the Well-being of Future Generations (Wales) Act 2015 (WBFGA 2015) and Planning Policy Wales Edition 10 (PPW) has been considered and details of these can be found in the topic chapters within this ES.

Key Elements of the General Approach

4.21 The assessment of each environmental topic forms a separate chapter of the ES. For each environmental topic, the following have been addressed:

- Methodology and assessment criteria;
- Description of the environmental baseline conditions;
- Measures adopted as part of the project, including mitigation and design measures that form part of the proposed development aimed at reducing its residual impact;
- Identification of likely effects and evaluation and assessment of the significance of identified effects, considering any measures designed to reduce or avoid environmental effects which form part of the proposed development;
- Identification of any further mitigation or monitoring measures envisaged to avoid, reduce and, if possible, remedy adverse effects (in addition to those measures that form part of the proposed development); and

- Assessment of any cumulative effects with other developments planned in the area.

Methodology and Assessment Criteria

4.22 Each topic chapter provides details of the methodology for baseline data collection and the approach to the assessment of effects. Each environmental topic has been considered by a specialist in that area.

4.23 Each topic chapter defines the scope of the assessment within the methodology section, together with details of the study area, desk study and survey work undertaken and the approach to the assessment of effects. The identification and evaluation of effects have been based on the information set out in Chapter 2 (Project Description) of this ES, EIA good practice guidance documents and relevant topic-specific guidance where available.

Description of the Environmental Baseline Conditions (including Future Baseline Conditions)

4.24 The existing and likely future environmental conditions in the absence of the proposed development are known as 'baseline conditions'. Each topic-based chapter includes a description of the current (baseline) environmental conditions. The baseline conditions at the site and within the study area form the basis of the assessment, enabling the likely significant effects to be identified through a comparison with the baseline conditions.

4.25 The baseline for the assessment of environmental effects is primarily drawn from existing conditions during the main period of the EIA work in the period 2017 to 2019.

4.26 The baseline for the assessment should represent the conditions that will exist in the absence of the proposed development at the time that it is likely to be implemented. The anticipated start date for construction of the project is 2021, with enabling works likely to occur late in 2020. The programme would be of approximately three years duration (including enabling works). Assets are expected to come online when completed with full operation of the site assumed to take place in 2024. Further information about the construction programme assessed as part of the EIA process can be found in Chapter 2 (Project Description).

4.27 Consideration has been given to any likely changes between the time of survey and the future baseline for the construction of the project and its operation. In some cases, these changes may include the construction or operation of other planned developments in the area. Where such developments are built and operational at the time of writing these have been considered to form part of the baseline environment. Where sufficient and robust information is available, such as expected traffic growth figures, other future developments have been considered as part of the future baseline conditions. In all other cases, planned future developments are considered within the assessment of cumulative effects.

Limitations of the Assessment

4.28 Each topic chapter identifies any limitations identified in the available baseline data and whether there were any difficulties encountered in compiling the information required.

Mitigation Measures Adopted as Part of the Project

4.29 During the EIA process, environmental issues have been considered as part of an ongoing iterative design process. The process of EIA has therefore been used as a means of informing the design.

4.30 The proposed development assessed within this ES therefore includes a range of measures that have been designed to reduce or prevent significant adverse effects arising. In some cases, these measures may result in enhancement of environmental conditions. The assessment of effects has considered measures that form part of the project.

4.31 The topic chapters set out the measures that form part of the proposed development and that have been considered in the assessment of effects for that topic. These include:

- Measures included as part of the design (sometimes referred to as primary mitigation);
- Measures to be adopted during construction to avoid and minimise environmental effects, such as pollution control measures. These measures would be implemented through the OCoCP (**Appendix 2.3**); and
- Measures required because of legislative requirements.

Assessment of Effects

4.32 The EIA Regulations require the identification of the likely significant environmental effects of the proposed development. This includes consideration of the likely effects during the construction and operational phases. The assessment is based on consideration of the likely magnitude of the predicted impact and the sensitivity of the affected receptor. The process by which effects have been identified and their significance evaluated is set out within each individual topic chapter. The overarching principles are set out below.

Sensitivity or Importance of Receptors

4.33 Receptors are defined as the physical or biological resource or user group that would be affected by a project. For each topic, baseline studies have informed the identification of potential environmental receptors. Some receptors will be more sensitive to certain environmental effects than others. The sensitivity or value of a receptor may depend, for example, on its frequency, extent of occurrence or conservation status at an international, national, regional or local level.

4.34 Sensitivity is defined within each ES topic chapter and considers factors including:

- Vulnerability of the receptor;
- Recoverability of the receptor; and
- Value/importance of the receptor.

4.35 Sensitivity is generally described using the following scale:

- High;

- Medium;
- Low; and
- Negligible.

4.36 In some cases, a further category of very high has been used.

Magnitude of Impact

4.37 Impacts are defined as the physical changes to the environment attributable to the project. For each topic, the likely environmental impacts have been identified. For each topic the likely environmental change arising from the project has been identified and compared with the baseline (the situation without the project). Impacts are divided into those occurring during the construction and operational phases.

4.38 The categorisation of the magnitude of impact is topic-specific but generally considers factors such as:

- Extent;
- Duration;
- Frequency; and
- Reversibility.

4.39 With respect to the duration of impacts, the following has been used as a guide within this assessment, unless defined separately within the topic assessments:

- Short term: A period of months, up to one year
- Medium term: A period of more than one year, up to five years; and
- Long term: A period of greater than five years.

4.40 The magnitude of an impact has generally been defined used the following scale:

- High;
- Medium;
- Low; and
- Negligible.

4.41 In some cases, a further category of ‘no change’ has been used.

Significance of Effects

4.42 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'). This is identified by considering the magnitude of the impact and the sensitivity or value of the receptor.

4.43 The magnitude of an impact does not directly translate into significance of effect. For example, a significant effect may arise because of a relatively modest impact on a resource of national value, or a large impact on a resource of local value. In broad terms, therefore, the significance of the effect can depend on both the impact magnitude and the sensitivity or importance of the receptor.

4.44 Significance levels are defined separately for each topic. Unless separately defined in the topic chapters, the assessments consider relevant topic specific guidance, based on the following scale and guidance:

- Substantial: Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process with regard to planning permission. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer the most damaging impact and loss of resource integrity;
- Major: These beneficial or adverse effects are considered very important considerations and are likely to be material in the decision-making process;
- Moderate: These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision making if they lead to an increase in the overall adverse effect on a particular resource or receptor;
- Minor: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project; and
- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

4.45 The terms minor, moderate, major and substantial apply to either beneficial or adverse effects. Effects may also be categorised as direct or indirect, secondary, short, medium or long term, or permanent or temporary as appropriate.

4.46 Each chapter defines the approach taken to the assessment of significance. Unless set out otherwise within the chapter, topic chapters use the general approach set out in Table 4.1. For some topics, a simplified or quantitative approach is considered appropriate.

Table 4.1: Typical Assessment Matrix

Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High

Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very High	No change	Minor	Moderate or Major	Major or Substantial	Substantial

4.47 Unless set out otherwise in each topic chapter, effects assessed as moderate or above are considered to be significant in terms of the EIA Regulations within this assessment.

Further Mitigation and Future Monitoring

4.48 Where required, further mitigation measures have been identified within topic chapters. These are measures that could further prevent, reduce and, where possible, offset any adverse effects on the environment.

4.49 Where relevant and necessary, future monitoring measures have been set out within the topic chapters.

Assessment of Cumulative Effects

4.50 The EIA Regulations require consideration of cumulative effects, which are effects on a receptor that may arise when the project is considered together with other proposed developments in the area.

4.51 The cumulative effects of the project in conjunction with other proposed schemes have been considered within each topic chapter of the ES. Other developments considered within the cumulative assessment include those that are:

- Under construction;
- Permitted, but not yet implemented;
- Submitted, but not yet determined; and
- Identified in the Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.

4.52 It is noted that developments that are built and operational at the time of submission are considered to be part of the existing baseline conditions.

4.53 Details of the developments included as part of the cumulative assessment are provided in **Appendix 4.4**.

Interrelationships

4.54 Each topic chapter considers whether or not there are any inter-related effects with other topics included within the EIA that have not already been considered in order to identify any secondary, cumulative or synergistic effects.

Summary Tables

4.55 Summary tables have been used to summarise the effects of the proposed development for each environmental topic.

Consultation

4.56 Any topic specific consultation that has been undertaken during the preparation of this ES is set out in the individual topic chapters.

Local Planning Authority

4.57 The project lies within the administrative area of Pembrokeshire County Council (PCC). MHPA had informally been in liaison with officers from PCC in relation to the proposed development and in particular in relation to ecological and heritage matters, over a period of three years.

4.58 A formal pre-application enquiry was submitted to PCC on 8th February 2018 and a pre-application meeting was held with PCC on 20th February 2018. A subsequent site meeting to discuss key aspects of the proposed development with PCC and Cadw was held on 6th March 2018 and PCC's formal pre-application response was issued on 8th March 2018.

4.59 Cadw visited the site again on 20th September 2018 and subsequent meetings to discuss key aspects of the proposed development with PCC and Cadw were held on 19th December 2018, 18th March 2019 and 5th September 2019.

4.60 Further to the above, topic specialists have consulted the relevant experts within PCC and their consultees on their approach to the EIA through the scoping and assessment process. As mentioned above, any further information regarding consultation with topic specific organisations is detailed within the individual topic chapters.

Public Consultation and Exhibitions

4.61 As part of the consultation process, the applicant has engaged with the local community to inform local people about the project, to explain the development and its likely effects and to take on board any concerns or issues raised.

4.62 Consultation events have included the following:

- Presentations to PCC Full Council on 13th September 2017 and 19th January 2018
- A community engagement event on 17th January 2018 with attendees including the public, Pembroke Town Council, Pembroke Dock Town Council, PCC councillors and officers, Marine Energy Wales and West Wales Maritime Heritage Society
- Drop-in sessions for PCC councillors on 1st and 3rd May 2018;

- Engagement event held 18 December 2019.

4.63 In addition, because the proposed development is a 'major' development as defined in Article 1 of the Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016, a formal pre-application consultation (PAC) has been carried out. This included:

- Displaying a site notice in at least one place on or near the land to which the proposed application relates for a period of no less than 28 days.
- Writing to 'any owner or occupier of any land adjoining the land to which the proposed application relates'.
- Making the draft planning application information available publicly.
- Consulting community and specialist consultees.

4.64 A PAC Report has been submitted with the applications providing further details of the statutory consultation process. The main issues that were identified through the process included:

- [List the main issues that arise from PAC]

4.65 As detailed in the PAC Report, these comments have been considered by the design team in the preparation of the applications and, where relevant, in the EIA process.

Chapter 4 References

Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment.
Institute of Environmental Management and Assessment (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report.
Institute of Environmental Management and Assessment (2015a) Environmental Impact Assessment Guide to Shaping Quality Development.
Institute of Environmental Management and Assessment (2016) Environmental Impact Assessment Guide to Delivering Quality Development.
Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (2017 SI No. 567)
Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016