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Morlais Project
Environmental Statement

Chapter 27: Summary

Volume I

Applicant: Menter Môn Morlais Limited

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Chapter 27: Summary

Author: Royal HaskoningDHV

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GLOSSARY OF ABBREVIATIONS

AEZ	Archaeological Exclusion Zone
AIS	Automatic Information System
AONB	Area of Outstanding Natural Beauty
AWS	Ancient Woodland Site
CD	Chart Datum
CoCP	Code of Construction Practice
CRM	Collision Risk Modelling
DBA	Desk-Based Assessment
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EMMP	Environmental Mitigation and Monitoring Plan
EP1HS	Extended Phase 1 Habitat Survey
ERCoP	Emergency Response Cooperation Plan
ERM	Encounter Rate Modelling
ES	Environmental Statement
FLO	Fisheries Liaison Officer
FRC	Flood Risk Consequence
FSA	Formal Safety Assessment
GAPS	Gwynedd Archaeological Planning Service
GPS	Global Positioning System
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
IALA	International Association of Lighthouse Authorities
IAQM	Institute of Air Quality Management
ICES	International Council for Exploration of the Seas
IoACC	Isle of Anglesey County Council
LAQM	Local Air Quality Management
LWS	Local Wildlife Site
MATZ	Military Aerodrome Traffic Zone
MCA	Maritime and Coastguard Agency
MDZ	Morlais Demonstration Zone
MGN	Marine Guidance Notice
MMO	Marine Mammal Observers
MoD	Ministry of Defence
MPCP	Marine Pollution Contingency Plan
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NSR	Noise Sensitive Receptor
NtM	Notice to Mariners
OWF	Offshore Wind Farm

O&M	Operation and Maintenance
PAD	Protocol for Archaeological Discoveries
PRA	Preliminary Risk Assessment
PWS	Private Water Supplies
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SLVIA	Seascape, Landscape and Visual Impact Assessment
SoCG	Statement of Common Ground
SOPEP	Ship Oil Pollution Emergency Plan
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
TEC	Tidal Energy Converter
TMP	Traffic Management Plan
TP	Travel Plan
TWAO	Transport and Works Act Order
TWG	Technical Working Group
UK	United Kingdom
UKC	Under Keel Clearance
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
VER	Valued Ecological Receptors
WADZ	West Anglesey Demonstration Zone
WFD	Water Framework Directive
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

27. SUMMARY

27.1. INTRODUCTION

1. Menter Môn Morlais Limited (Menter Môn) is seeking a Transport and Works Act Order (TWAO) and Marine Licence for the proposed Morlais Project (herein referred to as 'the Project'). Menter Môn, the applicant, is a not for profit social enterprise company. When consented, the Project will have a generating capacity of up to 240 MW of tidal generating capacity within the Morlais Demonstration Zone (MDZ).

2. This chapter provides a summary of the potential impacts associated with the construction, operation and maintenance (O&M), repowering and decommissioning of the Project based on the assessments undertaken for each receptor, for both offshore and onshore topics as they are presented in the technical chapters of this Environmental Statement (ES) (Chapters 7 to 25). Cumulative and transboundary impacts are also detailed in each technical chapter, where applicable, and are summarised in **Chapter 26, Cumulative, Transboundary Impacts and In-Combination Impacts**.

3. This ES covers a wide range of physical, ecological and human environmental receptors for which potential impacts have been assessed. The methodology for the Environmental Impact Assessment (EIA) is outlined in **Chapter 5, EIA Methodology** and detailed further in each technical chapter (Chapters 7 to 25). Where an impact assessment methodology for a certain receptor deviates from the standard methodology outlined in **Chapter 5, EIA Methodology**, this is explained in the relevant chapter. The approach to EIA has largely been informed by consultation which has been undertaken with relevant technical consultees (see **Chapter 6, Consultation**).

27.2. OVERVIEW OF THE PROJECT

4. The Project is located within one of several marine energy demonstration zones located around the United Kingdom (UK) coast, which have been leased out by The Crown Estate in a bid to encourage and accelerate the marine energy industry. The Project is located within the West Anglesey Demonstration Zone (WADZ), a zone primarily selected for its tidal resource. Menter Môn has been appointed as the manager of the WADZ by The Crown Estate. In this ES, the WADZ is referred to as the MDZ.

5. Two scoping reports were previously submitted to Natural Resources Wales (NRW), the Marine Management Organisation (MMO) and the Isle of Anglesey County Council (IoACC) in support of earlier (lower capacity) versions of the Project. However, since those reports were submitted the proposed installed capacity of the Project has been increased and the Project is now seeking consent for up to 240 MW capacity.

6. A further request for scoping opinion, for the current 240 MW capacity Project, was submitted to the Welsh Government and NRW in April 2018, superseding the earlier scoping requests. The Welsh Government and NRW provided a detailed scoping opinion, which has been the starting point for consultation on the project. Consultation with the Welsh Government and NRW has been ongoing throughout the EIA to discuss developments in the Project, scope and design

parameters, and to agree methodologies and approaches used for environmental surveys and assessments during the EIA process (see **Chapter 6, Consultation**).

7. The Project will comprise an offshore development area including the MDZ covering an area of 35 km², combined with an export cable corridor (ECC) with an area of 4.75 km², plus associated onshore infrastructure contained within an onshore development area of 1 km².

8. The offshore and onshore development areas of the Morlais Project are shown in **Figure 1-1** and **Figure 1-2**, respectively.

9. As a pre-consented and grid connected demonstration zone, a number of different tidal devices and array configurations may be deployed within the MDZ over its lifetime. The Project aims to secure a broad consented project design envelope (PDE), which will encompass a range of tidal device types and technologies with the potential to be installed and operated as part of the project. This approach allows for deployment of a variety of currently available technologies, whilst also allowing for evolution of the designs of tidal devices over time.

10. However, the range and flexibility sought within the consent application has been limited by careful consideration of development scenarios designed to rationalise the likely approach to development and to set workable limits on potential impacts. The PDE approach used in this ES, has been tested in planning law and is often referred to as the 'Rochdale Envelope' approach

11. The details of tidal technologies and infrastructure to be installed post consent, and methods to be used, will be reviewed with regulators prior to deployment and their compliance with the PDE confirmed. The types of devices that have been used to define the Project Design Envelope for the project are discussed in **Chapter 4, Project Description** (**Volume I** of the ES)**.**

12. The key components of the offshore works associated with the Project include tidal devices deployed in multiple arrays within the MDZ, to a maximum installed capacity of 240 MW. Each single array will be comprised of the same type of tidal device (technology type) and located within a discrete location, or berth, within the MDZ. The installed capacity per array is expected to be up to 30 MW, but may in practice be greater or smaller than this, being determined by a number of factors including the individual capacity of the export cables supporting each array, the installed capacity of the Project in full, and the requirements of the tidal devices. The installed capacity of individual arrays is not a parameter of bearing upon the HRA, and all installed arrays, when summed, will fall within the total installed capacity for the Project of 240 MW.

13. For deployment of arrays, the MDZ may be spilt into a series of subzones, with the zones allowing the demarcation of different technology types. Eight indicative subzones within the MDZ are presented through the ES, however, these indicative zones may be modified to meet the requirements of tenants and regulators. Water depths and tidal resource vary across the MDZ (average depth across the MDZ is approximately 40 m), and the subzones are likely to be located in areas of stronger tidal resource, while offering a range of depth parameters.

14. A phased approach to deployment of the project may be taken, with scale and timeframe of potential phasing determined by assessments and consideration of mitigation and management

undertaken within the ES. Dependent on the type of tidal device, full deployment to 240 MW could comprise up to a maximum of up to a maximum of 620 tidal devices supporting up to 1,648 Tidal Energy Convertors (TECS) and up to 740 inter-array cables within the MDZ. This represents the worst-case scenario as outlined in **Chapter 4, Project Description** (**Volume I**)**.**

15. The MDZ and Export Cable Corridor (ECC) will also contain the following ancillary infrastructure;

- Up to nine export cables;
- Up to nine export cable tails (shared with onshore components);
- Navigation and environmental monitoring equipment;
- Mooring and foundation structures; and
- Offshore electrical infrastructure, including submerged, floating or surface emergent hubs.

16. The key components of the onshore works associated with the Project include:

- Landfall works, including:
  - Up to nine Horizontal Directional Drilling (HDD) ducts or trenched equivalents
  - Up to nine transition pits
  - Up to nine export cable tails (shared with offshore components);
- A landfall substation at Ty-Mawr (hereafter referred to as 'Landfall Substation');
- A switchgear building at Parc Cybi (hereafter referred to as 'Switchgear Building');
- A grid connection substation at the existing Orthios Eco-Park to the east of Holyhead (the site of the former Anglesey Aluminium works) (hereafter referred to as 'Grid Connection Substation');
- Onshore cable route installed between Landfall Substation, Switchgear Building and Grid Connection Substation.

17. The expected life of the project is 37 years, including time required for construction, operation, repowering and decommissioning.

18. Following consent award, tidal device developers will be allocated locations or "berths" within the MDZ, within which they will be able to deploy anything from one device to arrays of multiple tidal devices. A repowering of a device/array is defined as the end of a berth/array demonstration cycle, at which time the device, device foundations, support structures, electrical hubs, tenant monitoring equipment, and inter-array cabling will be removed, in line with procedures adopted during decommissioning. Once all developer owned assets listed above have been removed, the Project will then have capacity for 'repowering'. The berth would be available for 'repowering' where new devices may be installed to utilise the vacated berth or be installed at a new berth for further demonstration.

19. For the purpose of defining impact assessment parameters for the repowering phase, an assumption has been made that 50% of the tenants will undertake repowering, i.e. for 50% of the tenants, their infrastructure will be removed and replaced (potentially with different

infrastructure by a different tenant). For the other 50% of tenants, their infrastructure will remain over the lifetime of the project.

20. The Project will also provide communal electrical infrastructure, including the aforementioned Landfall and Grid Connection Substations and onshore electrical cable route. Following construction, the onshore infrastructure will not be subject to repowering, impacts will be limited to O&M and decommissioning.

21. At the end of the intended Project lifetime of 37 years, the Project is likely to be decommissioned. It is assumed that the worst-case scenario is that:

- Cables will be re-used, preserved *in situ* or removed. Removal is considered as the worst-case scenario for metocean and coastal processes;
- Cable protection material will be left *in situ* on the sea bed, assuming that it causes no unacceptable impacts or hazards;
- Gravity base foundations (including gravity anchors) may be left *in situ* with piles cut to an acceptable level;
- All other components of the tidal devices (i.e. TECs, superstructure and support structure) will be removed;
- Any electrical hubs will be removed; and
- Navigation buoys and site monitoring equipment and their foundations / moorings will be removed for re-use.

27.3. MITIGATION

22. The Project has committed to a number of mitigation measures which are embedded in the project design and therefore incorporated in the impact assessments. A number of these commitments have been made as a result of public and/or stakeholder consultation. Key commitments are detailed in **Table 27-1** and are discussed further in **Chapter 4, Project Description**. Where appropriate, further topic specific additional mitigation measures would be adopted and these are detailed in **Table 27-2** and are discussed in each technical chapter.

23. It is expected that the mitigation and monitoring measures as summarised in **Table 27-2** will form part of the eventual consent and licence conditions, many of which will require monitoring and mitigation plans to be produced. An outline Construction Environmental Monitoring Plan (CEMP) for marine aspects and outline Code of Construction Practice (CoCP) for onshore aspects, have been prepared, see **Document MOR/RHDHV/DOC/0073, Outline CEMP** and **Document MOR/RHDHV/DOC/0076, Outline CoCP** for further detail. An outline Pollution Prevention and Management Plan (**Document MOR/RHDHV/DOC/0077, Outline PPMP**) has been prepared to provide an outline of the construction practice mitigation measures to be undertaken for offshore topics, to minimise any impacts predicted.

24. Some topic specific managements will also be prepared in consultation with regulators. An outline Landscape Management Plan (LMP) and outline Invasive Non-Native Species (INNS) Management Plan have been submitted with this application (**Document**

MOR/RHDHV/DOC/0074, Outline LMP and **Document MOR/RHDHV/DOC/0075, Outline INNS Management Plan**, respectively).

25. It is recognised that monitoring is an important element in the management and verification of the actual Project impacts. The requirement for appropriate design and scope of monitoring for two key topic areas, Marine Ornithology and Marine Mammals would be agreed with NRW prior to construction works commencing. An outline Environmental Monitoring and Mitigation Plan (EMMP) has been prepared (see **Document MOR/RHDHV/DOC/0072, Outline EMMP**).

26. The above management plans will be the principle vehicles through which mitigation measures are implemented to ensure that appropriate actions are taken to prevent, reduce and offset potential impacts which have been described in the ES or identified through subsequent consultation and monitoring.

Table 27-1 Design Phase Embedded Mitigation Measures

Potential Impact	Project infrastructure	Mitigation or monitoring measure
Chapter 7, Metocean Conditions and Coastal Processes		
Impact to coastal processes	Morlais Demonstration Zone (MDZ)	Devices within the MDZ will be spaced appropriately to minimise the energy loss between adjacent rows. This also has the added advantage of causing least potential impact on the baseline tidal current regime.
Impact to coastal processes	MDZ	So far as other constraints (for example, **Chapter 24, Chapter Seascape, Landscape and Visual Impact Assessment**) allow, devices within the MDZ are most likely to be placed towards the eastern part of the MDZ, where the baseline tidal currents are higher. This means that changes in the tidal velocities will be a lower percentage change relative to the baseline conditions than if devices were to be placed towards the west of the MDZ.
Chapter 11, Marine Ornithology		
Assessing impacts from current and future tidal devices	MDZ	PDE for tidal devices defined using parameters available from established tidal device technologies, which has been assumed will be developed sufficiently for commercial use at time of deployment.
Chapter 12, Marine Mammals		
Assessing impacts from current and future tidal devices	MDZ	PDE for tidal devices defined using parameters available from established tidal device technologies, which has been assumed will be developed sufficiently for commercial use at time of deployment.
Chapter 15, Shipping and Navigation		
Impacts to navigation routes	MDZ	Preference for the deployment of seabed mounted or buoyant mid water tidal devices in the north of the MDZ to maintain under keel clearance of 20 m or more, as appropriate to vessels using those parts of the MDZ. Mitigation through the application of the spatial measure shown and defined in **Figure 4.1** (**Volume II**), where an area is labelled "Submerged tidal devices with 20 m Under Keel Clearance (UKC) only".

Potential Impact	Project infrastructure	Mitigation or monitoring measure
Impacts to navigation routes	MDZ	Maintenance of an area inshore of any floating / surface emergent arrays deployed in the MDZ, with a minimum distance of 1 km from floating / surface emergent arrays to the nearest coastline. within which a minimum Under Keel Clearance (UKC) of 8 m is maintained. Mitigation through the application of the measure shown and defined in Figure 4.1, where an area is labelled "Submerged tidal devices with an 8 m UKC only". When combined with the export cable corridor also shown in **Figure 4.1** (**Volume II**) (where no devices are deployed), a minimum width of 1km to shore is achieved.
Chapter 19, Onshore Ecology		
Habitat loss / disturbance	Onshore Development Area	The onshore cable corridor will be installed within the existing road network to minimise impacts to surrounding habitats. Where this is not possible due to existing services in the road, the route will be micro-sited to avoid hedgerow, marshy grassland, fen and open mosaic habitat.
Habitat loss / disturbance	Onshore Development Area	The preferred construction method for cable burial is the use of HDD at the landfall location, which will avoid disturbance of the coastal fringe habitats.
Chapter 21, Noise and Vibration		
Reduction of noise disturbance	HDD works	A 3.5 m high acoustic demountable fence will be installed around the HDD equipment and a 2 m high solid hoarding fence will be built around the works compound boundary.
Chapter 24, Seascape, Landscape and Visual Impact Assessment		
Landscape and visual impact	MDZ	Preference for the deployment of visually prominent devices in the south of the MDZ. Mitigation through the application of the measure shown and defined in **Figure 4.1** (**Volume II**), which shows where the deployment of "Floating / surface emergent and submerged tidal devices" is proposed. Potential in the future for deployment of Floating / surface emergent more northern parts of the MDZ will be kept under review on a case by case basis with regulators.
Landscape and visual impact	Landfall Substation	Selecting a recessive location in the landscape, in a relatively low lying position and using the landform to help integrate the landfall substation (cutting into the valley side rather than building a platform out).
Landscape and visual impact	Landfall Substation	Arrangement of plant and equipment within three buildings, resulting in a collection of buildings that break up the scale of the development and create a form and massing that is comparable with local agricultural buildings.
Landscape and visual impact	Landfall Substation	Using colours and materials (including natural materials) that are consistent with the vernacular associated with agricultural buildings and are recessive in the local context.
Landscape and visual impact	Landfall Substation	Using the buildings to define the boundaries of the landfall substation, reducing the requirement for security fencing.
Landscape and visual impact	Landfall Substation	Using stone walls and stock proof fencing as part of new boundaries.

Potential Impact	Project infrastructure	Mitigation or monitoring measure
Landscape and visual impact	Landfall Substation	Minimising the use of external lighting in this rural location.
Landscape and visual impact	Grid Connection Substation	Positioning of the grid connection substation in a location where industrial structures form an established part of the baseline context, and where established vegetation surrounding the site provides effective visual enclosure.
Landscape and visual impact	Switchgear Building	Positioning of the switchgear building within an allocated employment site, adjacent to an existing substation and where surrounding development will be comparable in form, massing and appearance.
Landscape and visual impact	Onshore Cable Corridor	Use of underground cabling to provide the connections between the Landfall Substation and Grid Connection Substation, avoiding the need for overhead cables
Landscape and visual impact	Onshore Cable Corridor	Routing the underground cable within the local road corridors where possible, to minimise potential disruption to field boundaries.

Table 27-2 Additional Mitigation Measures including those through Best Practice and Policy

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Chapter 7, Metocean Conditions and Coastal Processes			
Impact to coastal processes	MDZ	Construction	An outline CEMP and PPMP will be submitted with the TWAO application and Marine Licence application. The development of the detailed design and final CEMP will refine the worst-case impacts assessed in this EIA. It is recognised that monitoring is an important element in the management and verification of the actual Project impacts. The requirement for appropriate design and scope of monitoring would be agreed with NRW prior to construction works commencing.
Chapter 8, Marine Water and Sediment Quality			
Contamination to water quality	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Adherence to a Project-specific CEMP and PPMP, which themselves will take full account of relevant pollution control legislation and guidance, i.e. MARPOL regulations.
Chapter 9, Benthic and Intertidal Ecology			
Habitat and protected species disturbance	ECC	Construction	Pre-construction surveys will be carried out to check for the presence of any rare or protected habitats and species e.g. *S. spinulosa* reefs. Following these surveys, micro-siting of the cable would be used to mitigate impacts to these receptors where possible.
Accidental Release of Contaminants	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Development of an Emergency Response Cooperation Plan (ERCoP) with guidance set out by MCA in MGN 371, issued and approved by MCA.
Accidental Release of Contaminants	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Development of a Pollution Prevention and Management Plan (PPMP) along with the implementation of other construction best practice

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			methods, which would include the following measures: • Notice to Mariners to be issued to reduce collision risks; • Vessels associated with all Project operations will comply with IMO/MCA codes for prevention of oil pollution and any vessels over 400 GT will have on board Shipboard Oil Pollution Emergency Plans (SOPEP); • Vessels associated with all Project operations will carry on-board oil and chemical spill mop up kits; and • Where possible, vessels will avoid working in poor weather conditions.
Habitat and protected species disturbance	MDZ and ECC	Construction	If it is not possible to conduct cable-lay via the preferred HDD method, prior to the excavation of the trench and installation of the cables, a detailed installation methodology would be produced through consultation with NRW. This will outline how the substratum will be reinstated with the right stratification of layers and will describe how physical impacts will be kept to a minimum, for example restricted working corridors for vehicles and personnel. Larger boulders would be moved sideways out of the cable trench corridor to an equivalent area of the shore, prior to trenching work commencing. These boulders would then be used as the upper layer after backfilling the trench.
Habitat and protected species disturbance	ECC	Construction	Pre-construction surveys would be carried out to check for the presence of any rare or protected habitats and species. Following these surveys, micro-siting of the cable would be used to mitigate impacts to these receptors where possible. This would inform areas which should be avoided and therefore minimal loss of important or protected habitats will occur.
Introduction of Invasive Non-Native Species (INNS)	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Compliance with relevant guidance regarding ballast water and INNS risk assessment prior to each deployment to identify mechanisms behind risk identified and appropriate mitigation measures. This can be undertaken once installation vessels and construction / manufacturing ports have been identified.
Habitat loss	ECC	Construction,	Pre-construction surveys will be carried out to check for the presence of any rare or protected habitats and species, including Annex I habitats which may be classified as reef features. Following these surveys, micro-siting of the cable would be used to mitigate impacts to these receptors where possible. This would inform areas which should be avoided and areas which infrastructure should not be placed.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Chapter 11, Offshore Ornithology			
Disturbance to sensitive species	ECC	Construction, Operation, Repowering, Decommissioning	Based on the species known to breed at each of the potentially affected seabird colonies, and excluding any species understood to possess a "low" sensitivity to disturbance and displacement when at sea, it is considered that it is appropriate to prohibit all vessel activities within 300 m of each of these colonies during the breeding season unless an ecological professional is able to supervise activities. This is considered to be March to July for Abraham's Bosom and February to August for South Stack and Gogarth based on the species present at the last count.
Disturbance to sensitive species (40 MW deployment)	MDZ	Operation	The intention of the Project is to install a first commercial phase of development at around 40 MW. Build out to out to that scale and beyond to 240 MW will require several years, and within that timeframe the establishment of monitoring and mitigation measures through an EMMP is proposed. Before the first deployment and between subsequent deployments, detailed information on the behaviour of guillemot and razorbill breeding at the South Stack and Penlas SMP sub-colonies will be collected using three principal methods; coastal vantage point watches, colony counts, and a dual deployment of bird-borne time-depth-temperature recorders and GPS recorders on as large a sample size of the South Stack and Penlas SMP sub-colonies population as is permitted (and is possible due to practical issues such as the ability to safely access colonies for bird capture and tag deployment). Other methods such as boat-based surveys will be considered. This monitoring work would be undertaken in conjunction with SNCBs under appropriate licensing arrangements. Other methods (for example the use of sonar data for diving birds) will be considered for inclusion in the monitoring programme where their deployment could provide useful information. Further information on the proposed monitoring is described in **Document MOR/RHDHV/DOC/0072, outline EMMP**.
Disturbance to sensitive species (240 MW deployment)	MDZ	Operation	To enable the consent of an initial deployment of 240 MW of tidal devices**,** surveillance of key receptors supported by empirical information is required to give confidence that evidence of significance impacts is not present. The general goals of the monitoring strategy would be to provide finer scale information on distribution, densities, diving depths and bird behaviour in the vicinity of TECs, throughout the day and night,

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			refine the accuracy of / reduce uncertainty in input parameters and avoidance rates for ERM/CRM. This monitoring work would be undertaken in conjunction with SNCBs under appropriate licensing arrangements. Further information on the proposed monitoring is described in **Document MOR/RHDHV/DOC/0072, outline EMMP**. Should the proposed monitoring and deployment strategy be successful in justifying the refinement of CRM / ERM models such that the predicted collisions are at a level that would not result in an ecologically significant adverse effect on razorbill and guillemot (e.g. setting of avoidance to at least 99.5 % for breeding guillemot, and 99.9 % for breeding razorbill), the magnitude of impact could be revised to "low adverse" for both species, as well as the South Stack and Penlas SMP sub-colonies. This would result in a residual impact significance of Minor adverse for all three receptors.
Chapter 12, Marine Mammals			
Noise disturbance to sensitive species	MDZ and ECC	Construction, Repowering, Decommissioning	If required, Marine Mammal Mitigation Protocols (MMMPs) will be prepared to reduce the risk of any permanent auditory injury (Permanent Threshold Shift (PTS)) to marine mammals as a result of underwater noise during construction. The MMMP(s) will be developed in the pre-construction period and based upon best available information, methodologies, industry best practice, latest scientific understanding, current guidance and detailed project design. The MMMP(s) will be developed in consultation with NRW and the relevant SNCBs, detailing the proposed mitigation measures to reduce the risk of any physical or permanent auditory injury (PTS) to marine mammals from underwater noise. This will include details of embedded mitigation, as well as details of the 500 m mitigation zone and any additional mitigation measures required in order to minimise potential impacts of any physical or permanent auditory injury (PTS), for example, the use of Marine Mammal Observers (MMOs), Passive Acoustic Monitoring (PAM) and / or activation of acoustic deterrent devices (ADDs). The methods for achieving the mitigation zone would be agreed with NRW and the relevant SNCBs.
Noise disturbance to sensitive species	MDZ and ECC	Construction, Repowering, Decommissioning	The proposed mitigation to reduce the risk of any PTS, for example, 500 m mitigation zone and MMOs during drilling activity, will also reduce the risk of animals in the predicted impact area for Temporary Threshold Shift (TTS).

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Noise disturbance to sensitive species	MDZ	Construction, Repowering, Decommissioning	A MMMP for drilling activity would be prepared prior to construction, for example with the option of having MMOs on site during drilling activities to ensure marine mammals do not enter a predetermined mitigation zone, based on the maximum potential PTS impact range, e.g. 210m for minke whale. Although, to take into account the deeper water at the MDZ compared to the Wylfa site and the potential for increased noise propagation, the proposed mitigation zone for drilling activity would be a precautionary 500m.
Noise disturbance to sensitive species	ECC	Construction, Repowering, Decommissioning	A MMMP for cable installation and cable protection activities would be prepared prior to construction, for example with the option of having MMOs on site to ensure marine mammals do not enter a predetermined mitigation zone, based on the potential PTS impact range, e.g. 100m. Although, the proposed mitigation zone could be a precautionary 500m.
Noise disturbance to sensitive species	MDZ and ECC	Decommissioning	It is proposed the MMMPs would be prepared for decommissioning activities that could have potential underwater noise impacts, such as the removal of tidal devices and cables.
Contamination to water quality	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Adherence to CEMP and PPMP.
Collision risk with sensitive species	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Where possible, all vessel movements will be kept to the minimum number that is required to reduce any potential collision risk. Additionally, vessel operators will use good practice to reduce any risk of collisions with marine mammals.
Collision risk with sensitive species	MDZ	Operation	The mitigation and monitoring plan to reduce the collision risk of marine mammals with operational turbines will be developed in the pre-construction period so that it can be based upon best available information, methodologies, industry best practice, latest scientific understanding, current guidance and detailed project design. It will be developed in consultation with NRW and the relevant SNCBs, detailing the proposed mitigation measures which could include, but may not be limited to, detecting marine mammals in and around the arrays (this could be done using remotely monitored PAM, underwater cameras, autonomous recorders, and / or high definition (HD) and thermal imaging camera systems). There would also be the use of active sonar to detect marine mammals in close proximity to the arrays / devices which could be used to trigger mitigation measures, such as the automatic activation of ADDs to deter marine mammals from a predetermined mitigation zone around the arrays / devices.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			The approach would be based on deployment, monitoring and adaptive management, with regular reviews of the installation at appropriate deployment increments directly related to collision risk to marine mammals, specially bottlenose dolphin, to ensure that no more than one bottlenose dolphin could be theoretically at risk of collision or other significant impact.
Entanglement of sensitive species	MDZ	Operation	The mitigation and monitoring measures to reduce the risk of collision with operational turbines would also reduce the risk of entablement with mooring lines.
Chapter 13, Offshore Archaeology and Cultural Heritage			
Impacts to marine heritage assets	MDZ and ECC	Construction	Mitigation by micro-siting and adoption of archaeological exclusion zones (AEZs) around known wreck sites and medium potential geophysical anomalies
Impact to heritage assets	MDZ	Construction	Mitigation by micro-siting and avoidance or modification of construction foundation design for potential channel areas (unless archaeological value confirmed as low).
Impact to heritage assets	MDZ and ECC	Construction	Mitigation by micro-siting and adoption of AEZs around known wreck sites and medium potential geophysical anomalies. No activities or development work are to take place within the AEZs and no devices, cables (including catenary cables) or other structures may extend to within the AEZs. The extent of each AEZ comprises a footprint on the seabed and the water column above. The extent of the AEZs should reflect the likely extent of the wrecks, with an appropriate buffer. AEZs are recommended, based on the known dimensions of the wreck sites and debris, and allowing for appropriate buffers.
Impact to heritage assets	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Implement the Protocol for Archaeological Discoveries (PAD), as part of the Written Scheme of Investigation (WSI), for Offshore Renewables Projects (The Crown Estate 2014), for the duration of the Project. This protocol provides a system for identifying, recording, reporting and investigating any unexpected discoveries made during the course of the Project, including prehistoric material. If material is found, there are a range of next-step mitigation options including creation of temporary or permanent exclusion zones around areas in which archaeological sites or remains may exist.
Impact to heritage assets	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	Creation of a WSI to cover all future works within the site and to include specification for archaeological involvement prepared in consultation, once the final layout details of the development site and offshore cable corridor is established. This document should be incorporated into the final Environmental Management Plan

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			(EMP). The WSI would set out the design and implementation of a programme of detailed mitigation works, which will include future monitoring of the assets.
Impact to heritage assets	MDZ and ECC	Construction, Repowering, Decommissioning	Geoarchaeological assessment should accompany any geotechnical campaigns which may take place within the site. Geoarchaeological work should follow best practice guidance set out in Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector (Cowrie 2011), and Model Clauses for Archaeological Written Schemes of Investigation: Offshore Renewables Projects (The Crown Estate 2010). The assessment should include review of core logs to determine the potential for deposits of palaeoenvironmental and archaeological interest and follow a staged process which should be determined by the results of the assessment and may include analysis, reporting and publication.
Impact to heritage assets	MDZ and ECC	Construction, Repowering, Decommissioning	A watching brief should also be conducted in the intertidal zone. This is primarily to mitigate impacts upon potential maritime and intertidal remains. It would allow archaeological input in case any such remains are found and also serve to record any isolated or eroded finds from the coast. This would be particularly valuable due to the potential for eroded remains associated with the Late Iron Age and Romano-British settlement which lies c. 200 m above the high-water mark, to the north of Plas Nicol.
Chapter 14, Commercial Fisheries			
Disturbance to fishing activities	MDZ and ECC	Construction, Repowering, Decommissioning	Local fishermen to be notified of all planned construction works via Notice to Mariners
Disturbance to fishing activities	MDZ and ECC	Construction, Repowering, Decommissioning	Project-specific FLO to be appointed during construction phase.
Disturbance to fishing activities	MDZ and ECC	Construction, Repowering, Decommissioning	All construction vessels to exhibit appropriate lighting and markings at all times.
Disturbance to fishing activities	MDZ and ECC	Construction, Repowering, Decommissioning	Construction activities to be planned as far as possible so that they are focussed in discrete areas at any one time, i.e. not spread out across entire site.
Disturbance to fishing activities	MDZ and ECC	Construction, Repowering, Decommissioning	Key areas of static gear deployment to be provided by local fishermen and used to develop agreed transit routes around/through the MDZ that aim to minimise damage to static gear.
Disturbance to fishing activities	MDZ	Construction, Operation,	Where local vessels are able to demonstrate a clear loss in annual income due to loss of fishing grounds within the MDZ, Menter Môn will enter into

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
		Repowering, Decommissioning	discussions on appropriate forms of financial assistance.
Disturbance to fishing activities	MDZ	Operation	▪ Ensuring devices marked as per International Association of Lighthouse Authorities (IALA) Guidance and Aids to Navigation; ▪ Promulgation of information via Notices to Mariners (NtM); ▪ GPS off station alarm / SCADA monitoring system; ▪ Site boundaries marked in accordance with Trinity House; ▪ Surveyed and charted as required by UKHO; ▪ Restrict Navigation through the MDZ; ▪ Exclusion of fishing within the MDZ; and ▪ Establish no anchoring areas.
Chapter 15, Shipping and Navigation			
All potential impacts	MDZ and ECC	Construction, Operation, Repowering, Decommissioning	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Temporary navigation aids as required by Trinity House; ▪ Implementation of Safety Zones; ▪ Construction vessels to be marked in accordance with COLREGS; ▪ Redesign the Northern Boundary; ▪ Undertake device specific NRA's prior to deployments, i.e. once exact locations and scale/type of device deployment is known; ▪ Provisions made for continued use of ferry poor weather routeing or alternative routes to be established; ▪ Exclusion of fishing within the MDZ; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; ▪ Ensure regular programme of device condition surveys; ▪ Enhanced cable protection; and ▪ Establish no anchoring areas.
Chapter 16, Marine Infrastructure and Other Users			
Disruption of MOD activities	MDZ and ECC	Construction, Operation,	Ongoing engagement with the MOD will be undertaken at all times during the construction phase. This will be via formal issue of Notices to

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
		Repowering, Decommissioning	Airmen (NoTAM's) prior to any major works and also be ensuring that regular updates are also provided via construction phase bulletins.
Disruption of MOD activities	MDZ	Operation	All project infrastructure will be communicated to the United Kingdom Hydrographic Office (UKHO) and updated on relevant Admiralty Charts.
Interaction with UXO	MDZ and ECC	Construction, Repowering, Decommissioning	It will be necessary to undertake detailed risk assessment works in the development site and export cable corridor once the final positions of the infrastructure is known in order to identify any potential UXO and establish the requirements for any further geophysical survey of specific locations. This is due to the variety of UXO that could be present. Dependent on the nature of identified UXO further investigations and/or detonations may be required, further to which a certificate would be provided to the contractor to determine that the risks associated with site investigation are reduced to As Low As Reasonably Practicable (ALARP). Any proposed pre-construction marine geophysical surveys should be designed to have the potential capability to detect UXO in sufficient detail across the development site and export cable corridor. Given the moderate risk for encountering UXO in the offshore site, it is considered that the most prudent method of managing the risk to construction would be to undertake a high resolution total field magnetometer or gradiometer survey, with survey line spacing as small as 2m, and a sensor elevation not exceeding 5m (and ideally as low as 2m). Remotely operated vehicle (ROV) inspection would be recommended to confirm whether identified targets were UXO related. It may also be necessary to undertake micro-siting of infrastructure to avoid potential UXO, depending upon the results of detailed investigation. In addition, it would be prudent to ensure that all construction staff have an awareness of the UXO hazard through contractors' induction processes. This will ensure that appropriate action is taken in the event that a suspect item is discovered. Other risk mitigation will depend on the detail and nature of any planned works.
Interaction with active telecommunication cables	MDZ and ECC	Construction, Repowering, Decommissioning	To mitigate any risk of damage to this live cable a 500 m safety buffer will be implemented around the CeltixConnect cable during all construction works. The position of this live cable will be communicated to all installation vessels and the Project will consult with the asset owner directly.
Interaction with UXO	MDZ	Operation	Mitigation measures will be the same as those discussed for the construction phase, with the exception of micro siting the cable. Any vessel

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			involved with the decommissioning phase would need to be equipped to sufficiently detect UXO across the development site and export cable corridor.
Chapter 17, Water Resources and Flood Risk			
Direct Disturbance of Surface Water Bodies	Onshore Cable Corridor	Construction	Minimise the amount of time that temporary dams are in place, flumes or pumps would be adequately sized to maintain flows downstream of the obstruction whilst minimising upstream impoundment and scour protection would be used to protect the bed downstream of the dam from higher energy flows at the outlet of the flumes or pumps. Furthermore, a fish rescue (if necessary) would be undertaken in the area between the temporary dams prior to dewatering.
Direct Disturbance of Surface Water Bodies	Onshore Cable Corridor	Construction	Cable ducts would typically be installed 2m below the bed of the watercourses (sufficient to account for climate-related changes in fluvial flows and erosion). This would be dependent upon local geology and geomorphological risks (e.g. bed scour and channel instability) and avoid exposure during periods of higher energy flow where the bed could be mobilised.
Direct Disturbance of Surface Water Bodies	Onshore Cable Corridor	Construction	Vegetation would not be removed from the banks unless necessary to undertake the works; any vegetation removal would be restricted to the smallest practicable footprint.
Direct Disturbance of Surface Water Bodies	Onshore Cable Corridor	Construction	Where possible, localised improvements to the geomorphology and in-channel habitats will be considered where the watercourse is crossed using open cut techniques. This will include sympathetic reinstatement of banks (e.g. by replacing re-sectioned banks with more natural profiles that are typical of the natural geomorphology of the watercourse). Note that any improvements would be restricted to within the works area of the proposed Project.
Direct Disturbance of Surface Water Bodies	Onshore Cable Corridor	Construction	Buffer strips of vegetation will be retained adjacent to the watercourses, where possible. Where surface vegetation has been removed, it will be reseeded to prevent future runoff (excluding arable crops).
Accidental Release of Contaminants	Onshore Cable Corridor	Construction	Buffer strips of vegetation will be retained adjacent to the watercourses, where possible, to intercept surface runoff and any dissolved or particulate contaminants associated with it.
Accidental Release of Contaminants	Onshore Cable Corridor	Construction	Cable installation activities will be designed to ensure that they will not affect groundwater in any significant manner. The majority of excavations will be shallow (approximately 1.7m deep), except for instances where HDD (or a similar method) is used.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Accidental Release of Contaminants/Sediment and Contaminant Disturbance	Onshore Cable Corridor	Construction, Operation	Any abstractions within the onshore cable corridor will be verified with the landowners prior to construction, and suitable mitigation measures employed at that point to ensure no adverse effects on water supplies occur.
Surface flood risk	ODA	Construction, Operation	Development of a drainage strategy including use of swales to allow for drainage of excess surface water from the Site.
Surface flood risk	ODA	Construction, Operation	Use of permeable surfacing where applicable.
Surface flood risk	ODA	Construction, Operation	Use of flood-resilient building materials e.g. concrete floors and walling.
Surface flood risk	ODA	Construction, Operation	Raised electrical infrastructure to prevent flooding of critical infrastructure during a surface water flood event.
Chapter 18, Ground Conditions and Contamination			
Contamination to groundwater	ODA	Construction	Adherence to the CoCP and PPMP, including Incident/Emergency Response Plan.
Contamination to groundwater	ODA	Construction	Avoidance of construction in areas of historical development, including all historic pits and area of infilled land that has previously been identified.
Contamination to groundwater	ODA	Construction	Should any unanticipated contamination be encountered during the work, work should be halted and a written statement on how contamination will be dealt with should be agreed with the local authority.
Contamination to groundwater	ODA	Construction	If piling is required in areas previously identified as potential sources of contamination, additional mitigation measures may be required prior to piling activities commencing, this may include a ground investigation to identify areas of concern and/or remediation.
Contamination to surface waters	ODA	Construction	The following mitigation will be employed: Code of Construction Practice (CoCP); Construction Design Management Regulation (CDM, 2015); Construction Environmental Management Plan (CEMP); CL:AIRE Industry Code of Practice for waste management; Environment Agency groundwater protection pollution prevention guidance (PPG); and General best practice.
Impacts to human health	ODA	Construction	Site and Excavated Waste Management Plan (SWMP), to ensure that any waste arising is closely monitored, and that waste prevention, re-use or recycling opportunities are maximised. The appropriate waste management route is confirmed following a waste hierarchy assessment.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Impacts to human health	ODA	Construction	A written scheme (based on the Model Procedures for the Management of Land Contamination, CLR11) for the management of contamination of any land and groundwater would be submitted and approved by the local authority. The document will also provide procedures to follow in the event of encountering unexpected contamination and will include proposals to deal with any waste soils excavated during the works.
Contamination to controlled waters	ODA	Construction	Mitigation measures may be required in areas previously identified as potential sources, this may include a ground investigation to identify areas of concern, backfilling with a low permeability material in these areas and/or remediation.
Chapter 19, Onshore Ecology			
Habitat loss / disturbance	Landfall	Construction	Should HDD not be possible and trenching across the maritime cliff and slope habitat and neutral grassland is required, there will be temporary trenching across the maritime cliff and slope habitat and neutral grassland and potential long term pinning of cables on the cliff habitat. Temporary habitat lost will be compensated for within the onshore site or enhancement will take place at nearby adjacent cliff and slope habitat of poorer quality than that which is being temporarily lost. This will be detailed in an EAP. The compensatory/enhancement habitat will aim to maintain the functionality of the habitat that is lost. The area of compensatory/enhancement habitat will be as a minimum the same area of habitat that is lost. Compensatory/enhancement habitat will be subject to a habitat creation and management plan, undertaken in consultation with IoACC and NRW. The habitat creation and management plan will include: ▪ A defined area which will be subject to the plan ▪ A plan for any pre-construction surveys ▪ Details of suitable planting and ground preparation and planting methodology ▪ Details of any post-creation monitoring surveys, reporting and reviewing required ▪ A schedule/programme for delivery of the plan ▪ Responsibilities attributed to the relevant parties to deliver the plan; including creation, maintenance and monitoring of the new habitat ▪ Consideration of the future of the new habitat following decommissioning of the substation site. ▪ Replacement of linkage habitat in the vicinity of ancient woodlands

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Habitat loss / disturbance	Onshore Development Area	Construction	Toolbox talks will be delivered to all construction personnel detailing the importance of the protection of the designated sites: ▪ A strict construction working footprint will be maintained; ▪ Temporary fencing will be installed to physically delineate the rest of the designated site from the construction footprint; Materials and plant will be stored within the construction footprint; ▪ Habitats affected within and outwith the designated site will be combined within the habitat reinstatement plan; and ▪ A habitat re-instatement plan will be implemented upon completion of the works.
Habitat loss / disturbance	Onshore Development Area	Construction	Prior to construction, further detailed botanical survey work is undertaken to ensure the risk of impacts to spatulate (South Stack) fleawort, golden-hair lichen and spotted rock-rose (and other areas of botanically rich vegetation) can be avoided. Such survey work should be carried out in May or June when fleawort is in flower. This survey work will support the decision of where the Onshore Cable Route is micro-sited to, enabling the footprint of overlap into the RSPB reserve to be minimised; and
Habitat loss / disturbance	Onshore Development Area	Construction	Consultation with NRW and RSPB will be undertaken to agree the final micro-siting of the cable route.
Habitat loss / disturbance	Onshore Development Area	Construction	The following mitigation will be implemented to minimise the impact to Habitats of Principal Importance: ▪ Toolbox talks will be presented to all contractors to inform of the Habitats of Principle Importance present in the area: ▪ Microsite to avoid hedgerow, marshy grassland, fen and open mosaic habitat where possible; ▪ A strict construction working footprint will be maintained; ▪ Temporary fencing will be installed to physically delineate the rest of the habitats of principal importance from the construction footprint; ▪ Materials and plant will be stored within the construction footprint; ▪ Habitats affected within and outwith the designated site will be combined within the habitat reinstatement plan;

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ Compensation habitat will be instated for any areas of Habitats of Principal Importance that are permanently lost; ▪ A habitat re-instatement plan will be instigated upon completion of the works; ▪ Root protection areas will be fenced off during construction; ▪ A pre-construction assessment of all trees to be removed will be undertaken by a suitably qualified arboriculturist; ▪ Where hedgerows are disturbed, they will be replaced following completion of construction activities to the same quality or better, with native species of local provenance. The replanting plan will be detailed in the EAP; ▪ To mitigate impacts to the OMH surrounding the aluminium works, habitat reinstatement will be undertaken upon completion of the construction phase. This would involve the reinstatement of excavated material in a way that would provide low nutrient substrate suitable for ephemeral vegetation. The replanting plan will be detailed in the EAP. Since this area is subject to scrub encroachment it is possible that some localised disturbance will be beneficial (to reduce scrub and maintain patches of open habitat); and ▪ If trenching is required at landfall through the designated land, further consultation will be undertaken with NRW and RSPB to determine full mitigation, methodology and to obtain any necessary consents.
Habitat loss / disturbance	Onshore Development Area	Construction	▪ To minimise impacts to Cloddiau, all Cloddiau to be left in situ will be clearly marked by a one metre buffer fence. ▪ A tool box talk will be presented by the ECoW to all construction personnel to ensure the importance of these features is understood. ▪ Where Cloddiau cannot be avoided by going around or underneath, the walls will be carefully dismantled by an appropriately trained professional and stored within a marked fenced area during construction. ▪ As soon as possible upon completion of construction activities, the stone walls will be

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			rebuilt in a traditional style, reusing the original materials. ▪ The EMP will provide details of storage methods and locations of the vegetated stones.
Disturbance to protected species: otter	Onshore Development Area	Construction	▪ As otter is a mobile species, a pre-construction survey for otter will be undertaken in all potential habitat prior to construction to confirm no otters have entered the project area since the 2018 surveys. This includes any watercourses, ditches or areas which may provide suitable resting sites. Should evidence of otter be found, further consultation with NRW will be conducted as ascertain the most appropriate procedures to follow. ▪ During construction activities, precautionary methods will be implemented to ensure risk of killing or injuring are minimised, such as including exit ramps on excavations; ▪ Prior to construction, a tool box talk on otter will be delivered to all relevant parties by the ECoW.
Disturbance to protected species: water vole	Onshore Development Area	Construction	▪ As water vole is a mobile species, a pre-construction survey for water vole will be undertaken in all potential habitat (i.e. ditches) prior to construction to confirm no water vole have entered the project area since the 2018 surveys. This includes any watercourses or ditches whether water vole were previously suitable or not. Should evidence of water vole be found, further consultation with NRW will be conducted to ascertain the most appropriate procedures to follow (such as micro siting, water vole method statement or displacement under licence (trapping is not anticipated to be necessary)); ▪ Prior to construction, a tool box talk on water vole will be delivered to all relevant parties by the ECoW.
Disturbance to protected species: red squirrel	Onshore Development Area	Construction	Prior to construction, a tool box talk on red squirrel will be delivered to all relevant parties by the ECoW.
Disturbance to protected species: badger	Onshore Development Area	Construction	Under a worst-case scenario, Sett 1 is unavoidable, either because of HDD or trenching activities. If Sett 1 cannot be avoided, a licence would need to be obtained from NRW to temporarily or

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			permanently exclude it. This may sometimes require the provision of a nearby replacement sett. A licence would restrict activities affecting the sett to the licensable period between July and November in a given year. A plan for sett exclusion and creation of artificial habitat will be developed in consultation with NRW and will be informed by preconstruction surveys (such as bait marking surveys) to determine the level of activity at the sett and surrounding habitat, and territories of resident badgers nearer the time of construction.
Disturbance to protected species: badger	Onshore Development Area	Construction	A pre-construction survey will be undertaken for badgers and evidence of new badger setts prior to construction activities commencing. There are numerous areas of dense thick scrub within the Onshore Study Area which could not be comprehensively searched for setts (as described in the limitations above). It is therefore recommended that if any dense scrub requires clearance that precautionary checks for badger sett are carried out while vegetation is removed before any more intrusive ground work is carried out. Where possible, the survey will be undertaken in winter months when the scrub vegetation is low and therefore more accessible.
Disturbance to protected species: badger	Onshore Development Area	Construction	▪ Precautionary methods with be implemented to minimise harm to badgers during construction, including use of exit ramps and covering trenches deeper than 1 m at the end of each working day to prevent animals becoming trapped. ▪ Badger proof fencing will be used around the Onshore Development Area to ensure badgers do not enter the site. Particular attention will be paid around the landfall. ▪ Post construction monitoring will be undertaken. ▪ Ecological management proposals will be included within the EAP. ▪ Prior to construction, a tool box talk on badgers will be delivered to all relevant parties by the ECoW.
Disturbance to protected species: bats	Onshore Development Area	Construction, Operation	The following mitigation will be included within an EAP: ▪ Night-time lighting of construction sites should be avoided where possible; ▪ If night-time working is necessary, then lighting will be designed in accordance with Bats and artificial Lighting in the UK (BCT, ILE, 2018);

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			and Guidance Notes for the Reduction of Obtrusive Light ILE (2011). This is likely to require: ▪ No direct lighting of the woodland edges, scrub and hedgerow habitats, or historic roost site and use of dark buffer zones; and ▪ Consideration of appropriate luminaire specifications, sensitive light configuration, screening, glazing, dimming and part-night lighting to minimise impacts; ▪ A toolbox talk by a suitably qualified ecologist will be undertaken as part of the induction of all construction staff; ▪ Should a bat be encountered on site during the works, works will cease in that area and the advice of an experienced bat ecologist sought prior to re-commencing ▪ A survey will be undertaken to confirm the presence or absence of the historic bat roost record. If present, a buffer of 30m will be placed around the bat roost and works will not take place within this zone to avoid disturbance to this feature. ▪ Building, tree or woodland removal is not anticipated. If it is required it is recommended that further survey and assessment is carried out, in consultation with NRW, to confirm that potential roost features are not present; and ▪ Hedgerow will be replanted following completion of construction works. ▪ Lighting will be designed in accordance with Bats and artificial lighting in the UK (BCT, ILE, 2018); and Guidance Notes for the Reduction of Obtrusive Light ILE (2011). This is likely to require: ▪ No direct lighting of the woodland edges, scrub and hedgerow habitats, and use of dark buffer zones; ▪ Consideration of appropriate luminaire specifications, sensitive light configuration, screening, glazing, dimming and part-night lighting to minimise impacts.
Disturbance to protected species: reptiles	Onshore Development Area	Construction	As reptiles are mobile, a pre-construction survey for reptiles will be undertaken in all potential habitat prior to construction.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Disturbance to protected species: reptiles	Onshore Development Area	Construction	Precautionary methods of working will be utilised, including clearance of vegetation under supervision of the ECoW. The precautionary methods of working will be detailed in a CEMP and submitted to IoACC in advance of the works. The details will be dependent on the timings of the work, and may include the following: ▪ Where possible, the works will be timed within the reptile active season (March to October inclusive); ▪ A mitigation strategy for reptiles will be informed by the pre-construction survey and will be produced prior to construction and submitted to the LPA, including: ▪ Trapping and translocation, if required; ▪ Details of appropriate habitat improvement works to receptor sites for displaced reptiles; ▪ Post construction monitoring ▪ Details of the temporary fencing (including type, location and maintenance methodology) to be used to prevent reptiles from re-entering the site; ▪ Details of ecological supervision during construction including a toolbox talk; and ▪ Reptile welfare (including handling methodology); and ▪ Following construction, habitat will be reinstated as a minimum to the same value as before, using native species of local provenance.
Disturbance to protected species	Onshore Development Area	Construction	Pre- construction HSI and eDNA surveys (methodology to be agreed with IoACC in advance of surveys) to confirm the absence of GCN in the area and include a method statement within the EMP for what to do in the unlikely event an GCN is encountered on site. In addition, a toolbox talk by a suitably qualified ecologist will be undertaken as part of the induction of all construction staff.
Disturbance to protected species: breeding birds	Onshore Development Area	Construction	▪ No construction works will take place within 500 m of an active chough nest during the breeding season. ▪ A toolbox talk by the ECoW or a suitably qualified ecologist with ornithological expertise will be undertaken as part of the induction of all construction staff. ▪ Vegetation removal will be carried out outside the breeding season for birds as far as

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			possible. If vegetation removal is required within the bird breeding period, checks for nesting birds will be carried out by an ecologist; if nests are present the work will be delayed until young have fledged. This mitigation is not practical for large scale development and therefore should only be used if vegetation removal cannot be undertaken outside the bird breeding season in small parcels of land (for example where land access has been a constraint). ▪ Pre-construction checks for potential barn owl nesting sites (focusing on agricultural buildings) will be undertaken, in case there are any nests within potential disturbance distance of onshore works. Should any active nests be found, works in the vicinity of the nest will stop pending advice by the ECoW or a suitably qualified ecologist with ornithological expertise on the requirement for a works exclusion buffer around the nest until breeding activity is completed (chicks have fledged, or a nesting attempt has failed). ▪ Scrub, hedgerow, marshy grassland and maritime cliff and slope habitat that cannot be avoided will be subject to pre-construction walkover habitat survey in advance of construction commencing to inform the habitat reinstatement plans. ▪ Habitat reinstatement will be undertaken following completion of construction, using native species of local provenance. Landscaping plans will take into consideration of creation of breeding bird habitat.
Disturbance to notable plant species	Onshore Development Area	Construction	The location of the wild leek and small flowered catchfly will be clearly marked and identified with 5 m buffer fencing, and this area will be avoided during any construction work. This may require a bypass section of track to be temporarily constructed.
Disturbance to notable plant species	Onshore Development Area	Construction	It is recommended that prior to construction, further detailed botanical survey work is undertaken to ensure the risk of impacts to spatulate (South Stack) fleawort, golden-hair lichen and spotted rock-rose (and other areas of botanically rich vegetation) can be avoided. Such survey work should be carried out in May or June when fleawort

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			is in flower and morning time when spotted rock rose is more likely to flower.
Disturbance to notable plant species	Onshore Development Area	Construction	If, under a worst-case scenario, the cables are trenched at landfall, further consultation will be undertaken with NRW and RSPB to determine appropriate methods, mitigation and any appropriate consents to undertake the work. This would include any habitat reinstatement and planting schemes which will be detailed in the EAP, along with frequency of any required monitoring programme.
Disturbance to notable plant species	Onshore Development Area	Construction	A toolbox talk detailing the importance of these plant species will be delivered by the ECoW to all personnel working on site.
Disturbance to notable plant species	Onshore Development Area	Construction	Mitigation will include: - A pre-construction survey will be undertaken to ascertain up-to-date locations of any non-native invasive species within the Study Area; - An Invasive Species Management Plan (specific to Japanese knotweed) will be included in the EMP; and - A toolbox talk will be delivered by the ECoW to all personnel working on site.
Spread of INNS	Onshore Development Area	Construction	A buffer of 10 m will be placed around the known strands of non-native invasive species. If work is required in close proximity to the plants (e.g. within 7 m), advice from a specialist contractor is recommended to determine how any spoil generated from the work should be dealt with (for example, any possibly contaminated spoil may need to be disposed of at waste facility that is licenced to accepted controlled waste), and to agree an appropriate working method in this area. Treatment of strands of Japanese knotweed may be required if avoidance is not possible.
Chapter 20, Onshore Archaeology and Cultural Heritage			
Damage to previously unidentified heritage assets	Onshore Development Area	Construction	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use HDD on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.
Damage to previously unidentified heritage assets	Onshore Development Area	Construction	The predicted phases of archaeological evaluation and mitigation for the Project are ▪ Geophysical survey of the landfall area, landfall substation location and onshore cable route

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			where it passes through fields or adjacent to the road where archaeological potential has been identified. This would be undertaken pre-determination of the Transport and Works Act Order (TWAO) application, to further inform stakeholders of the Project's archaeological potential; ▪ Archaeological trial trenching, to be undertaken in areas where archaeology is identified in the geophysical survey results. This will be done following consultation with GAPS, potentially pre-determination; ▪ Areas of pre-construction archaeological excavation, if the trenching results reveal that significant archaeological remains are located within the Project's footprint; ▪ Archaeological monitoring (Watching Brief) of the cable installation within the road footprint, in areas where archaeological potential is identified; ▪ Results would be presented in a grey literature report, followed by a publication if the results are worthy of such; and ▪ Wider dissemination of the results of archaeological works, through talks to local history and archaeology groups, schools or interested parties, to inform the public.
Damage to scheduled monument	Onshore Development Area	Construction	If the field to the west of the road [adjacent to Porth Dafarch Hut Circles] is used for installation, it would be far enough away to reduce any impacts from potential vibration or hydrological changes. HDD should also be assessed as a potential construction method for this section. Archaeological evaluation and investigation of the western field would be undertaken, to ensure any archaeological remains within the field that might be associated with the scheduled monument are preserved by record.
Chapter 21, Noise and Vibration			
Noise Impacts	Onshore Development Area	Construction	Standard construction noise mitigation practices and good practice construction management will be adopted throughout the construction phase. These will be captured within a Construction Noise Management Plan (CNMP) which forms part of a Code of Construction Practice (CoCP).
Noise Impacts	Onshore Development Area	Construction	The Control of Pollution Act and BS 5228 define a set of Best Practice working methods and mitigation

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			measures, referred to as BPM. Examples of these measures include: ▪ Where possible, locating temporary plant so that it is screened from receptors by on-site structures, such as site cabins; ▪ Using modern, quiet equipment and ensuring such equipment is properly maintained and operated by trained staff; ▪ Applying enclosures to particularly noisy equipment where possible; ▪ Ensuring that mobile plant is well maintained such that loose body fittings or exhausts do not rattle or vibrate; ▪ Ensuring plant machinery is turned off when not in use; ▪ Providing local residents with 24 hour contact details for a site representative in the event that disturbance due to noise from the construction works is perceived; and ▪ Establishing a community engagement process including informing local residents about the construction works, detailing the timing and duration of any particularly noisy elements, and providing a contact telephone number to them; ▪ Keeping noisy deliveries to the middle of the day where possible.
Noise Impacts	Onshore Development Area	Construction	The site induction programme and site rules should include good working practice instructions for site staff, managers, visitors and contractors to help minimise noise whilst working on the site. Good working practice guidelines/instructions could include, but not be limited to, the following points: ▪ Avoiding unnecessary revving of engines; ▪ Plant used intermittently should be shut-down between operational periods, where possible; ▪ Avoiding reversing wherever possible; ▪ Reporting any defective equipment/plant as soon as possible so that corrective maintenance can be undertaken; and ▪ Handling material in a manner that minimises noise ▪ Maintenance of construction plant ▪ Maintenance of temporary plant should be carried out routinely and in accordance with the manufacturers' guidance.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ A regular inspection of all plant and equipment should be undertaken to ensure that: ▪ All plant is in a good state of repair and fully functional; ▪ Any plant found to be requiring interim maintenance has been identified and taken out of use; ▪ Acoustic enclosures fitted to plant are in a good state of repair; ▪ Doors and covers to such enclosures remain closed during operation; and ▪ Any repairs are being undertaken by a fully qualified maintenance engineer.
Noise Impacts	Onshore Development Area	Construction	Careful scrutiny of plant selection at procurement stage would ensure that the associated noise impact of the plant is reduced as much as reasonably possible.
Chapter 22, Air Quality			
Dust and Particulate Matter Emissions	Onshore Development Area	Construction	Measures in relation to dust management include: ▪ Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by IoACC; ▪ Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken; ▪ Make the complaints log available to IoACC when asked; ▪ Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book; ▪ Liaise with any other high-risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes; ▪ Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ Plan the working area so that machinery and dust causing activities are located away from receptors, as far as is practicable; ▪ Erect solid screens or barriers around dusty activities, or the works boundary, that are at least as high as any stockpiles on site; ▪ Take measures to control site runoff of water or mud; ▪ Keep fencing, barriers and scaffolding clean using wet methods; ▪ Remove materials that have a potential to produce dust from site as soon as possible; ▪ Cover, seed or fence stockpiles to prevent wind whipping; ▪ Ensure all vehicles switch off engines when stationary - no idling vehicles; ▪ Minimise the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; ▪ Impose and signpost a maximum-speed-limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas; ▪ Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials; ▪ Implement the Travel Plan that has been produced for the proposed scheme, which supports and encourages sustainable travel for contractor operatives and staff (public transport, cycling, walking, and car-sharing); ▪ Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems; ▪ Use enclosed chutes and conveyors and covered skips; and ▪ Bonfires and burning of waste materials should not be permitted.
Dust and Particulate Matter Emissions	Onshore Development Area	Construction	Measures in relation to earthworks include: ▪ Re-vegetate or cover earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable; and ▪ Only remove the cover in small areas during work and not all at once.

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Dust and Particulate Matter Emissions	Onshore Development Area	Construction	Measures specific to construction include: ▪ Ensure sand and other aggregates are stored in a controlled and well-managed manner; ▪ Avoid scabbling (roughening of concrete surfaces) if possible; ▪ Ensure bulk cement and other fine powder materials are delivered in enclosed tankers to prevent escape of material; and ▪ For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust release.
Dust and Particulate Matter Emissions	Onshore Development Area	Construction	Measures specific to trackout include: ▪ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site; ▪ Ensure vehicles loaded with dusty materials entering and leaving sites are covered to prevent escape of materials during transport; ▪ Record all inspections of haul routes and any subsequent action in a site log book; ▪ Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; ▪ If required as a result of visual inspection, install a wheel washing system (with rumble grids to dislodge accumulated dust and mud) prior to leaving the site where reasonably practicable; and, ▪ Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits; and.
Dust and Particulate Matter Emissions	Onshore Development Area	Construction	NRMM and plant would be well maintained. If any emissions of dark smoke occur, then the relevant machinery should stop immediately, and any problem rectified. In addition, the following controls would apply to NRMM: ▪ All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004); ▪ All NRMM will comply with regulation (EU) 2016/1628 of the European Parliament and of the European Council;

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ All NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting); ▪ The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks; and ▪ Implementation of energy conservation measures including instructions to throttle down or switch off idle construction equipment, switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, and ensure equipment is properly maintained to ensure efficient energy consumption.
Chapter 23, Traffic and Transport			
Road Safety	Onshore Development Area	Construction	Landfall Substation new access at South Stack Road: ▪ Development of a detailed CTMP ▪ Advanced scheduling of deliveries and assigning of delivery slots to reduce the potential for two vehicles to meet at the access; ▪ Requiring drivers to call ahead to confirm their expected arrival time; and ▪ Controlling all departing HGV traffic through the use of a banksman.
Road Safety	Onshore Development Area	Construction	Additionally: ▪ The access would be provided with appropriate visibility splays to allow vehicles to safely access and exit, these would be maintained by the appointed Contractor; ▪ The access would incorporate a bound (concrete or asphalt) surface to prevent dust and dirt being tracked on to the highway, reducing the potential for vehicles to lose control on loose material; ▪ Temporary direction and warning signs to advise of turning vehicles would be provided for the construction phase. This signage would highlight the proposed access to drivers to avoid late breaking manoeuvres and highlight to the travelling public the potential for turning vehicles; and

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ A temporary reduction in the existing speed limit in the vicinity of the access would be implemented during the construction phase to reduce the speed of vehicles in the vicinity of the access.
Road Safety	Onshore Development Area	Construction	Grid connection substation access (existing Orthios Eco Park access from the A5) ▪ In order to make the public aware of the potential for constriction traffic to be using these accesses, temporary direction and warning signs to advise of turning vehicles would be provided. This signage would highlight the proposed accesses to drivers to avoid late breaking manoeuvres and highlight to the travelling public the potential for turning vehicles.
Traffic impacts	Onshore Development Area	Construction	With regards to managing the traffic through the single lane closure following measures would be applied to reduce the potentially adverse impacts. These measures would be agreed with the local highway authority post consent once a Contractor has been appointed through the development of a detailed CTMP, the measures would include: ▪ Controlling traffic through temporary traffic signals/ stop go boards; ▪ Maintaining a safe route for pedestrians through the works area; and ▪ Working with the local highway authority and local stakeholders to agree an appropriate time to undertake the works.
Traffic impacts	Onshore Development Area	Construction	With regards driver delay impacts upon the three properties that would be within the road closures, the following additional mitigation measures are proposed: ▪ Establishing a direct line of communication with residents to discuss the proposed timing of the works; ▪ Providing temporary parking within the closed section of highway as close to the properties as possible; ▪ Ensure that a banksman is available to guide residents safely through the works area; and

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ Provide assistance with carrying heavy items (shopping, bins, etc.) between the resident's vehicles and home.
Chapter 24, Seascape, Landscape and Visual Impact Assessment			
Landscape and visual impact	Onshore Cable Corridor	Construction	Reinstatement of the ground and landscape features following construction.
Landscape and visual impact	MDZ	Design	Further consideration could be given to mitigation at the detailed design stage, such measures could include: ▪ The colour of the tidal devices; ▪ The navigational lighting that is required; and ▪ The layout configurations of tidal devices within arrays e.g. curved rows of devices or irregular placement.
Landscape and visual impact	Landfall Substation	Design	Considering limited application of planting to help integrate the landfall substation, acknowledging the limitations associated with this in the open and exposed coastal landscape.
Chapter 25, Socioeconomics, Tourism and Recreation			
Social Benefits - Decentralisation of Economic Growth	MDZ, ECC and Onshore Development Area (ODA)	Construction	▪ Seek to localise as much development and operational expenditure in Anglesey and North Wales as possible; ▪ Encourage the local supply chain to invest in key capabilities that maximise local contracting opportunities; ▪ Encourage appropriate public sector support and private sector investment to back the supply chain endeavours; ▪ Seek to expand the marine energy and related renewables and energy systems activity in Anglesey and North Wales, as much as possible; ▪ Seek to expand the range of development activities, to increase the activity during the operations years.
Wellbeing of Future Generations - Green Branding of Locality	MDZ, ECC and Onshore Development Area (ODA)	Construction	▪ The mitigation and optimisation measures that are considered appropriate by the assessors regards wider green branding for Anglesey associated with this project are: ▪ Establishing and maintaining a strong online and news media presence for the brand through the management of news, data, information and progress announcements; ▪ Ensuring that all activities undertaken by the Project and its delivery partners are aligned

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			with a defined set of brand values and guidelines; ▪ The capturing of video and photo opportunities associated with all aspects of project development; ▪ Having resources available to welcome and host reporters and other interested parties; ▪ Organising regular local events to share the brand with local residents and ensure local buy-in; ▪ Attending sector events nationally and international as appropriate; and ▪ Seeking opportunities for telling the story of the Project through any media.
Economic Impacts - Direct and Secondary Income	MDZ, ECC and Onshore Development Area (ODA)	Construction	▪ The Project should attempt to maintain pressure on UK and Welsh Governments to support marine renewables; ▪ The Project should encourage the development of support mechanisms for marine energy, such as Innovation PPA, or ring-fenced Innovation CfD, being promoted nationally (Marine Energy Council, 2019); ▪ Encourage Schools, Colleges and Universities to develop appropriate training for the workforce; ▪ Fully develop a local and regional supply chain, that can take advantage of the opportunities that develop, thorough the project maximising the GVA benefits.
Economic Impacts - Accumulation of Grant Support	MDZ, ECC and ODA	Construction	▪ Continued pressure by the Project team exerted on UK and Welsh Government to support Marine Renewables; ▪ Continued pressure by the Project team in support of the suggested development of support mechanisms for Marine Energy, such as Innovation PPA or ring-fenced Innovation CfD, being promoted nationally (Marine Energy Council, 2019); ▪ Research full range of grant options available to projects that intend to utilise the Project; ▪ Full engagement with local and national development agencies to ensure all support mechanisms are fully developed;

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
			▪ There are some risks with EU funding around Brexit. This can be mitigated against by fully engaging with the governments' transition team.
Economic Impacts - Level of Commerce Activity - Green Cluster Creation	MDZ, ECC and ODA	Construction	▪ Ensure that there is an understanding of the benefits of clustering within all key stakeholders; ▪ Ensure that all activities undertaken by the Project support cluster creation; in particular, through progressive partnership type procurement processes, wherever practical/possible; ▪ Encourage established sector players to create/join in with a local cluster; and ▪ Advocate the inherent advantages and opportunities there are in Anglesey (and possibly North Wales) for such a cluster to be created.
Employment Issues - Job Numbers	MDZ, ECC and ODA	Construction	▪ Support given to developers to manufacture and construct the devices within Wales; ▪ Develop training programmes to up-skill the workforce; ▪ Highlight the job availability across Wales, timely and in advance of the developments to encourage workforce to prepare; ▪ Encourage the supply chain to prepare and bid for any contracts; and ▪ Create cluster of local and region companies that can ensure local content.
Employment Issues - Quality of Jobs	MDZ, ECC and ODA	Construction	▪ Development of appropriate training to up-skill the work force in advance of the Project; ▪ Highlight the job availability across Wales in a timely fashion and in advance of the developments to encourage workforce to prepare; ▪ Encourage Schools, Colleges and Universities to develop appropriate training for the workforce; ▪ Incentivise developers to create apprentices and other training opportunities; and ▪ Encourage some of the specialist skilled workforce to relocate to the area.
Skills impacts - Shortage of Necessary Skills	MDZ, ECC and ODA	Construction	▪ The Project should be ensuring there is a robust and experience based plan of what

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
- Reduced Performance of Project			capacity, skills, and experience is needed to run a site of the type envisaged; ▪ The project should establish good links and exchange of information, on a commercial basis if necessary, with established operational tidal sites; ▪ Carefully considering the personnel engagement strategy that ensures the right expertise and experience is available to the Project; and ▪ Establishing an advisory board of experienced peers who can help identify any areas of weakness and recognise areas of strength.
Training Impacts - New Skills and Competence Needs	MDZ, ECC and ODA	Construction	▪ Ensuring there is a robust and experience based plan of what capacity, skills, and experience is needed to run a site of the type envisaged; ▪ Menter Mon, the third-party managers of the Project, have a remit to maximise the economic benefit to Anglesey and therefore the retraining of the potential workforce will be a high priority, to optimise and maximise this potential beneficial impact; ▪ As part of the project Menter Môn should map out the opportunities and encourage the development of specific training programmes, that focus on the development opportunities identified in the mapping process; and ▪ These options could be developed throughout the phases of the project, allowing for increased employment opportunities.
Training Impacts - Tertiary BSc, Eng, PhD	MDZ, ECC and ODA	Construction	▪ The full support of the local and regional universities to fully utilise the demonstration zone to develop research and courses and seek out tidal energy research students should optimise this impact; and ▪ Encourage schools, colleges and universities to develop appropriate training for the workforce.
Other Impacts - Additional Local Services available within the local area - New Technical Skills, Workboats,	MDZ, ECC and ODA	Construction	▪ Establishing a clear list of anticipated requirements well in advance of the need actually arising and engaging with the local supply chain to assess their interest in engaging in capacity building;

Potential Impact	Project infrastructure	Project Phase	Mitigation or monitoring measure
Cranes, Better Marine Skills			▪ Ensuring that there are appropriate, transparent and legal procurement mechanisms to reward proactive local capacity investment, with participation in future work activities; ▪ Exploring parallel capacity building projects with prospective supply chain partners; ▪ Establishing formal supply chain partnerships where there is strong alignment of purpose; and ▪ Ensuring that site users and clients are made aware of and beneficially directed to engage with, local suppliers who have invested in important local capacity.
Energy Impacts - Energy Security – More Green Electricity, Local Supply, Diversity of Supply		Construction	▪ Consider the actual scale and pattern of power outputs at different stages of development, with different technologies and with predicted maintenance and unplanned outages; ▪ Consider the merits or otherwise of introducing power storage and grid system balancing technologies alongside the generation assets; ▪ Consider specialised energy markets that may exist locally, that could be directly serviced by power outputs; and ▪ Consider how supplies of tidal energy might add to the resilience of the Anglesey and nearby grid system.
Energy Impacts - Decarbonisation - Clean Energy, Balancing Services, Spin-Off Capacity	MDZ, ECC and ODA	Construction	▪ Full assessment of the possible carbon savings for each project within the overall Morlais project should be quantified and maximised; ▪ An assessment methodology that highlights how projects and the supply chain can make carbon savings should be developed; ▪ Balancing services that can complement the introduction of tidal energy should be developed, in parallel with the phases of the Project; and ▪ Spin off opportunities should be encouraged and developed alongside the different phases of the Project.

27.4. SUMMARY OF POTENTIAL IMPACTS

27. The purpose of the EIA is to inform the decision-maker, stakeholders and all interested parties of any significant environmental issues that may result from the Project during its construction, operation and (where relevant) decommissioning. The EIA provides an independent assessment of the Project to enable interested parties to understand such potential impacts before making decisions on whether consent for the Project should be granted.

28. The process of identifying and assessing the environmental impacts of the proposed Project is iterative, running in parallel with the project design. Where any of the potential impacts are identified as being significantly adverse then, where possible, the design will be altered to mitigate these impacts.

29. The impact assessment for each chapter has considered any relevant embedded mitigation as outlined in **Table 27-1** and presents an initial impact significance. Where significant adverse impacts have been identified as a result of the Project, additional site specific mitigation measures, as outlined in **Table 27-2** are proposed to seek to reduce residual impacts to acceptable (non-significant) levels.

30. **Table 27-3** to **Table 27-21** provide a summary of the results of the impact assessment for each technical chapter within this ES, whilst overall conclusions are presented in **Section 27.5**.

Table 27-3 Summary of Potential Impacts for Metocean And Coastal Processes

Potential Effect	Scale	Scale	Duration	Frequency	Reversibility	Magnitude of Effect
Construction and Repowering Phase						
Effect 1: Changes in suspended sediment concentrations due to foundation installation in the Project	Near-field	Low	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 2: Changes in sea bed level (morphology) due to deposition during foundation installation in the Project	Near-field	Low	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 3: Changes in suspended sediment concentrations during offshore export cable installation (including nearshore) (construction only)	Near-field	Low (sand ridge) to Negligible (elsewhere)	Negligible	Negligible	Negligible	Low (sand ridge) to Negligible (elsewhere)
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 4: Changes in sea bed level due to offshore export cable installation (construction only)	Near-field	Low (sand ridge) to Negligible (elsewhere)	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 5: Changes in suspended sediment concentrations during inter-array cable installation	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 6: Changes in sea bed level due to inter-array cable installation	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 7: Changes in sea bed level (morphology) due to indentations during installation in the Project	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	No effect	Negligible	Negligible	Negligible	Negligible
Operational Phase						
Effect 1: Changes to the tidal regime due to the presence of structures in the Project	Device	Medium	High	Medium	Negligible	Medium
	Near-field	Low - Medium	High	Medium	Negligible	Low - Medium
	Far-field	Negligible	High	Medium	Negligible	Negligible

Potential Effect	Scale	Scale	Duration	Frequency	Reversibility	Magnitude of Effect
Effect 2: Changes to the wave regime due to the presence of structures in the Project	Device	Medium	High	Medium	Negligible	Medium
	Near-field	Low	High	Medium	Negligible	Low
	Far-field	Negligible	High	Medium	Negligible	Negligible
Effect 3: Changes to the sediment transport regime due to the presence of structures in the Project	Device	Low	High	Medium	Negligible	Low
	Near-field	Negligible	High	Medium	Negligible	Negligible
	Far-field	Negligible	High	Medium	Negligible	Negligible
Effect 4: Loss of sea bed morphology due to the footprint of structures in the Project	Near-field (direct footprint)	Low	High	Medium	Negligible	Low
	Far-field	No change	No change	No change	No change	No change
Effect 5: Morphological and sediment transport effects due to cable protection measures for offshore export cables (including nearshore and at the coastal landfall)	Near-field	Negligible	High	Medium	Negligible	Negligible
	Far-field	Negligible	High	Medium	Negligible	Negligible
Effect 6: Morphological and sediment transport effects due to cable protection measures for inter-array cables	Near-field	Negligible	High	Medium	Negligible	Negligible
	Far-field	Negligible	High	Medium	Negligible	Negligible
Effect 7: Changes in sea bed level (morphology) due to maintenance during maintenance in the Project	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	No effect	Negligible	Negligible	Negligible	Negligible
Decommissioning and Repowering Phase						
Effect 1: Changes in suspended sediment concentrations due to device and hub removal	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 2: Changes in sea bed level due to device and hub removal	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible

Potential Effect	Scale	Scale	Duration	Frequency	Reversibility	Magnitude of Effect
Effect 3: Changes in suspended sediment concentrations during offshore export cable removal (including nearshore and at the coastal landfall) (decommissioning only)	Near-field	Low (sand ridge) to Negligible (elsewhere)	Negligible	Negligible	Negligible	Low (sand ridge) to Negligible (elsewhere)
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 4: Changes in sea bed levels due to removal of the offshore export cables (decommissioning only)	Near-field	Low (sand ridge) to Negligible (elsewhere)	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 5: Changes in suspended sediment concentrations during removal of parts of the inter-array cables	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 6: Changes in sea bed levels due to removal of parts of the inter-array cables	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	Negligible	Negligible	Negligible	Negligible	Negligible
Effect 7: Changes in sea bed level (morphology) due to indentations during decommissioning in the Project	Near-field	Negligible	Negligible	Negligible	Negligible	Negligible
	Far-field	No effect	Negligible	Negligible	Negligible	Negligible

Table 27-4 Summary of Potential Impacts for Marine Water and Sediment Quality

Potential Impact	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
Construction / Repowering Phase					
Impact 1: Change in water quality due to sediment plume generated via foundation installation	Negligible	Low	Negligible	None required	Negligible

Potential Impact	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
Impact 2: Change in water quality due to sediment plume generated via cable installation (construction only)	Low (sandwave area) Negligible (other areas)	Low	Minor Adverse (sandwave area) Negligible (other areas)	None required	Negligible
Impact 3: Change in water quality due to release of contaminated sediments	Negligible	Low	Negligible	None required	Negligible
Impact 4: Change in water quality due to discharge of construction material and/or chemicals	Low	Low	Minor Adverse	Adherence to project-specific CEMP and PPMP which themselves will take full account of relevant pollution control legislation and guidance, i.e. MARPOL regulations	Negligible
Impact 5: Deterioration in status of WFD waterbodies and/or local designated bathing waters	Low	Medium	Minor Adverse	Adherence to project-specific CEMP and PPMP which themselves will take full account of relevant pollution control legislation and guidance, i.e. MARPOL regulations	Negligible
Operational Phase					
Impact 1: Change in water and/or sediment quality due to accidental spillages/leaks from operational devices	Low	Low	Negligible	Adherence to project-specific CEMP and PPMP which themselves will take full account of relevant pollution control legislation and guidance, i.e. MARPOL regulations	Negligible
Impact 2: Change in water sediment quality due to sediment plumes generated by repowering and/or cable repair works	Negligible	Low	Negligible	None required	Negligible
Impact 3: Change in water sediment quality due to sediment plumes produced via scour around seabed	Low (sandwave/ sediment areas)	Low	Minor	None required	Minor adverse (sandwave / sediment areas)

Potential Impact	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
mounted project infrastructure	Negligible (no sediment areas)				Negligible (no sediment areas)
Decommissioning / Repowering Phase					
Impact 1: Changes in suspended sediment concentrations during removal of project infrastructure	Negligible	Low	Negligible	None required	Negligible
Impact 2: Change in water and/or sediment quality due to accidental spillages/leaks from vessels involved in decommissioning works	Low	Low	Minor Adverse	Adherence to project-specific CEMP and PPMP which themselves will take full account of relevant pollution control legislation and guidance, i.e. MARPOL regulations	Negligible

Table 27-5 Summary of Potential Impacts for Benthic and Intertidal Ecology

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Physical disturbance to habitats and species and temporary habitat loss	VER Group 9 and 10	Medium	Low	Minor Adverse	Mitigation will be conducted to ensure minimal disturbance to and loss of habitats and species during construction via pre-construction surveys and micro-siting.	Minor Adverse
Impact 2: Increased suspended sediment concentration and sediment deposition	VER Group 10	Low	Negligible	Negligible	None required	Negligible

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 3: Pollution of water and sediment through accidental events	Benthic habitats within MDZ	High	Low	Moderate	▪ Development of an Emergency Response Cooperation Plan (ERCoP) with guidance set out by MCA in MGN 371, issued and approved by MCA; ▪ Notice to Mariners issued to reduce collision risks; ▪ Vessels associated with all Project operations will comply with IMO/MCA codes for prevention of oil pollution and any vessels over 400 GT will have on board SOPEPs; ▪ Vessels associated with all Project operations and barge will carry on-board oil and chemical spill mop up kits; and ▪ Where possible, avoid working in poor weather conditions.	Minor Adverse
Impact 4: Physical disturbance to intertidal habitats and species during landfall works	VER Group 1, 9, 12	Medium	Medium	Moderate	Agree work method with NRW to minimise disturbance, using excavated materials to backfill, and to safeguard some boulders from top layer pre trench excavation, for replacement at end of backfilling.	Minor Adverse
Impact 5: Potential spread of non-native	Benthic habitats within MDZ	Medium	Medium	Moderate	Compliance with guidelines, risk assessment of project vessels for INNS and further mitigation measures if required.	Minor Adverse
Operational Phase						
Impact 6: Long term loss of benthic habitat via placement of project infrastructure	VER Habitat Group 1, 9 and 12	Medium	Medium	Moderate	Following consent, pre-construction surveys and possible micro-siting will be conducted to allow for identification of important areas of habitat.	Minor Adverse

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 7: Changes in hydrodynamic and inter-related effects on benthic ecology	Benthic habitats within MDZ	Low	Medium	Minor Adverse	None required	Minor Adverse
Impact 8: Introduction of new habitat in the form of project infrastructure	Benthic habitats within MDZ	Medium	Negligible	Minor Adverse	None required	Minor Adverse
Impact 9: Temporary physical disturbance of seabed caused by maintenance and repowering activities	VER Habitat Group 9 and 10	Medium	Negligible	Minor Adverse	None required	Minor Adverse
Decommissioning Phase						
Impact 10: Physical disturbance to habitats and species and temporary habitat loss	VER Habitat Group 9 and 10	Medium	Low	Minor Adverse	Following consent, pre-construction surveys and possible micro-siting will be conducted to allow for identification of important areas of habitat.	Minor Adverse
Impact 11: Increases in suspended sediment concentration and subsequent deposition	Benthic habitats within MDZ	Low	Negligible	Negligible	None required	Negligible
Impact 12: Permanent loss of habitat	Benthic habitats within MDZ	Negligible	Negligible	Negligible	None required	Negligible

Table 27-6 Summary of Potential Impacts for Fish Ecology

Potential Impact	Receptor	Value / sensitivity combined	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Underwater noise	All fish species	Medium	Low	Minor adverse	None proposed	Minor adverse

Potential Impact	Receptor	Value / sensitivity combined	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 2: Physical disturbance of habitats and temporary habitat loss	All fish and shellfish species	Low	Low	Minor adverse	None proposed	Minor adverse
Impact 3: Increased suspended sediment concentration and sediment deposition	All fish and shellfish species	Medium	Very low	Minor adverse	None proposed	Minor adverse
Operational Phase						
Impact 4: Underwater Noise	All fish species	Medium	Low	Minor adverse	None proposed	Minor adverse
Impact 5: Long-term habitat loss via placement of project infrastructure (project footprint)	All fish and shellfish species	Medium	Low	Minor adverse	None proposed	Minor adverse
Impact 6: Barrier effects	All fish and shellfish species	Low	Medium	Minor adverse	None proposed	Minor adverse
Impact 7: Collision risk	All fish and shellfish species	Low	Negligible	Minor adverse	None proposed	Minor adverse
Impact 8: Electromagnetic fields	All fish and shellfish species	Low	Low	Minor adverse	None proposed	Minor adverse
Repowering						
Impact 9: Underwater noise	All fish species	Medium	Low	Minor adverse	None proposed	Minor adverse
Impact 10: Physical disturbance of habitats and temporary habitat loss	All fish and shellfish species	Medium	Low	Minor adverse	None proposed	Minor adverse
Impact 11: Increased suspended sediment concentration and sediment deposition	All fish and shellfish species	Medium	Very low	Minor adverse	None proposed	Minor adverse
Decommissioning Phase						
Impact 12: Underwater noise	All fish species	Medium	Low	Minor adverse	None proposed	Minor adverse

Potential Impact	Receptor	Value / sensitivity combined	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 13: Physical disturbance of habitats and temporary habitat loss	All fish and shellfish species	Low	Low	Minor adverse	None proposed	Minor adverse
Impact 14: Increased suspended sediment concentration and sediment deposition	All fish and shellfish species	Medium	Very low	Minor adverse	None proposed	Minor adverse

Table 27-7 Summary of Potential Impacts for Marine Ornithology

Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Airborne Noise and Visual Disturbance	Guillemot	High/Medium	Low	Minor adverse	None	Minor adverse
	All other species	Various	Negligible	Negligible		Negligible
Impact 2: Disturbance at Breeding Sites	Abraham's Bosom	High/Negligible for activity >300 m from colony, medium if within <300 m. Low sensitivity if outside the breeding season within <300m	Negligible for activity >300 m from colony, medium if within <300 m	Medium adverse if <300 m during breeding season, otherwise negligible	No works within 300 m of any colony during breeding season	Negligible
	South Stack and Penlas RSPB					
	Gogarth					
Impact 3: Other Impacts	All species	Various/low or negligible	Negligible	Negligible	None	Negligible
Operational Phase						
Impact 4: Airborne Noise and Visual Disturbance	Guillemot	High/Medium	Low	Minor adverse	None	Minor adverse

Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
	Cormorant	Low/High	Low	Minor beneficial		Minor beneficial
	All other species	Various	Negligible	Negligible		Negligible
	Shag	Medium/Medium	Low	Minor beneficial		Minor beneficial
Impact 5: Disturbance at Breeding Sites	Abraham's Bosom	High/Negligible for activity >300 m from colony, medium if within <300 m. Low sensitivity if outside the breeding season within <300m	Negligible for activity >300 m from colony, medium if within <300 m	Medium adverse if <300 m during breeding season, otherwise negligible	No works within 300 m of any colony during breeding season	Negligible
	South Stack and Penlas RSPB					
	Gogarth					
Impact 6: Collision risk with tidal devices (40 MW Worst Case, 95% avoidance rate)	South Stack and Penlas SMP sub-colonies	High/High	High	Major adverse	Monitoring programme enabling use of higher avoidance rate, plus deploy, manage and monitor approach	Minor adverse
	Gannet	High/Medium	Negligible	Minor adverse	None	
	Guillemot		Medium	Moderate adverse	Monitoring programme enabling use of higher avoidance rate, plus deploy, manage and monitor approach	
	Manx shearwater		Low	Minor adverse	None	
	Puffin					
	Razorbill		High	Major adverse	Monitoring programme enabling use of higher	

Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
					avoidance rate, plus phased deployment	
	Red-throated diver	Medium/Medium	Low	Minor adverse	None	
	Shag		Negligible			
	All other species	Various/Negligible		Negligible		Negligible
Impact 7: Collision risk with tidal devices (240 MW Indicative Array, 95% avoidance rate)	South Stack and Penlas SMP sub-colonies	High/High	Very High	Major adverse	Monitoring programme enabling use of higher avoidance rate, plus deploy, manage and monitor approach	Minor adverse
	Gannet	High/Medium	Negligible	Minor adverse	None	
	Guillemot		Very High	Major adverse	Monitoring programme enabling use of higher avoidance rate, plus phased deployment	
	Manx shearwater		Low	Minor adverse	None	
	Puffin					
	Razorbill		Very High	Major adverse	Monitoring programme enabling use of higher avoidance rate, plus deploy, manage and monitor approach	
	Red-throated diver	Medium/Medium	Low	Minor adverse	None	
	Shag		Negligible			
	All other species	Various/Negligible		Negligible		Negligible

Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 8: Entanglement with Tidal devices	Cormorant	Low/Medium	Low	Minor adverse	None	Minor adverse
	Guillemot	High/Medium				
	Puffin					
	Razorbill					
	Red-throated Diver	Medium/Medium				
	Shag					
	All other species	Various/Negligible	Negligible	Negligible	None	Negligible
Impact 9: Other Impacts	All species	Various/low or Negligible	Negligible	Negligible	None	Negligible
Decommissioning						
Impact 10: Airborne Noise and Visual Disturbance	Guillemot	High/Medium	Low	Minor adverse	None	Minor adverse
	Puffin					
	Razorbill					
	Red-throated diver	Medium/Very High				
	Shag	Medium/Medium				
	All other species	Various	Negligible	Negligible		Negligible
Impact 11: Disturbance at Breeding Sites	Abraham's Bosom	High/Negligible for activity >300 m from colony, medium if within <300 m. Low sensitivity if outside the breeding season within <300m	Negligible for activity >300 m from colony, medium if within <300 m	Medium adverse if <300 m during breeding season, otherwise negligible	No works within 300 m of any colony during breeding season	Negligible
	South Stack and Penlas RSPB					
	Gogarth					
Impact 12: Other Impacts	All species	Various/Low or negligible	Negligible	Negligible	None	Negligible

Table 27-8 Summary of Potential Impacts for Marine Mammals

Potential Impact	Receptor	Value / sensitivity combined	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction						
Impact 1: Underwater noise	All species	Medium	Negligible / very low	Minor adverse	MMMPs	Minor adverse (not significant)
Impact 2: Barrier effects from underwater noise	All species	Low	Negligible / very low	Negligible	None proposed, other than MMMPs	Negligible
Impact 3: Disturbance haul-out sites	Grey seal	Low	Negligible / very low	Negligible	None required or proposed	Negligible
Impact 4: Increased collision risk with vessels	All species	Low	Negligible to low	Negligible to Minor adverse	Not required or proposed	Negligible to Minor adverse (not significant)
Impact 5: Changes in water quality	All species	Negligible	Low	Negligible	EMMP and PPMP	Negligible
Impact 6: Changes in prey availability	All species	Low to Medium	Negligible / very low	Negligible to Minor adverse	None required or proposed	Negligible to Minor adverse (not significant)
Operational Phase						
Impact 7: Underwater noise	All species	Low	Low to Medium	Minor adverse	None required or proposed	Minor adverse (not significant)
Impact 8: Collision risk with operational turbines	Bottlenose dolphin	High	Medium to High	Major adverse	Deploy, manage and monitor approach	Minor to Moderate adverse
	All other species	Low	Low to Medium	Minor adverse		Minor adverse (not significant)
Impact 9: Increased collision risk with vessels	All species	Low	Negligible to low	Negligible to Minor adverse	None required or proposed	Negligible to Minor adverse (not significant)
Impact 10: Entanglement with mooring lines	Minke whale	Low	Low to High	Minor to Moderate adverse	Deploy, manage and monitor approach	Minor adverse (not significant)
	All other species	Low	Low to Moderate	Minor adverse		Minor adverse (not significant)
Impact 11: EMF effects	All species	Negligible	Negligible	Negligible	None required or proposed	Negligible

Potential Impact	Receptor	Value / sensitivity combined	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 12: Barrier effects	All species	Low	Low	Minor adverse	None required or proposed	Minor adverse (not significant)
Impact 13: Changes in water quality	All species	Negligible	Negligible to Low	Negligible	EMMP and PPMP	Negligible
Impact 14: Changes in prey availability	All species	Low to Medium	Low	Minor adverse	None required or proposed	Minor adverse (not significant)
Decommissioning Phase						
It is anticipated that the decommissioning impacts would be no worse than those of construction.						
Cumulative Impacts						
Impact 15: Underwater noise and disturbance	All species	Low	Negligible	Negligible	No further mitigation proposed	Negligible
Impact 16: Collision risk with tidal devices and vessels	All species	Low	Medium	Minor	Deploy, manage and monitor approach	Minor adverse (not significant)
Impact 16: Displacement due to changes in prey availability / habitat loss	All species	Low to Medium	Negligible to Low	Negligible to Minor adverse	None required or proposed	Negligible to Minor adverse (not significant)

Table 27-9 Summary of Potential Impacts for Offshore Archaeology and Cultural Heritage

Potential Impact	Receptor	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Direct physical impact on known and unknown maritime, aviation and submerged prehistoric cultural heritage assets	Submerged palaeolandscapes	Medium	Medium	Moderate Adverse	WSI Reporting by geoarchaeological assessment Where possible, micro-siting and avoidance or design modification	Negligible
	Discrete submerged prehistoric receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Micro-siting and avoidance (AEZs)	Negligible

Potential Impact	Receptor	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
	Potential redeposited prehistoric and later finds	Medium	Low	Minor Adverse	WSI Reporting protocol (PAD) Watching brief	Negligible
	Known maritime receptors	High	High	Major Adverse	WSI Micro-siting and avoidance (AEZs) Reporting protocol (PAD)	Negligible
	Unknown maritime receptors	Medium	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Negligible
	Unknown aviation receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Negligible
Impact 2: Indirect physical impacts on known and unknown maritime, aviation and submerged prehistoric cultural heritage assets	Submerged palaeolandscapes	Medium	Medium	Moderate Adverse	WSI Reporting by geoarchaeological assessment Where possible, micro-siting and avoidance or design modification	Negligible
	Discrete submerged prehistoric receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Micro-siting and avoidance (AEZs)	Minor adverse
	Potential redeposited prehistoric and later finds	Medium	Low	Minor Adverse	WSI Reporting protocol (PAD) Watching brief	Negligible
	Known maritime receptors	High	High	Major Adverse	WSI Micro-siting and avoidance (AEZs) Reporting protocol (PAD)	Minor adverse

Potential Impact	Receptor	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
	Unknown maritime receptors	Medium	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
	Unknown aviation receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
Operational Phase						
Impact 3: Direct physical impact on known and unknown maritime, aviation and submerged prehistoric cultural heritage assets	Submerged palaeolandscapes	Medium	Medium	Moderate Adverse	WSI Reporting by geoarchaeological assessment Where possible, micro-siting and avoidance or design modification	Negligible
	Discrete submerged prehistoric receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Micro-siting and avoidance (AEZs)	Minor adverse
	Potential redeposited prehistoric and later finds	Medium	Low	Minor Adverse	WSI Reporting protocol (PAD) Watching brief	Negligible
	Known maritime receptors	High	High	Major Adverse	WSI Micro-siting and avoidance (AEZs) Reporting protocol (PAD)	Minor adverse
	Unknown maritime receptors	Medium	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
	Unknown aviation receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse

Potential Impact	Receptor	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
Impact 4: Indirect physical impacts on known and unknown maritime, aviation and submerged prehistoric cultural heritage assets	Submerged palaeolandscapes	Medium	Medium	Moderate Adverse	WSI Reporting by geoarchaeological assessment Where possible, micro-siting and avoidance or design modification	Negligible
	Discrete submerged prehistoric receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Micro-siting and avoidance (AEZs)	Minor adverse
	Potential redeposited prehistoric and later finds	Medium	Low	Minor Adverse	WSI Reporting protocol (PAD) Watching brief	Negligible
	Known maritime receptors	High	High	Major Adverse	WSI Micro-siting and avoidance (AEZs) Reporting protocol (PAD)	Minor adverse
	Unknown maritime receptors	Medium	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
	Unknown aviation receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
Decommissioning Phase						
Impact 5: Direct physical impact on known and unknown maritime, aviation and submerged prehistoric cultural heritage assets	Submerged palaeolandscapes	Medium	Medium	Moderate Adverse	WSI Reporting by geoarchaeological assessment Where possible, micro-siting and avoidance or design modification	Negligible
	Discrete submerged	High	High	Major Adverse	WSI Reporting protocol (PAD)	Minor adverse

Potential Impact	Receptor	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
	prehistoric receptors				Micro-siting and avoidance (AEZs)	
	Potential redeposited prehistoric and later finds	Medium	Low	Minor Adverse	WSI Reporting protocol (PAD) Watching brief	Negligible
	Known maritime receptors	High	High	Major Adverse	WSI Micro-siting and avoidance (AEZs) Reporting protocol (PAD)	Minor adverse
	Unknown maritime receptors	Medium	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
	Unknown aviation receptors	High	High	Major Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Minor adverse
Impact 6: Indirect physical impacts on known and unknown maritime, aviation and submerged prehistoric cultural heritage assets	Submerged palaeolandscapes	Low	Medium	Minor Adverse	WSI Reporting by geoarchaeological assessment Where possible, micro-siting and avoidance or design modification	N Negligible
	Discrete submerged prehistoric receptors	Low	High	Moderate Adverse	WSI Reporting protocol (PAD) Micro-siting and avoidance (AEZs)	Negligible
	Potential redeposited prehistoric and later finds	Low	Low	Minor Adverse	WSI Reporting protocol (PAD) Watching brief	Negligible
	Known maritime receptors	Low	High	Moderate Adverse	WSI Micro-siting and avoidance (AEZs)	Negligible

Potential Impact	Receptor	Effect Magnitude	Receptor Sensitivity	Significance	Additional Mitigation Measures	Residual Impact
					Reporting protocol (PAD)	
	Unknown maritime receptors	Low	High	Moderate Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Negligible
	Unknown aviation receptors	Low	High	Moderate Adverse	WSI Reporting protocol (PAD) Watching brief (intertidal)	Negligible

Table 27-10 Summary of Potential Impacts for Commercial Fisheries

Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation	Residual Impact
Construction Phase					
Impact 1: Loss of access to fishing grounds due to construction activity	Medium Low Low	≤10m nearshore static: Low ≤>10m MDZ static: Low >10m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	▪ Local fishermen to be notified of all planned construction works via Notice to Mariners; ▪ Project-specific FLO to be appointed during construction phase; ▪ All construction vessels to exhibit appropriate lighting and markings at all times; and ▪ Construction activities to be planned as far as possible so that they are focussed in discrete areas at any one time, i.e. not spread out across entire site. ▪ Where local vessels are able to demonstrate a clear loss in annual income due to loss of fishing grounds	Minor adverse Minor adverse Negligible

Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation	Residual Impact
				within the MDZ, Menter Môn will enter into discussions on appropriate forms of financial assistance.	
Impact 2: Collision risk between commercial fishing vessels and construction vessels					See **Chapter 15, Shipping and Navigation**
Impact 3: Obstruction to regular fishing vessel transit routes	Medium Low Low	≤10m nearshore static: Low ≤>10m MDZ static: Low >10m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	As per Impact 1 plus: Where required, agreed transit routes around/through the MDZ to be developed and agreed between Menter Môn and local fishing vessels. This approach has been successfully adopted on OWF projects around the UK coast;	Minor adverse Minor adverse Negligible
Impact 4: Interference with static fishing gear due to additional vessel traffic	Medium Low Negligible	≤10m nearshore static: Medium ≤>10m MDZ static: Medium >10m MDZ mobile: Negligible	Moderate adverse Minor adverse Negligible	As per above 1 plus: Key areas of static gear deployment to be provided by local fishermen and used to develop agreed transit routes around/through the MDZ that aim to minimise damage to static gear.	Minor adverse Negligible Negligible

Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation	Residual Impact
Impact 5: Supply chain opportunities for local fishing vessels	Medium Medium Medium	≤10m nearshore static: Low ≤>10m MDZ static: Low >10m MDZ mobile: Medium	Minor beneficial Minor beneficial Moderate beneficial	No mitigation required. However, to increase opportunities for local fishing vessels to support the Morlais project, the Action Plan provided as part of the 2015 study (MarineSpace, 2015) should be reviewed and, where appropriate updated. Discussions should then be held between Menter Môn and the local fishing community to identify what needs to be done to maximise these opportunities.	Minor beneficial Minor beneficial Moderate beneficial
Operational Phase					
Impact 6: Collision risk between commercial fishing vessels and project infrastructure					See Chapter 12, Shipping and Navigation
Impact 7: Loss of access to fishing grounds and displacement of fishing effort onto adjacent grounds	Negligible Medium Low	≤10m nearshore static: Medium ≤>10m MDZ static: Low >10m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	Where local vessels are able to demonstrate a clear loss in annual income due to loss of fishing grounds within the MDZ, Menter Môn will enter into discussions on appropriate forms of financial assistance.	Minor adverse Minor adverse Negligible
Impact 8: Reduction in abundance of target species and reduced supply of catch to established local buyers	Negligible Low Low	≤10m nearshore static: Medium ≤>10m MDZ static: Low >10m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	None proposed	Minor adverse Minor adverse Negligible
Impact 9: Presence of seabed fasteners	Low Negligible Negligible	≤10m nearshore static: Medium <≤>10m MDZ static: Low >10m MDZ mobile: Negligible	Minor adverse Negligible Negligible	▪ Ensuring devices marked as per International Association of Lighthouse Authorities (IALA) Guidance and Aids to Navigation ▪ Promulgation of information via NtM;	Negligible Negligible Negligible

Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation	Residual Impact
				▪ GPS off station alarm / SCADA monitoring system; ▪ Site boundaries marked in accordance with Trinity House; ▪ Surveyed and charted as required by UKHO; ▪ Restrict Navigation through the MDZ; ▪ Exclusion of fishing within the MDZ; and ▪ Establish no anchoring areas.	
Impact 10: Supply chain opportunities for local fishing vessels	Low Medium Medium	≤10m nearshore static: Medium ≤>10m MDZ static: Low >10m MDZ mobile: Medium	Minor beneficial Minor beneficial Moderate beneficial	No mitigation required. However, to increase opportunities for local fishing vessels to support the Morlais project, the Action Plan provided as part of the 2015 study (MarineSpace, 2015) should be reviewed and, where appropriate updated. Discussions should then be held between Menter Môn and the local fishing community to identify what needs to be done to maximise these opportunities	Minor beneficial Minor beneficial Moderate beneficial
Decommissioning Phase					
It is anticipated that the decommissioning impacts would be no worse than those of construction.					

Table 27-11 Summary of Potential Impacts for Shipping and Navigation

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
Construction Phase					
1. Potential impacts on commercial vessels (safe operations)	Moderate (C3)	Remote (F1)	(C3 x F1) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Only deploy devices that provide at least 20m UKC within indicative subzones 1 (as shown within **Figure 4-1** (**Volume II**); ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Implementation of Safety Zones; ▪ Temporary navigation aids as required by Trinity House; and ▪ Undertake device specific NRA's prior to deployments, i.e. once exact locations and scale/type of device deployment is known; ▪ Construction vessels to be marked in accordance with COLREGS; ▪ Check device surveys; and ▪ Exclusion of fishing within the MDZ (applicable to break out of device/device not at stated depth).	(C3 x F1) = **Low**
2. Potential impacts on commercial vessel routing	Minor (C2)	Remote (F1)	(C2 x F1) = Low	As above	(C2 x F1) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
3(a). Potential impacts on Passenger Vessels (safe operations)	Moderate (C3)	Unlikely (F2)	(C3 x F2) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Only deploy devices that provide at least 20 m UKC within indicative subzones 1 (as shown within **Figure 4-1** (**Volume II**); ▪ Redesign the Northern Boundary; ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Implementation of Safety Zones; ▪ Temporary navigation aids as required by Trinity House; ▪ Undertake device specific NRA's prior to deployments, i.e. once exact locations and scale/type of device deployment is known; ▪ Construction vessels to be marked in accordance with COLREGS; ▪ Appropriate spacing of devices; and ▪ Exclusion of fishing within the MDZ (applicable to break out of device/device not at stated depth).	(C3 x F1) = **Low**
3(b). Contact: Passenger Vessels with mid-water devices (<8m UKC)	Moderate (C3)	Possible (F3)	(C3 x F3) = **ALARP**	▪ Restrict navigation through the Morlais Zone; ▪ Continues monitoring by Marine Co-ordination Centre; ▪ Devices >20m to be deployed along northern boundary; ▪ Re-design northern boundary; ▪ Check device surveys; ▪ Implementation of Safety Zones;	(C3 x F2) = **Low Risk**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
				▪ Guard vessel to monitor passing traffic; ▪ Construction vessels to be marked in accordance with COLREGS; and ▪ Temporary navigation aids as required by Trinity House.	
3(c). Collision Passenger Vessel ICW Passenger Vessel	Major (C4)	Unlikely (F2)	(C4 x F2) = **ALARP**	▪ Continuous monitoring by Marine Co-ordination Centre; ▪ Re-design northern boundary; ▪ Guard vessels to monitor passing traffic; ▪ Construction vessels to be marked in accordance with COLREGS; and ▪ Temporary navigation aids as required by Trinity House.	(C4 x F1) = **ALARP**
4. Potential impacts on passenger vessel routing	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	As above	(C2 x F3) = **Low**
5. Potential impact on fishing vessels	Moderate(C3)	Possible (F3)	(C3 x F3) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; ▪ Ensure regular programme of device condition surveys;	(C2 x F2) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
				▪ Use of Guard vessel(s) to monitor passing traffic; ▪ Enhanced cable protection; ▪ Implementation of Safety Zones; ▪ Temporary navigation aids as required by Trinity House; ▪ Undertake device specific NRA's prior to deployments, i.e. once exact locations and scale/type of device deployment is known; and ▪ Construction vessels to be marked in accordance with COLREGS.	
5 (b) Contact Fishing Vessel with Mid-Water Device <8 below CD	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; and ▪ Check device surveys.	C2 x F3 = **Low**
5 (c) Snagging / Obstruction Fishing Vessel	Minor (C2)	Frequent (F5)	(C2 x C5) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; and	C2 x F3 = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
				▪ Check device surveys.	
5 (d) Grounding Fishing Vessel	Minor (C2)	Likely (F4)	(C2 x F4) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; and ▪ Check device surveys.	(C2 x F3) = **Low**
6(a). Potential impact on recreational craft	Moderate (C3)	Possible (F3)	(C3 x F3) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; ▪ Ensure regular programme of device condition surveys; ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Establish no anchoring areas; ▪ Enhanced cable protection; ▪ Implementation of Safety Zones;	(C3 x F2) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
				▪ Temporary navigation aids as required by Trinity House; ▪ Undertake device specific NRA's prior to deployments, i.e. once exact locations and scale/type of device deployment is known; ▪ Construction vessels to be marked in accordance with COLREGS; and ▪ Exclusion of fishing within the MDZ (applicable to break out of device/device not at stated depth). ▪	
6(b). Grounding Recreational Vessel	Moderate (C3)	Frequent (F5)	(C3 x F5) = **Significant** (Unacceptable in the absence of additional mitigation).	▪ Devices >8m below CD to be deployed along the eastern boundary; and ▪ Redesign Eastern boundary.	(C3 x F3) =ALARP
7. Potential impact on Other vessels	Moderate (C3)	Likely (F4)	(C3 x F4) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Temporary navigation aids as required by Trinity House; and ▪ Construction vessels to be marked in accordance with COLREGS	(C2 x F3) = **Low**
8. Potential impact on emergency response operations	Minor (C2)	Unlikely (F2)	(C2 x F2) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ;	(C2 x F2) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
				▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; ▪ Ensure regular programme of device condition surveys; ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Implementation of Safety Zones; ▪ Temporary navigation aids as required by Trinity House; ▪ Construction vessels to be marked in accordance with COLREGS; and ▪ Marine pollution contingency planning.	
8 (b) Contact SAR Vessel with Surface or Mid-Water Device (<8m below CD).	Minor (C2)	Likely (F4)	(C2 x F4) = **ALARP**	▪ Restrict Navigation through Morlais Zone; Continuous Monitoring by Marine Co-ordination Centre; Devices >8m below CD to be deployed along eastern boundary; Redesign eastern boundary; Check Device Surveys; Appropriate spacing of devices. Local Promulgation; Creation of Emergency Response Cooperation Plan (ERCOP).	(C2 x F2) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
9. Subsea Infrastructure – impact on all receptors	Minor (C2)	Possible (F3)	(C2 x F3) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; ▪ Ensure regular programme of device condition surveys; ▪ Use of guard vessel(s) to monitor passing traffic; ▪ Implementation of Safety Zones; ▪ Temporary navigation aids as required by Trinity House; ▪ Construction vessels to be marked in accordance with COLREGS; and ▪ cable protection by burial (where possible), rock bags, burial, mattresses or split pipe. ▪	(C2 x F2) = **Low**
Operational Phase					
1. Potential impacts on commercial vessels (safe operations)	Moderate (C3)	Remote (F1)	(C3 x F1) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Check device surveys; ▪ Only deploy devices that provide at least 20 m UKC within indicative subzones 1 (as shown within **Figure 4-1** (**Volume II**); and	(C3 x F1) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
				▪ Use of guard vessel(s) to monitor passing traffic.	
2. Potential impacts on commercial vessel routing	Minor (C2)	(Likely) F)	(C2 x F4) = Low	As above	(C2 x F1) = **Low**
3(a). Potential impacts on Passenger Vessels (safe operations)	Moderate (C3)	Unlikely (F2)	(C3 x F2) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Check device surveys; ▪ Only deploy devices that provide at least 20 m UKC within indicative subzones 1 (as shown within **Figure 4-1** (**Volume II**); ▪ Redesign Northern Boundary; and ▪ Use of Guard vessel(s) to monitor passing traffic;	(C3 x F1) = **Low**
3(b). Potential impact on passenger vessels: Contact: Passenger Vessels with mid-water devices (<8m UKC)	Moderate (C3)	Possible (F4)	(C3 x F4) = **ALARP**	As above	(C3 x F2) = **Low**
3(c). Collision Passenger Vessel ICW Passenger Vessel	Major (C4)	Remote (F2)	(C4 x F2) = **ALARP**	As above	(C4 x F1) = **ALARP**
4(a). Potential impacts on passenger vessel routing	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	As above	(C2 x F3) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
5. Potential impacts on fishing vessels	Minor (C2)	Possible (F3)	(C2 x F3) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; and ▪ Check device surveys.	(C2 x F1) = **Low**
5 (b) Contact Fishing Vessel with Mid-Water Device <8 below CD	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; and ▪ Check device surveys.	C2 x F3 = Low
Snagging / Obstruction Fishing Vessel	Minor (C2)	Frequent(F5)	(C2 x F5) = **ALARP**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Exclusion of fishing within the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Ensure appropriate alignment and spacing of devices; and ▪ Check device surveys.	C2 x F3 = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
6(a). Potential impacts on recreational craft	Minor (C2)	Possible (F3)	(C2 x F3) = **Low**	▪ Restrict navigation throughout the MDZ; ▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Check device surveys; and ▪ Ensure appropriate alignment and spacing of devices; and ▪ Establish no anchoring areas.	(C4 x F2) = **Low**
6(b). Grounding Recreational Vessel	Minor (C3)	Frequent (F5)	(C3 x F5) = **Significant** (Unacceptable in absence of additional mitigation)	▪ Devices >8m below CD to be deployed along the eastern boundary; and ▪ Redesign Eastern boundary	(C3 x F3) = **ALARP**
6 (c) Contact Recreational Vessel with Surface Device	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	▪ Restrict navigation throughout the MDZ; ▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Check device surveys; and ▪ Ensure appropriate alignment and spacing of devices; and ▪ Establish no anchoring areas.	(C2 x F3) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
6 (d) Contact Recreational Vessel with Mid-Water Device (<8m below CD)	Minor (C2)	Likely (F5)	(C2 x F5) = **ALARP**	▪ Restrict navigation throughout the MDZ; ▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; ▪ Check device surveys; and ▪ Ensure appropriate alignment and spacing of devices; and ▪ Establish no anchoring areas.	(C2 x F3) = **Low**
7. Potential Impacts on other vessels	Minor (C2)	Likely (F3)	(C2 x F3) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; and ▪ Construction vessels to be marked in accordance with COLREGS. ▪	(C3 x F2) = **Low**
7 (b) Contact Other Vessels with Mid-Water Device (<8m below CD).	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	As Above	C2 x F3) = Low
8.(a) Potential impacts on emergency response operations	Minor (C2)	Unlikely (F2)	(C2 x F2) = **Low**	▪ Continuous Monitoring by Marine Co-ordination Centre; ▪ Restrict Navigation through the MDZ; ▪ Only deploy devices that allow at least 8 m UKC along eastern boundary; ▪ Re-design eastern boundary of the MDZ; and ▪ Check device surveys.	(C2 x F2) = **Low**

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
8 (b) Contact SAR Vessel with Mid-Water Device (<8m below CD).	Minor(C2)	Likely (F4)	(C2 x F4) = **ALARP**	▪ Restrict Navigation through Morlais Zone; Continuous Monitoring by Marine Co-ordination Centre; ▪ Devices >8m below CD to be deployed along eastern boundary; ▪ Redesign eastern boundary; ▪ Check Device Surveys; ▪ Appropriate spacing of devices. ▪ Local Promulgation; ▪ Creation of Emergency Response Cooperation Plan (ERCOP).	(C2 x F2) = **Low**
9. (a) Subsea Infrastructure – potential impacts on all receptors	Minor (C2)	Unlikely (F2)	(C2 x F2) = **Low**	As above	(C2 x F2) = **Low**
9 (b) Snagging / Obstruction Fishing Vessel	Minor (C2)	Frequent (F5)	(C2 x F5) = **ALARP**	As above	(C2 x F3) = **Low**
Decommissioning Phase					
	It is likely that decommissioning of individual structures will be the responsibility of the individual developers, as overseen by Mentor Môn. Decommissioning of the site comprises the complete removal of all infrastructure associated with the tidal energy project. Offshore decommissioning methodologies would vary considerably between devices but would be expected to be similar to the construction phase in reverse. As the methodologies for decommissioning are expected to be similar to construction it can be assumed that the same impacts arise and can be applied to the decommissioning phase. It should be noted that this is a highly precautionary assessment as it is likely that the impacts from decommissioning will be less than those from construction.				

Potential Impact	Baseline Severity of Consequence	Baseline Frequency of Occurrence	Baseline Impact	Additional Mitigation Measures	Residual Impact (Risk)
Cumulative Impacts					
C1. Impact from increased vessel activity	Minor (C2)	Unlikely (F2)		▪ Restrict Navigation through Morlais Zone; Continuous Monitoring by Marine Co-ordination Centre; ▪ Devices >8m below CD to be deployed along eastern boundary; ▪ Redesign eastern boundary; ▪ Check Device Surveys; ▪ Appropriate spacing of devices. ▪ Local Promulgation; ▪ Creation of Emergency Response Cooperation Plan (ERCOP).	(C2 x F2) = **Low**
C2. Impact on vessel routing	Minor (C2)	Unlikely (F2)		As above	(C2 x F2) = **Low**
C3. Impact from subsea cables	Minor (C2)	Unlikely (F2)		As above	(C2 x F2) = **Low**

Table 27-12 Summary of Potential Impacts for Marine Infrastructure and Other Users

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Disruption of ongoing MOD activities	MOD	High	Very Low	Minor	On-going stakeholder engagement. Plotting MDZ on Admiralty charts.	Negligible
Impact 2: Interaction with UXO	Sea Users (crew / vessels), environmental receptors	N/A	N/A	Potential to disturb and expose UXO	Risk assessment and potential survey required to identify location of potential UXO. If UXO present, infrastructure could be micro-sited or UXO cleared. Contractors to be made aware of potential risks.	Minor
Impact 3: Interaction with active telecommunication cables	CeltixConnect Subsea cable	High	Very low	Minor	Implementation of 500 m safety buffer around active subsea cable. The position of this live cable will be communicated to all installation vessels and the Project will consult with the asset owner directly.	Negligible
Operational Phase						
Impact 4: Disruption of ongoing MOD activities	MOD	High	Very Low	Minor	Ongoing stakeholder engagement.	Negligible
Impact 5: Interaction with active telecommunication cables	CeltixConnect Subsea cable	High	Very low	Minor	None required.	Negligible
Decommissioning Phase						
Impact 6: Disruption of ongoing MOD activities	MOD	High	Very Low	Minor	Ongoing stakeholder engagement.	Negligible
Impact 7: Interaction with UXO	Sea Users (crew / vessels), environmental receptors	N/A	N/A	Potential to disturb and expose UXO	As per construction	Minor

Table 27-13 Summary of Potential Impacts for Water Resources and Flood Risk

Potential Impact	Receptor	Sensitivity	Value	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase							
Impact 1: Direct disturbance of surface water bodies	Natural streams	Medium	High	Low	Moderate adverse	Measures to minimise the impacts of temporary watercourse crossings, install infrastructure below the active bed of the channel, and reinstate bed and banks.	Minor adverse
	Modified watercourses	Negligible	Negligible	No impact	-		-
	Area of marshy grassland containing undefined drains	Low	Low	Low	Minor adverse		Negligible
	Standing water	Low	Low	No impact	-		-
	Ynys Mon groundwater body	Medium	Low	No impact	-		-
Impact 2: Increased sediment supply	Natural streams	Medium	High	Medium	Minor adverse	Additional construction best practice measures to manage sediment and surface drainage, including Guidance for Pollution Prevention (GPPs) from NRW, Scottish Environment Protection Agency and the Northern Ireland Environment Agency; specifically GPP5.	Minor adverse
	Modified watercourses	Negligible	Negligible	Minor adverse	Negligible		Negligible
	Area of marshy grassland containing undefined drains.	Low	Low	Low	Minor adverse		Negligible
	Standing water	Low	Low	No impact	-		-
	Ynys Mon groundwater body	Medium	Low	No impact	-		-
Impact 3: Accidental release of contaminants	Natural streams	Medium	High	Low	Moderate adverse	A construction method statement will be produced in line with best practice guidance on pollution control measures.	Minor adverse
	Modified watercourses	Negligible	Negligible	Low	Negligible		Negligible
	Area of marshy grassland containing undefined drains	Low	Low	Low	Minor adverse		Negligible
	Standing water	Low	Low	No impact	-		-
	Ynys Mon groundwater body	Medium	Low	Low	Minor adverse		Negligible
Impact 4: Increased	Natural streams	Medium	High	Low	Minor adverse	Measures to minimise impact of temporary culverts, if	Negligible
	Modified watercourses	Negligible	Negligible	Low	Negligible		Negligible

Potential Impact	Receptor	Sensitivity	Value	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
surface water runoff and flood risk	Area of marshy grassland containing undefined drains	Low	Low	Medium	Minor adverse	applicable, including the creation of drainage changes to manage construction drainage.	Negligible
	Standing water	Low	Low	No impact	-		-
	Ynys Mon groundwater body	Medium	Low	Low	Minor adverse		Negligible
Operational Phase							
Impact 5: Changes to surface water runoff, groundwater flows and flood risk	Natural streams	Medium	High	Low	Minor adverse	A surface water drainage plan will be developed, particularly for the substation locations.	Negligible
	Modified watercourses	Negligible	Negligible	Low	Negligible		Negligible
	Area of marshy grassland containing undefined drains	Low	Low	Medium	Minor adverse		Negligible
	Standing water	Low	Low	No impact	-		-
	Ynys Mon groundwater body	Medium	Low	Low	Minor adverse		Negligible
Impact 6: Supply of fine sediment and other contaminants	Natural streams	Medium	High	Low	Minor adverse	Surface water drainage system will include oil interceptors and bund pumps.	Negligible
	Modified watercourses	Negligible	Negligible	Negligible	Negligible		Negligible
	Area of marshy grassland containing undefined drains	Low	Low	No impact	-		-
	Standing water	Low	Low	Negligible	Negligible		No Impact
	Ynys Mon groundwater body	Medium	Low	Negligible	Minor adverse		Minor adverse
Decommissioning Phase							
Contractual details relating to decommissioning are yet to be finalised, however the ultimate responsibility for the decommissioning of the general onshore electrical infrastructure will lie with Menter Môn. At this stage, this is expected to consist primarily of removal of the landfall and grid connection substations. It is anticipated that the decommissioning impacts would be no worse than those of construction.							

Table 27-14 Summary of Potential Impacts for Ground Conditions and Contamination

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Impacts on designated geological sites	Geology	High	Low	Minor Adverse	N/A	N/A
Impact 2: Impacts on Groundwater Quality in the Superficial Secondary Aquifers During Earthwork Activities	Secondary A and Undifferentiated Aquifers	Low	Low	Negligible	N/A	N/A
Impact 3: Impacts on Groundwater Quality in the Secondary B Bedrock Aquifers Resulting from HDD	Secondary B Aquifers	Negligible	Negligible	Negligible	N/A	N/A
Impact 4: Impact on Groundwater Quality in the Secondary B Bedrock Aquifers Resulting from Piling	Secondary B Aquifers	Negligible	Negligible	Negligible	N/A	N/A
Impact 5: Impact on Surface Waters from Contamination of Groundwaters and Subsequent Discharge	Surface Waters	Low	Low	Minor	Adherence to the Environment Agency pollution prevention guidance.	Negligible
Impact 6: Impacts to Human Health	Humans	High	Low	Moderate Adverse	Appropriate personal protective equipment (PPE) and working practices to be adopted by construction workers, including subcontractors, and health and safety measures would be undertaken to mitigate any short-term risk during construction.	Negligible
Impact 7: Impacts on Controlled Waters as a Result of Construction Activities	Controlled waters	Low	Low	Minor Adverse	Use of lower permeability material to backfill trenches in areas identified as being/in close proximity to potential sources.	Negligible
Operational Phase						
No discernible impacts.						
Decommissioning Phase						
Contractual details relating to decommissioning are yet to be finalised, however the ultimate responsibility for the decommissioning of the general onshore electrical infrastructure will lie with Menter Môn. At this stage, this is expected to consist primarily of removal of the landfall and grid connection substations. It is anticipated that the decommissioning impacts would be no worse than those of construction.						

Table 27-15 Summary of Potential Impacts for Onshore Ecology

Potential Impact	Receptor	Value	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Statutory designated nature conservation designated sites	Glannau Ynys Gybi / Holy Island Coast SSSI/SPA/SAC and Tre Wilmot SSSI	Worst case High	Medium	Worst case Major adverse	Habitat creation and management plan, in consultation with IOACC and NRW.	Worst case Moderate adverse
	Beddmanarch-Cymryan SSSI	High	Low	Minor adverse		Negligible
Impact 2: Non-statutory designated nature conservation designated sites	Local Wildlife Sites	Medium	No impact	No impact	Habitat reinstatement plan	Minor adverse
	Ancient woodlands	Medium	Negligible	Negligible		Negligible
	South stacks RSPB Reserve	Medium	Low	Minor adverse		Negligible
	Breakwater Country Park	Medium	low	Minor adverse		Negligible -
Impact 3: Habitat loss and fragmentation	Grasslands	Low	Medium	Minor adverse	Micrositing, management of construction boundaries tool box talks, habitat reinstatement	Minor adverse
	Hedgerows and trees	Medium	medium	Moderate adverse		Minor adverse
	Lowland fen and reedbed	Medium	Medium	Moderate adverse		Minor adverse
	Open mosaic habitat	Low	Low	Minor adverse		Minor beneficial
	Cloddiau	Medium	Low - high	Minor adverse – major adverse		Minor adverse
Impact 4: habitat loss, disturbance or killing of otter	Otter	Low	Low	Minor adverse	Pre- construction survey, tool box talks, use of exit ramps	Negligible

Potential Impact	Receptor	Value	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 5: habitat loss, disturbance or killing of water vole	Water vole	Low	Low	Minor adverse	Pre- construction survey, tool box talks	Negligible
Impact 6: habitat loss, disturbance or killing of red squirrel	Red squirrel	Medium	Negligible	Minor adverse	Pre- construction survey, tool box talks	Negligible
Impact 7: habitat loss, disturbance or killing of badger	Badger	Medium	High	Moderate adverse	Preconstruction survey, tool box talks, sett exclusion under licence and creation of replacement set, exit ramps	Minor adverse
Impact 8: habitat loss, disturbance or killing of bats	Roosting bats	Medium	Low	Minor adverse	Sensitive lighting regime, toolbox talks, bat survey of historic roost, buffers	Negligible
	Foraging and commuting bats	Low	Low	Minor adverse		
Impact 9: habitat loss, disturbance or killing of reptiles	Reptiles	Low - Medium	Medium	Minor - moderate	Pre-construction survey, precautionary methods of vegetation clearance, mitigation strategy, toolbox talks	Minor adverse
Impacts 10: habitat loss, disturbance or killing of GCN	GCN	Low	Low	Minor adverse	Pre-construction eDNA survey, toolbox talk	Negligible
Impacts 11: habitat loss, disturbance or killing of birds	Seabirds	See **Chapter 11, Offshore Ornithology**				
	Chough	High	Low	Moderately adverse	no construction works will take place within 500m of an active chough nest during the breeding season	Minor adverse
	Raptors	Medium	Low	Minor adverse	Toolbox talks, pre-construction surveys for barn owls in any agricultural buildings within the Onshore Study Area	Negligible - Minor adverse
	Passerines and other species	Medium	Low	Minor adverse	Commence work outwith the breeding bird season, toolbox talks, micrositing, habitat reinstatement	Negligible – minor adverse
Impact 12: habitat loss, disturbance or killing of invertebrates	Invertebrates	Low	Low	Negligible	None	negligible

Potential Impact	Receptor	Value	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Impact 13: damage to notable plant species	Notable plants	Medium	High	Major adverse	Pre construction surveys, protective buffers, habitat reinstatement, toolbox talks	Minor adverse
Impact 14: Spread of non-native invasive species	Japanese knotweed	Medium	Medium	Moderate adverse	Pre construction survey, invasive species management plan, toolbox talks	Minor adverse
Operational Phase						
Impact 15: Disturbance to foraging and commuting routes for bats	Bats	Low	Low	Minor adverse	Sensitive lighting regime, toolbox talks	Negligible
Decommissioning Phase						
Contractual details relating to decommissioning are yet to be finalised, however the ultimate responsibility for the decommissioning of the general onshore electrical infrastructure will lie with Menter Môn. At this stage, this is expected to consist primarily of removal of the landfall and grid connection substations. It is anticipated that the decommissioning impacts would be no worse than those of construction.						

Table 27-16 Summary of Potential Impacts for Key Onshore Archaeology and Cultural Heritage Assets

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
1	South Stack Lighthouse group	Medium	Construction Impact 3: Indirect impact to setting of assets during construction of offshore infrastructure.	Negligible	Minor	None required	Minor
			Operation Impact 3: Indirect impact to setting of assets from offshore infrastructure.	Medium	Moderate	None required	Minor to Moderate
4		High	Construction Impact 3: Indirect impact to setting of designated assets during installation of landfall cable.	Negligible	Minor	None required	Minor

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
	Porth Dafarch Hut Circles		Construction Impact 2: Direct impact to designated archaeological remains due to hydrological changes or vibration	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Minor

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
			Construction Impact 1: Direct impact to non-designated buried remains associated with (but outside of) the scheduled area.	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Non-significant
			Operation: No Impact	N/A	N/A	None required	N/A
5		High	Construction Impact 3: Indirect impact to setting of assets during installation of onshore cable.	Negligible	Minor	None required	Minor

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
	Ty-Mawr Standing Stone		Construction Impact 1: Direct impact to non-designated buried remains associated with (but outside of) the scheduled area.	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Non-significant
			Operation Impact 3: Indirect impact to setting of assets from landfall substation	Negligible	Minor	None required	Minor
8	Holyhead Mountain Hut Circles	High	Construction Impact 3: Indirect impact to setting of assets during construction of landfall substation and landfall cable.	Negligible	Minor	None required	Minor
			Operation Impact 3: Indirect impact to setting of assets from landfall substation	Negligible	Minor	None required	Minor

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
10	Trefignath Burial Chamber	High	Construction Impact 3: Indirect impact to setting of assets during installation of onshore cable and Parc Cybi substation option.	Negligible	Minor	None required	Minor
			Operation Impact 3: Indirect impact to setting of assets from grid connection substation (Parc Cybi option)	Negligible	Minor	None required	Minor
11	Penrhosfeilw Standing Stones	High	Construction Impact 3: Indirect impact to setting of the asset during construction of the landfall substation.	Negligible	Minor	None required	Minor
			Operation Impact 3: Indirect impact to setting of assets from landfall substation	Negligible	Minor	None required	Minor
13	Kingsland Windmill	High	Construction Impact 3: Indirect impact to setting of assets during installation of onshore cable.	Negligible	Minor	None required	Minor
			Operation: No Impact	N/A	N/A	None required	N/A
14	Ellin's Tower (Twr Ellin)	Medium	Construction Impact 3: Indirect impact to the setting of asset during installation of onshore cable.	Negligible	Minor	None required	Minor
			Operation Impact 3: Indirect impact to the setting of asset due to offshore infrastructure	Medium	Moderate	None possible, reduced through embedded mitigation as far as possible	Minor to Moderate

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
15	Old Customs Post	Medium	Construction Impact 3: Indirect impact to the setting of asset during installation of onshore cable.	Negligible	Minor	None required	Minor
			Operation: No Impact	N/A	N/A	None required	N/A
23	Ebenezer Chapel	Medium	Construction Impact 3: Indirect impact to the setting of asset during installation of onshore cable.	Negligible	Minor	None required	Minor
			Operation: No Impact	N/A	N/A	None required	N/A
32	Tan-y-Cytiau	Medium	Construction Impact 3: Indirect impact to the setting of asset during installation of onshore cable.	Low	Minor	None required	Minor
			Operation Impact 3: Indirect impact to setting of assets from landfall substation	Negligible	Minor	None required	Minor
34	Ancient Woodland, Penrhos coastal park	Low	Construction Impact 3: Indirect impact to the setting of asset during construction of grid connection substation (Orthios option).	Low	Minor	None required	Minor
			Operation: No Impact	N/A	N/A	None required	N/A

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
35	Cemetery, Porth Dafarch	High	Construction Impact 1: Direct impact to non-designated buried remains associated with this monument record.	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Non-significant
			Operation: No Impact	N/A	N/A	None required	N/A
36	Penrhosfeilw Chapel	Medium	Construction Impact 4: Indirect impact to the setting of a non-designated asset during installation of onshore cable.	Negligible	Minor	None required	Minor
			Operation: No Impact	N/A	N/A	None required	N/A
37	Pillbox, north-east of Tre God	Medium	Construction Impact 4: Indirect impact to the setting of a non-designated asset during installation of onshore cable.	Negligible	Minor	None required	Minor
			Operation: No Impact	N/A	N/A	None required	N/A

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
38	Parc Cybi archaeological remains	Medium	Construction Impact 1: Direct impact to potential buried archaeological remains associated with known (recorded) archaeological remains during installation of onshore cable and grid connection substation (Parc Cybi option).	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Non-significant
			Operation: No Impact	N/A	N/A	None required	N/A

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
39	Cist burial, remains of hut circles & finds	Medium	Construction Impact 1: Direct Impact to potential buried archaeological remains associated with known (recorded) archaeological remains during installation of onshore cable.	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Non-significant
			Operation: No Impact	N/A	N/A	None required	N/A

RHDHV No.	Name	Heritage Value	Impacts Summary	Magnitude of impact	Significance of effect	Additional Mitigation Measures	Residual effect (post-mitigation)
40	Remains of Hut circles & finds	Medium	Construction Impact 1: Direct Impact to potential buried archaeological remains associated with known (recorded) archaeological remains during installation of onshore cable.	High	Major	Pre-construction identification of potential archaeological sites through evaluation (geophysical survey potentially followed by trial trenching) which will in turn feed into decisions regarding micro-siting or route refinement, and the option to change design to use trenchless construction methods on sections as part of the post-consent works. This will result in the avoidance of sites wherever possible, ensuring they are preserved in-situ. Where avoidance is identified as not being viable, consultation with stakeholders will be undertaken and a decision made between parties on how to proceed.	Non-significant
			Operation: No Impact	N/A	N/A	None required	N/A

Table 27-17 Summary of Potential Impacts for Noise and Vibration

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction and operational phase noise and vibration impacts	Human receptors	Medium	No Impact	No Impact	Best practice measures. Noise and Vibration Management Plan.	Not significant
	Ecological receptors	Considered in **Chapter 19, Onshore Ecology**				N/A
Construction, operational and decommissioning phase road traffic noise and vibration impacts	Human receptors within road network study area	Medium	Negligible at worst	Negligible Impact	Not required	Not significant
	Ecological receptors	Considered in **Chapter 19, Onshore Ecology**				N/A

Table 27-18 Summary Of Potential Impacts For Air Quality

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction phase dust emissions	Human receptors within 350m	High sensitivity	Medium at worst	The IAQM guidance does not require consideration of significance prior to mitigation	Best practice dust minimisation and suppression methods as recommended by the IAQM	Not significant
	Ecological receptors within 50m	High sensitivity	Large at worst			Not significant

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction, operational and decommissioning phase road traffic emissions	Human receptors within 200m of road network	High sensitivity	Negligible	Not significant	Not required	Not significant
	Ecological receptors within 200m of road network	High sensitivity	Negligible	Not significant		Not significant

Table 27-19 Summary of Potential Impacts for Traffic and Transport

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
Construction Phase						
Impact 1: Severance	Links 4, 5, 6, 8	Low – High	Negligible	Negligible to Minor	N/A	Negligible to Minor
Impact 2: Pedestrian/ Cycle Amenity	Links 4 and 5	Low – High	Negligible	Negligible to Minor	N/A	Negligible to Minor
	Link 6 and 8	Low	Medium	Minor	N/A	Minor
Impact 3: Road Safety	All links	Negligible	Negligible	Negligible	N/A	Negligible
Impact 4: Driver Delay (capacity)	Junction 1, 2, 3	High	Negligible	Minor	N/A	Minor
	Landfall substation access	High	Medium	Major	CTMP management measures to prevent two HGVs meeting at the new access	Minor

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Additional Mitigation Measures	Residual Impact
					Provision of a new access to include a bound surface, advanced warning signs and a temporary speed limit.	
Impact 5: Driver delay (road closures)	Links 5, 8, 10 12	Low	Low	Minor	CTMP measures including: temporary traffic signals/ stop go boards; safe pedestrian routes; and agreeing timing of works	Minor
	Links 6, 11 and Mill Road	High	Negligible where direct access can be maintained	Minor	N/A	Minor
			High where direct access cannot be maintained	Major	Direct communication between the Contractor and residents; Temporary parking facilities; and Banksman to guide and assist residents through the works.	Moderate
	Links 6, 11	Low	Low	Minor	CTMP measures including: Detail of traffic management measures including proposed diversion signing; Staging of construction activities; and Details of measures to escort pedestrians and cyclists through the works.	Minor
Operational Phase						
No discernible impacts.						
Decommissioning Phase						
Contractual details relating to decommissioning are yet to be finalised, however the ultimate responsibility for the decommissioning of the general onshore electrical infrastructure will lie with Menter Môn. At this stage, this is expected to consist primarily of removal of the landfall and grid connection substations. It is anticipated that the decommissioning impacts would be no worse than those of construction.						

Table 27-20 Summary of Key Potential Impacts for Seascape, Landscape and Visual Receptors

Receptor	Sensitivity	Magnitude	Effect	Significance	Additional Mitigation Measures
Seascape					
SCA 10 – Carmel Head to Penrhyn	High/medium	Slight/negligible	Minor (adverse)	Not significant	No further mitigation, reduced through embedded mitigation as far as possible
SCA 11 – Holyhead	Medium	Slight	Minor (adverse)	Not significant	
SCA 13 – Holyhead Mountain	High	Medium	Major/moderate (adverse)	Significant	
SCA 14 – Rhoscolyn	High/medium	Medium	Moderate (adverse)	Significant	
SCA 31 – West of Anglesey	Medium	Medium/slight	Moderate (adverse)	Significant	
Designations					
Isle of Anglesey AONB	High	Medium	Moderate (adverse)	Locally significant	No further mitigation, reduced through embedded mitigation as far as possible
Heritage Coast (Holy Island)	High	Substantial	Major (adverse)	Significant	
Heritage Coast (north west Anglesey)	High/medium	Slight/negligible	Minor (adverse)	Not significant	
Mynydd Mechell SLA	Not specifically assessed	None	None	Not significant	
Conservation Areas	Not specifically assessed	Not specifically assessed	Predicted to be very limited	Not significant	
Carreglwyd Registered Park and Garden	Not specifically assessed	Not specifically assessed	Predicted to be limited	Not significant	
Settlements					
Holyhead	High	Negligible	Moderate/minor	Not significant	No further mitigation, reduced through embedded mitigation as far as possible
Trearddur	High	Slight to negligible	Moderate to moderate/minor	Not significant	
Rhosneigr	High	Negligible	Minor	Not significant	
Dispersed residential properties (north west Holy Island)	High	Substantial to medium	Major to major/moderate	Significant	
Transport routes					

Receptor	Sensitivity	Magnitude	Effect	Significance	Additional Mitigation Measures
Primary roads	Medium/low	Slight to negligible	Minor to negligible	Not significant	No further mitigation, reduced through embedded mitigation as far as possible
Secondary roads	Medium/low	Slight	Moderate/minor	Not significant	
Minor roads (north west Holy Island)	High/medium	Substantial to medium	Major/moderate	Significant	
Ferry passengers	Medium	Slight	Moderate/minor	Not significant	
Recreational Receptors					
Users of long-distance footpaths	High	Substantial to medium	Major to major/moderate (locally)	Significant	No further mitigation, reduced through embedded mitigation as far as possible
Other footpaths and Open Access Land	High	Substantial to medium	Major to major/moderate (locally)	Significant	
Promoted cycle routes	High/medium	Substantial to medium	Major to major/moderate (locally)	Significant	
Visitors to South Stack RSPB Visitor Centre	High	Substantial to medium	Major to major/moderate (locally)	Significant	
Visitors to beaches (Porth Dafarch, Trearddur Bay, Borthwen Sliver Bay, Rhosneigr and Penrhos)	High	Negligible to none	Minor to none	Not significant	
Visitors to beach at Abraham's Bosom	High	Substantial	Major	Significant	
Offshore recreational receptors	High/medium	Slight to negligible	Moderate (locally)	Not significant	

Table 27-21 Summary of Potential Impacts for Socio-Economics, Tourism and Recreation

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
Impact 1: Social benefits -	£19M and £11M per annum local expenditure is anticipated during the construction (peak) and operation phases of the Project. With the implementation of	Major and moderate beneficial	▪ Seeking to localise as much development and operational expenditure in Anglesey and North Wales as possible;

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
Decentralisation of economic growth	mitigation measures that maximise local content, the effects during construction and operation are predicted to be major and moderate beneficial.		▪ Encouraging the local supply chain to invest in key capabilities that maximise local contracting opportunities; ▪ Encouraging appropriate public sector support and private sector investment to back the supply chain endeavours; ▪ Seeking to expand the marine energy and related renewables and energy systems activity in Anglesey and North Wales, as much as possible; ▪ Seeking to expand the range of development activities, to increase the activity during the operations years.
Impact 2: Wellbeing of future generations - Green branding for locality	The implementation of mitigation measures that strengthen the 'green' credentials of the Project\locality will lead to moderate beneficial effects on the wellbeing of future generations for all phases.	Moderate beneficial	▪ Establishing and maintaining a strong online and news media presence for the brand through the management of news, data, information and progress announcements; ▪ Ensuring that all activities undertaken by the Project and its delivery partners are aligned with a defined set of brand values and guidelines; ▪ The capturing of video and photo opportunities associated with all aspects of project development; ▪ Having resources available to welcome and host reporters and other interested parties; ▪ Organising regular local events to share the brand with local residents and ensure local buy-in; ▪ Attending sector events nationally and international as appropriate; and ▪ Seeking opportunities for publicising the Project through any appropriate media.
Impact 3: Economic impacts - Direct and secondary income	In terms of direct spending in the locality, Anglesey is expected to benefit in the region of £10M and £5M during the construction and operation phases respectively.	Moderate beneficial	▪ Menter Môn should attempt to maintain lobbying pressure on UK and Welsh Governments to support marine renewables; ▪ Menter Môn should encourage the development of support mechanisms for marine energy, such as Innovation PPA, or

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
	The construction phase of the Project is going to see major spend at a National scale. With the implementation of mitigation measures such as development of support mechanisms and the local work force, direct and secondary income is expected to experience moderate beneficial effects for all phases.		ring-fenced Innovation CfD, being promoted nationally (Marine Energy Council, 2019); ▪ Outreach work should be promoted to encourage Schools, Colleges and Universities to develop appropriate training for the workforce; and ▪ Detailed work should be undertaken, outside the framework of this EIA, to fully develop a local and regional supply chain that can take advantage of the opportunities that develop, via this Project.
Impact 4: Economic impacts - Accumulation of grant support	The Project would represent a big step towards this commercialisation, but it is a demonstration zone, so should still attract grant aid. It will also attract research grant funding, for various aspects of the development. With continued government lobbying and development of further R&D/Grant funding opportunities, the Project is expected to experience major and moderate beneficial effects from a grant support perspective during the construction and operation\decommissioning phases respectively.	Major and moderate beneficial	▪ Continued pressure exerted by Menter Môn, via both industry-coordinated lobbying and personal communications, on UK and Welsh Government to support the marine energy sector; ▪ Continued pressure by Menter Môn in support of the suggested development of support mechanisms for marine energy, such as Innovation PPA or ring-fenced Innovation CfD, being promoted nationally (Marine Energy Council, 2019); ▪ Ongoing research into the full range of grant options available to projects that intend to utilise the Project; ▪ Full engagement with local and national development agencies to ensure all support mechanisms are fully developed; and ▪ There are some risks with EU funding around Brexit. This can be mitigated against by fully engaging with relevant Welsh Government departments.
Impact 5: Level of commerce activity -	The successful implementation of measures that increase the understanding of the Project and establish a strong green cluster locally, will lead to major beneficial effects	Moderate beneficial	▪ Ensuring that there is an understanding of the benefits of clustering within all key stakeholders;

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
Green cluster creation	during the operation and repowering phases. The effects will be moderate beneficial during construction.		▪ Ensuring that all activities undertaken by the Project support cluster creation; in particular, through progressive partnership type procurement processes, wherever practical/possible; ▪ Working with the existing Energy Island Programme to explore further opportunities for cluster creation; ▪ Encouraging established sector players to create/join in with a local cluster; and ▪ Advocating the inherent advantages and opportunities that exist on Anglesey (and possibly North Wales) for such a cluster to be created.
Impact 6: Job opportunities – Numbers	The Project could be expected to create between 4670 and 5980 FTE job years across Wales covering all phases of construction, installation and operations. The majority of these jobs are expected to be located within Anglesey with some 2231 to 3562 locally based jobs envisaged. The greatest proportion (90%) these job years would arise during the operations phase. In addition to these local FTE job years a further 1500 FTE job years are anticipated for North Wales and some 900 FTE job years foreseen for wider Wales. With implementation of appropriate mitigation\optimisation, the Project is expected to give rise to major beneficial impacts across all phases.	Major beneficial	▪ Ensuring support is given to developers (tenants) to manufacture and construct the devices within Wales; ▪ Developing training programmes to up-skill the workforce; ▪ Highlighting the job availability across Wales, timely and in advance of the developments to encourage workforce to prepare; ▪ Encouraging the supply chain to prepare and bid for any contracts; and ▪ Creating a cluster of local and region companies that can ensure local content – see Impact 5.
Impact 7: Job opportunities - Types, quality, skills areas	The Project will create a high number of jobs within the local economy, some of these will be highly skilled and will provide a very strong opportunity regionally and locally. Major beneficial effects are expected for the majority of phases with the implementation of appropriate mitigation e.g. encourage a stronger local content and support the	Major beneficial	▪ Development of appropriate training to up-skill the work force in advance of the Project; ▪ Highlighting the job availability across Wales in a timely fashion and in advance of the developments to encourage workforce to prepare;

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
	up skilling of the workforce to improve the quality of jobs on offer.		▪ Encouraging Schools, Colleges and Universities to develop appropriate training for the workforce; ▪ Incentivising developers to create apprentices and other training opportunities; and ▪ Encouraging some of the specialist skilled workforce needed to relocate to the Anglesey area.
Impact 8: Training Impacts - New skills and competence needs	Project construction will offer temporary employment opportunities both in terms of direct construction jobs and opportunities in the supply chain. There is a requirement for up-skilling of the local, regional and national workforce to take advantage of the opportunities presented by the Project. Moderate beneficial effects will be experienced nationally, regionally and locally if measures such as those that increase training uptake are implemented.	Moderate and minor beneficial	▪ Ensuring there is a robust and experience-based plan of what capacity, skills, and experience are required to support a project of this nature; ▪ Menter Môn, the third-party managers of the Project, have a remit to maximise the economic benefit to Anglesey and therefore the retraining of the potential workforce will be a high priority, to optimise and maximise this potential beneficial impact; ▪ Menter Môn should map out the opportunities and encourage the development of specific training programmes, that focus on the development opportunities identified in the mapping process; and ▪ These options could be developed throughout the phases of the Project, allowing for increased employment opportunities.
Impact 9: Training impacts - Tertiary BSc, Eng, PhD	This impact is considered beneficial for all three regions being assessed, as there could also be benefits to other regional and national university's and training establishments.	Moderate and minor beneficial	▪ The full support of the local and regional universities to fully utilise the MDZ to develop research and courses and seek out tidal energy research students should optimise this impact; and ▪ Encourage schools, colleges and universities to develop appropriate training for the workforce.

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
Impact 10: Additional local services - New technical skills, workboats, cranes, better marine knowledge	Development of local supply chain will continue to progress and over time will provide additional, services, facilities and knowledge. Moderate and minor beneficial effects will be experienced during the construction and operation phases respectively where measures that are successful in encouraging and supporting local capacity are implemented.	Moderate beneficial	▪ Establishing a clear list of anticipated requirements well in advance of the need actually arising and engaging with the local supply chain to assess their interest in engaging in capacity building; ▪ Ensuring that there are appropriate, transparent and legal procurement mechanisms to reward proactive local capacity investment, with participation in future work activities; ▪ Exploring parallel capacity building projects with prospective supply chain partners; ▪ Taking forward the Action Plan produced via the 2015 Fisheries Supply Chain Study report commissioned by Menter Môn (MarineSpace and Aquatera, 2015); ▪ Establishing formal supply chain partnerships where there is strong alignment of purpose; and ▪ Ensuring that site users and clients are made aware of and beneficially directed to engage with, local suppliers who have invested in important local capacity.
Impact 11: Energy security - More green electricity, local supply, diversity of supply	The Project will help to beneficially support a transition to a more decentralised and decarbonised energy model by showing how and where best tidal energy may be able to contribute effectively to local, regional and UK energy supply.	Moderate beneficial	▪ Consider the actual scale and pattern of power outputs at different stages of development, with different technologies and with predicted maintenance and unplanned outages; ▪ Consider the merits or otherwise of introducing power storage and grid system balancing technologies alongside the generation assets; ▪ Consider specialised energy markets that may exist locally, that could be directly serviced by power outputs; and ▪ Consider how supplies of tidal energy might add to the resilience of the Anglesey and nearby grid system.

Impact	Description	Effect	Additional Mitigation / Optimisation Measures
Impact 12: Decarbonisation - Clean energy, balancing services, spin-off capacity	Opportunities for decarbonisation and clean growth will only be fully realised within the operational and repowering stages of the Project and tenant's projects.	Moderate beneficial	▪ Full assessment of the possible carbon savings for each of the tenant's projects within the overall Morlais Project should be quantified and maximised; ▪ An assessment methodology that highlights how projects and the supply chain can make carbon savings should be developed; ▪ Balancing services that can complement the introduction of tidal energy should be developed, in parallel with the phases of the Project; and ▪ Spin off opportunities should be encouraged and developed alongside the different phases of the Project.

27.5. CONCLUSIONS

31. For onshore and offshore topics, the assessments conclude that the Project will not result in significant impacts once appropriate mitigation has been implemented, with the exception of traffic and transport, marine mammals, onshore ecology, SLVIA and onshore archaeology and cultural heritage, under a precautionary worst case scenario. It should be noted that identified significant residual impacts are predominantly localised, temporary effects, which are reversible after the completion of construction or which will reduce to not significant over time.

32. Moderate adverse impacts have been identified during construction in **Chapter 23, Traffic and Transport** for driver delay (road closures) where direct access cannot be maintained, particularly at Links 6, 11 and Mill Road, for the three properties that would be within the road closures.

33. Moderate adverse impacts have been identified during operation in **Chapter 12, Marine Mammals** for collision risk with operational turbines, on bottlenose dolphins. This has been precautionarily assessed as potentially minor to moderate adverse. This reflects the small number of individuals in the area; however, the potential risk is likely to be lower as bottlenose dolphins have not been recorded in the MDZ and are more likely to move along the coast than through the MDZ array area. Consultation to agree mitigation and monitoring will be undertaken throughout the development of the final design of the project to allow the best available practices to be implemented.

34. Moderate adverse impacts have been identified during construction in **Chapter 19, Onshore Ecology** for habitat loss and disturbance of features of statutory designated nature conservation designated sites. Under a worst-case scenario where HDD at landfall is not possible for technical / engineering reasons, landfall activities will involve trenching the cabling through a narrow coastal strip of the Holy Island SSSI, SPA, SAC designation. This will involve disturbance and temporary habitat loss of up to 0.07 % of the designated site. Following the implementation of mitigation including associated habitat reinstatement, the temporarily disturbed designated habitats by the coast are anticipated to recover over a number of seasons and will be monitored through post construction surveys with consultation with NRW of results. Therefore, the impact to the Glannau Ynys Gybi / Holy Island Coast SSSI/SPA/SAC is assessed to be reduced to moderate adverse in significance should the cables be trenched at landfall. If HDD technology is used, there will be no impact to the Glannau Ynys Gybi / Holy Island Coast SPA/SAC/SSSI.

35. Some potentially significant impacts have been identified in **Chapter 24, Seascape, Landscape and Visual Impact Assessment**, within localised extents of certain components of the project. The SLVIA has demonstrated that the significant effects would occur in relatively contained parts of the study area. The tidal energy devices would not become a defining feature of seascape or landscape character and would comprise small components within the open views that can be seen over the Irish Sea.

36. Moderate adverse impacts have bene identified during operation in **Chapter 20, Onshore Archaeology and Cultural Heritage** for indirect impact to setting of assets from offshore infrastructure at South Stack Lighthouse.

37. Sensitive site selection alongside embedded and additional topic specific mitigation, as appropriate, will deliver a project that avoids the vast majority of the potential impacts assessed entirely. Potential adverse impacts identified through the worst case assessment are of (minor to moderate) adverse significance and are typically temporally and geographically limited.

38. **Chapter 25, Socio-economics, Tourism and Recreation** demonstrates a number of beneficial impacts resulting from the project, including direct employment, direct spending in the locality, training opportunities and the development of the local supply chain.

27.6. REFERENCES

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