Afon Wen Seawall Defence Works

Habitat Regulations Assessment

Draft

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Contract

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This report describes work commissioned by MPH Construction following an instruction dated 12th May 2023. Hannah Webster and Jonathan Harrison of JBA Consulting carried out this work.

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Abbreviations

HRA	Habitat Regulations Assessment
PEA	Preliminary Ecological Appraisal
SAC	Special Area of Conservation
SPA	Special Protection Area
WFD	Water Framework Directive

1 Introduction

1.1 Background

1.2 Legislative Context

The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (amendment) (EU Exit) Regulations 2019), also known as the 'Habitats Regulations', provide legal protection to habitats and species of national importance. The regulations also secure an ecological network of protected sites, consisting of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Government guidance also requires that Ramsar sites (which support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance) are given the same level of protection as SACs and SPAs.

Prior to the UK's withdrawal from the EU, SACs were designated and protected under domestic legislation transposed from European Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive), and SPAs under European Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive). Together these sites formed a European-wide Natura 2000 network of protected sites. Since 31 December 2020, SACs and SPAs within the UK no longer fall within the Natura 2000 network, and instead form a National Site Network. SPAs and SACs continue to be referred to collectively as 'European sites' within the context of the Habitats Regulations, reflecting their international importance for the conservation of biodiversity.

SACs and SPAs within the National Site Network are also still designated for habitats listed on Annex I and for species listed on Annex II of the Habitats Directive, and criteria listed under the Birds Directive, and it is these Annex I habitats, Annex II species and Birds Directive Criteria against which assessments under the Habitats Regulations are still made.

Regulation 63 of the Habitats Regulations states that "A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which (a) is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in-combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives." This process is commonly referred to as Habitats Regulations Assessment (HRA).

2 Habitats Regulations Assessment Methods

2.1 Overview

Habitat Regulations Assessment follows a four-stage process as outlined in the Habitats Regulations Assessment Handbook (DTA, 2019) and summarised in Table 2-1 below. This report provides evidence to support Stage 1 and Stage 2 of the HRA process, to provide the Competent Authority(s) with information to make their assessment.

Table 2-1. The HRA Process

HRA Stage	Description
Stage 1: Screening	This process identifies the likely significant effects upon a European site of a project or plan, either alone or in-combination with other projects or plans and determines whether these impacts are likely to be significant. Following the recent ECJ judgement in the case of "people over wind" (Case C-323/17). Measures that are necessary to avoid or reduce impacts on the European site, even when considered standard environmental best-practice, can only be at Stage 2. If no likely significant effect is determined, the project or plan can proceed. If a likely significant effect is identified, stage 2 is commenced.
Stage 2: Appropriate Assessment	Stage 2 is subsequent to the identification of likely significant effects upon a European site in stage 1. This assessment determines whether a project or plan would have an adverse impact on the integrity of a European site, either alone or in-combination with other projects or plans. This assessment is confined to the effects on the internationally important habitats and species for which the site is designated (i.e. the interest features of the site). Appropriate Assessments, in line with ECJ Case C-461/17 Holohan v An Bord Pleanála, must also consider impacts upon habitats and species within or outside of a site boundary if they support a qualifying feature and could impact upon the conservation objectives of the site. If no adverse impact is determined, the project or plan can proceed. If an adverse impact is identified, stage 3 is commenced.
Stage 3: Assessment where no alternatives and adverse impacts remain	Where a plan or project has been found to have adverse impacts on the integrity of a European site, potential avoidance/mitigation measures or alternative options should be identified. If suitable avoidance/mitigation or alternative options are identified, that result in there being no adverse impacts from the project or plan on European sites, the project or plan can proceed.

HRA Stage	Description
	If no suitable avoidance/mitigation or alternative options are identified, as a rule the project or plan should not proceed. However, in exceptional circumstances, if there is an 'imperative reason of overriding public interest' for the implementation of the project or plan, consideration can be given to proceeding in the absence of alternative solutions. In these cases, compensatory measures will have to be put in place to offset any negative impacts.
Stage 4: Compensatory measures	Stage 4 comprises an assessment of the compensatory measures where, in light of an assessment of imperative reasons of overriding public interest, it is deemed that the project should proceed.

2.2 Guidance

The methodology used for this assessment is based on guidance in The Habitats Regulations Assessment Handbook (DTA, 2019). In addition, the following guidance documents were also consulted:

- European Commission Notice: Managing Natura 2000 sites. The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- UK Government Guidance on the Use of Habitats Regulations Assessment (UK Government, 2019).

2.3 Assumptions and Limitations

Information on the works and conditions on site are based on current knowledge at the time of writing. Cumulative impacts are based on published documentation. If other projects with the potential for cumulative impacts are identified, it may be necessary to re-assess this project.

3 Description of the Project

3.1 Project Overview

The proposed works are required to repair damage caused to the sea defences at Afon Wen (Figure 3-1 and 3-2). Repeated exposure to storm wave activity has resulted in damage, and removal of several sheet piles that front the seawall. The loss of the sheet piles has opened up a series of voids below the concrete base of the seawall. This currently affects roughly a 10 m stretch of the sea defence.

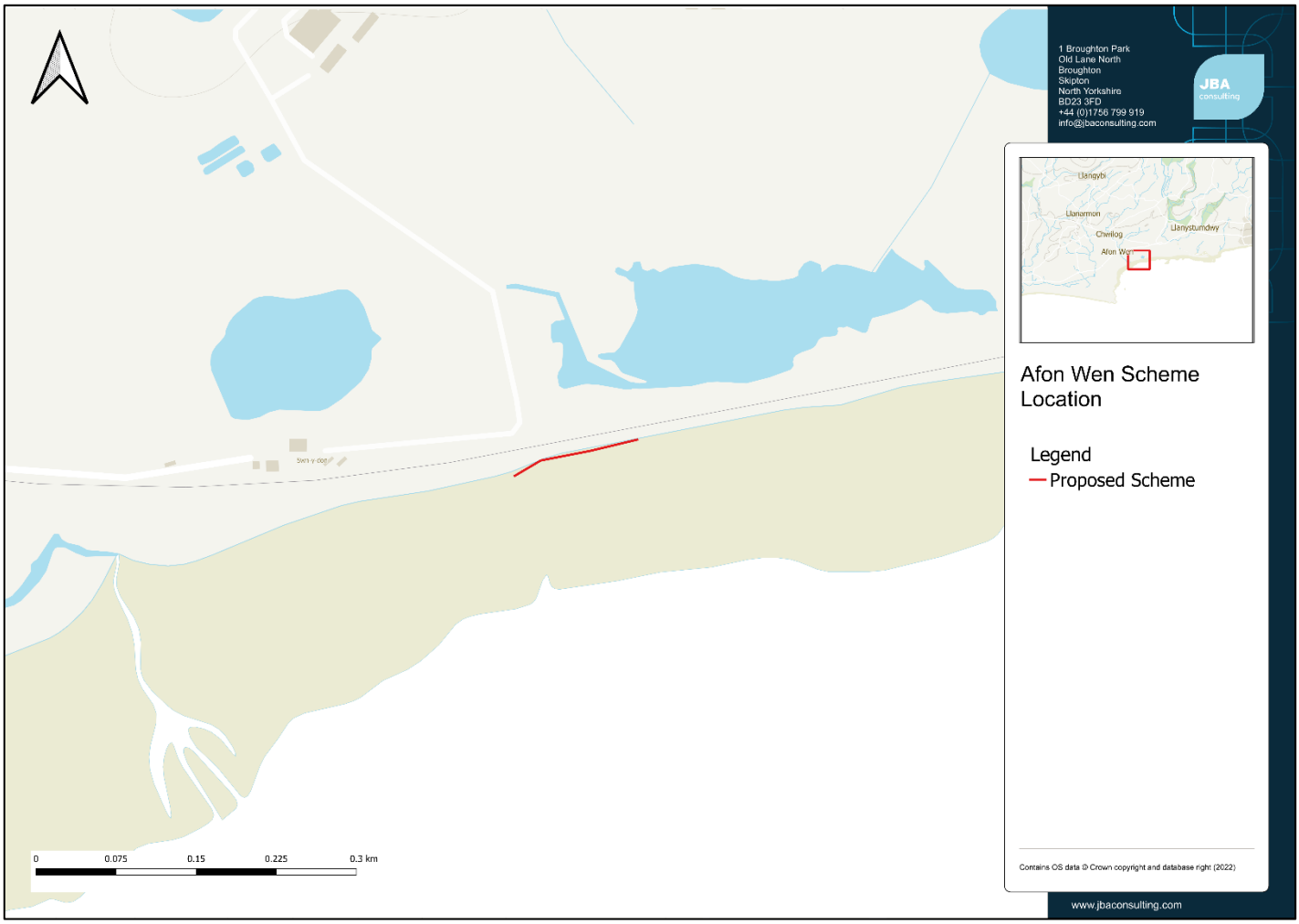

Figure 3-1. Site Location

Figure 3-2. Site Location Satellite View

3.2 Proposed Works

The proposed works involve repairs to the existing coastal defence along the frontage at Afon Wen (approximate location - 52°54'33.6"N 4°18'39.2"W). The works are required to reinstate the defences and protect the railway line which runs approximately 10 - 15 m behind the coastal defences.

Storm damage to the defence has displaced a number of sheet piles which has resulted in the removal of material from beneath the concrete seawall embankments. This has led to the creation of several voids that present a risk of undermining.

The proposed works are planned to fill the void spaces with pumped concrete prior to reinstating approximately eight sheet piles using a piling hammer positioned on the beach. The proposal is to then install rock armour in front of the piles to protect them from wave attack and limit movement in future. Detailed design drawings for the works can be found in the documents 23162B-001_B01 and 23162B-002_B01.

The works are further detailed as below:

- Piling works to reinstate storm damaged sheet piling - repair works are to be completed using a piling hammer.
- Potential to install anchor fixings to attach piles to the existing concrete structure (to be confirmed).
- Repair works to infill void spaces behind the damaged sheet piling - concrete is to be pumped into void spaces.
- Installation of rock armour in front of the sheet piles to prevent future damage.

4 European Sites

4.1 Project Area of Influence and European Sites

The proposed scheme is located within the Pen Llŷn a'r Sarnau/ Lleyn Peninsula and the Sarnau Special Area of Conservation (SAC) and is 1.5km from the Gogledd Bae Ceredigion/ Northern Cardigan Bay Special Protection Area (SPA). The scheme location in relation to the designated sites is mapped below in Figures 4-1 and 4-2.

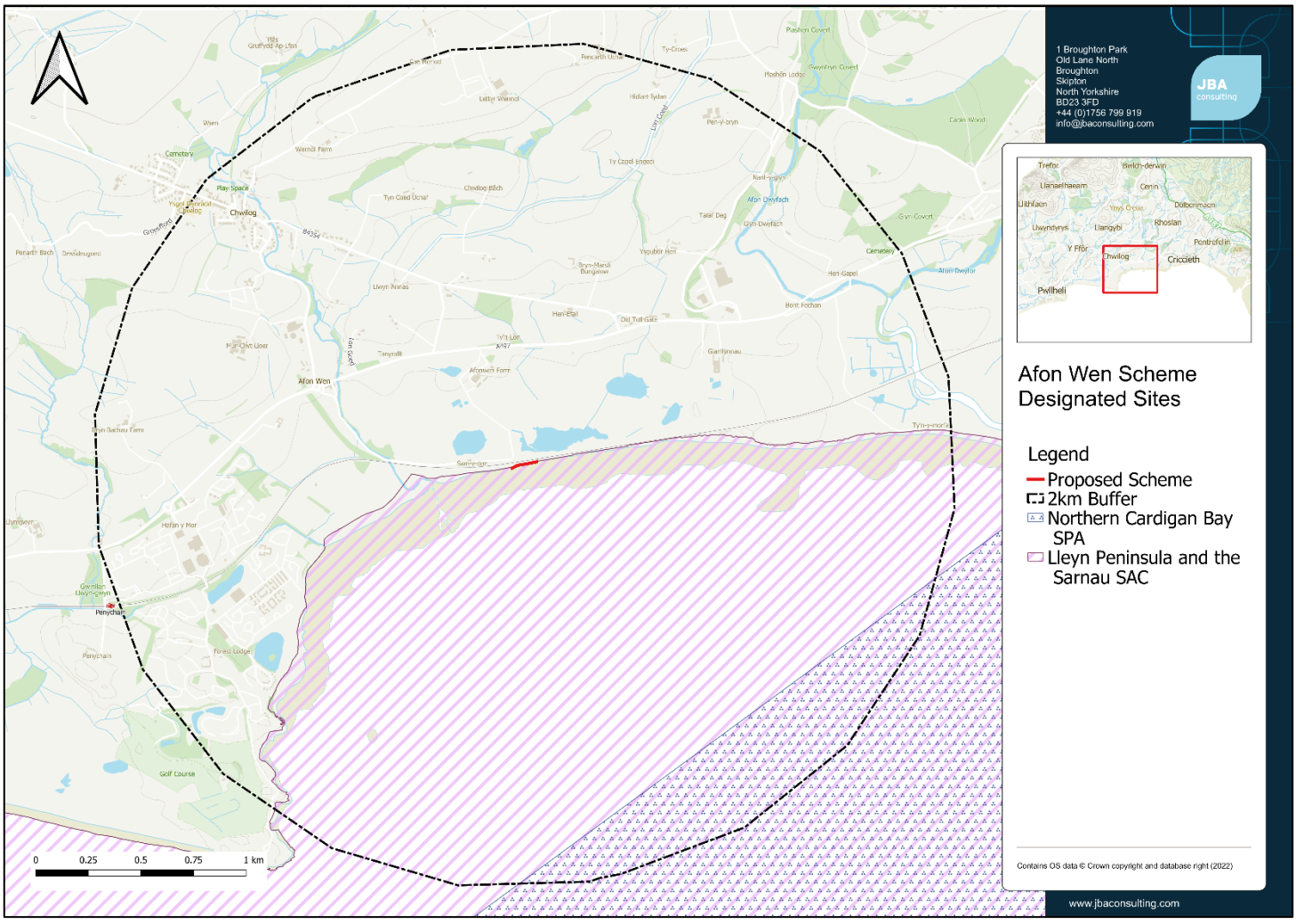

Figure 4-1. Location of proposed works area in relation to designated sites; Overview

4.2 Pen Llŷn a'r Sarnau/ Lleyn Peninsula and the Sarnau Special Area of Conservation (SAC)

4.2.1 Qualifying Features

The SAC comprises 92.6% marine areas and sea inlets, 5.4% tidal rivers, estuaries, mudflats, sandflats and lagoons (including saltwork basins, 1.2% salt marshes, salt pastures, salt steppes, 0.5% coastal sand dunes, sand beaches, machair, 0.2% shingle, sea cliffs, islets and 0.1% bogs, marshes, water fringed vegetation and fens.

Annex I habitats that are a primary reason for selection of this site:

- 1110 Sandbanks which are slightly covered by sea water all the time
- 1130 Estuaries
- 1150 Coastal lagoons
- 1160 Large shallow inlets and bays
- 1170 Reefs

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- 1140 Mudflats and sandflats not covered by seawater at low tide
- 1310 Salicornia and other annuals colonizing mud and sand
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia* maritime)
- 8330 Submerged or partially submerged sea caves

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- 1349 Bottlenose dolphin *Tursiops truncatus*
- 1355 Otter *Lutra lutra*
- 1364 Grey seal *Halichoerus grypus*

4.2.2 Conservation Objectives

To achieve favourable conservation status all the following, subject to natural processes, need to be fulfilled and maintained in the long-term. If these objectives are not met restoration measures will be needed to achieve favourable conservation status.

- Habitat Features
    - The overall distribution and extent of the habitat features within the site, and each of their main component parts is stable or increasing.
    - The physical biological and chemical structure and functions necessary for the long-term maintenance and quality of the habitat are not degraded.
    - The presence, abundance, condition and diversity of typical species is such that habitat quality is not degraded.
- Species Features

- The population is maintaining itself on a long-term basis as a viable component of its natural habitat.
- The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future.
- The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing.
- As part of this objective it should be noted that for the bottlenose dolphin and otter, populations should be increasing.

4.3 Gogledd Bae Ceredigion/ Northern Cardigan Bay Special Protection Area (SPA)

4.3.1 Qualifying Features

The site qualifies under Article 4.1- Qualification (79/409/EEC):

- Over winter the area regularly supports: Red-throated diver *Gavia stellata*, 1,186 individuals representing 7% of the wintering population in Great Britain (2001/02 – 2003/04)

4.3.2 Conservation Objectives

The single qualifying feature of the proposed SPA is the nationally important nonbreeding population of Red-throated diver *Gavia stellata*. The conservation objectives outlined for this feature include:

- The wintering population of Red-throated diver should be stable or increasing.
- The foraging habitat of this species should not decrease significantly, and its quality should remain unaffected by anthropogenic factors.

5 Screening Assessment

5.1 Introduction

The project is not wholly directly connected with, or necessary to, the conservation management of the site's qualifying features. Therefore, a HRA screening assessment is required.

The following section identifies potential hazards of the proposed works. The effects of relevant hazards are then assessed in relation to each of the relevant qualifying features of the Lleyn Peninsula and the Sarnau SAC and Northern Cardigan Bay SPA. The likelihood of potential exposure to the hazard and the mechanism of effect are also identified where possible. This then allows for likely significant effects on the interest features of the designated sites to be identified.

5.2 Potential Hazards to European Sites

The proposed project, as detailed in Section 3, was assessed in order to identify potential hazards that might arise to the relevant interest features of the Lleyn Peninsula and the Sarnau SAC and the Northern Cardigan Bay SPA. The list of potential hazards to the European sites are based on the designated site features and conservation objectives. These are:

- Direct habitat loss
- Noise and visual disturbance
- Water pollution
- Sediment release (temporary during construction)
- Alteration to coastal processes
- Physical damage/mortality
- Competition from, or mortality due to, invasive non-native species (INNS)

The results of this assessment are shown in Table 5-1.

Table 5-1. Potential Hazards to Relevant Qualifying Features

Potential Hazards	Habitat Loss	Noise and visual disturbance	Water pollution	Sediment release	Alteration to coastal processes	Physical damage/ mortality	Competition from, or mortality due to, invasive non-native species (INNS)
Sandbanks (covered by sea water at all times)	✓	X	✓	✓	✓	✓	X
Estuaries	✓	X	✓	✓	X	✓	X
Coastal Lagoons	✓	X	✓	✓	✓	✓	X
Large shallow inlets and bays	✓	X	✓	✓	✓	✓	X
Reefs	✓	X	✓	✓	X	✓	X
Mudflats and sandflats (not covered by seawater at low tide)	✓	X	✓	✓	✓	✓	X
Salicornia and other annuals colonising mud and sand	✓	X	✓	✓	✓	✓	✓
Sea caves (submerged or partially submerged)	✓	X	✓	X	X	✓	X
Atlantic salt meadows	✓	X	✓	✓	✓	✓	✓
Bottlenose dolphin	✓	✓	✓	X	X	✓	X

Potential Hazards	Habitat Loss	Noise and visual disturbance	Water pollution	Sediment release	Alteration to coastal processes	Physical damage/ mortality	Competition from, or mortality due to, invasive non-native species (INNS)
Otter	✓	✓	✓	X	X	✓	X
Grey seal	✓	✓	✓	X	X	✓	X
Red-throated diver (non-breeding)	✓	✓	✓	X	X	✓	X
Table key: ✓ = hazard potentially relevant, X = hazard not relevant							

5.3 Assessment of Likely Significant Affects

Assessment of the hazards identified in Table 5-1 was undertaken to determine whether they would be likely to have a significant effect on the relevant qualifying features of the Lleyn Peninsula and the Sarnau SAC and the Northern Cardigan Bay SPA and their supporting habitats, as a consequence of the project either alone or in combination with other plans or projects. The results of the screening assessment are given in Table 5-2. Plans and projects considered for the in-combination assessment are outlined in Section 6.4. Where appropriate, both construction and operational phase effects are considered.

Table 5-2. Assessment of Likely Significant Effects

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
Lleyn Peninsula and the Sarnau SAC					
Annex I habitats that are a primary reason for selection of this site: • Estuaries • Coastal lagoons • Reefs • Sandbanks which are slightly covered by	Habitat loss/ community simplification	The Annex I habitats ‘estuaries', 'coastal lagoons', ‘reefs’ and 'sandbanks' are not present within the works area and therefore no loss of these habitats is anticipated as part of the proposed works.	No	There is no potential for effects in combination with other PPPs.	No
	Competition from invasive non-native species (INNS)	The proposed works have the potential to spread terrestrial invasive species, however there are no invasive species likely to be introduced or spread which would impact the Annex I habitats present.	No	There is no potential for effects in combination with other PPPs.	No

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
sea water all the time	Physical Damage	Estuaries, Coastal lagoons, Reefs and Sandbanks are not present within the works area and will therefore not be impacted.	No	There is no potential for effects in combination with other PPPs.	No
	Water Pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
Annex I habitats that are a primary reason for selection of this site: • Large shallow inlets and bays	Habitat loss/ community simplification	The proposed works are located within the Tremadog Bay coastal water body. The works will be confined to the existing concrete seawall embankments and sandflats at the rear of the beach and will be limited to areas of the beach which are dry or inundated only at high tides. The proposed placement of rock armour at the base of the sewall embankment will result in a small-scale loss of sandflat habitat. There may also be further temporary losses within the construction areas at the top of the beach during construction works.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
	Alteration to coastal processes	Given the small scale of the proposed works no likely significant impacts to SAC Annex I features as a result of the proposed works via coastal squeeze are anticipated.	No	There is no potential for effects in combination with other PPPs.	No
	Physical damage/mortality	There is the potential for works to cause damage or disturb Tremadog Bay present within/adjacent to the proposed works area, during the construction phase.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Competition from invasive non-native species (INNS)	The proposed works have the potential to spread terrestrial invasive species, however there are no invasive species likely to be introduced or spread which would impact the annex I habitats present. Works will only take place above MHWS. There is therefore negligible risk of spreading or introducing marine INNS.	No	No potential for effects in combination with other PPPs have been identified.	No
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Mudflats and sandflats not	Habitat loss/ community simplification	The works will be confined to the existing concrete seawall embankments and sandflats at the rear of the beach and will be limited to areas of the beach which are dry or inundated only at high tides. The proposed placement of rock armour at the base of the sewall	Yes	In combination assessment carried forward to Appropriate Assessment	

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
covered by seawater at low tide		embankment will result in a small-scale loss of sandflat habitat. There may also be further temporary losses within the construction areas at the top of the beach during construction works.			
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Alteration to coastal processes	Given the small scale of the proposed works no likely significant impacts to SAC Annex I features as a result of the proposed works via coastal squeeze are anticipated.	No	There is no potential for effects in combination with other PPPs.	No
	Physical damage/mortality	There is the potential for works to damage sandflats, which are a feature of the SAC during the construction phase.	Yes	In combination assessment carried forward to Appropriate Assessment	
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	Habitat loss/ community simplification	The Annex I habitats ' Salicornia and other annuals colonizing mud and sand', 'Atlantic salt meadows' and 'Submerged or partially submerged sea caves' are not present within the works area and therefore no loss of	No	There is no potential for effects in combination with other PPPs.	No

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
• Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia* maritime) • Submerged or partially submerged sea caves		these habitats is anticipated as part of the proposed works.			
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Alteration to coastal processes	Given the small scale of the proposed works no likely significant impacts to SAC Annex I features as a result of the proposed works via coastal squeeze are anticipated.	No	There is no potential for effects in combination with other PPPs.	No
	Physical damage/mortality	The Annex I habitats ' Salicornia and other annuals colonizing mud and sand', 'Atlantic salt meadows' and 'Submerged or partially submerged sea caves' are not present within the works area and will therefore not be impacted.	No	No potential for effects in combination with other PPPs have been identified.	No
	Competition from invasive non-native species (INNS)	The proposed works have the potential to spread terrestrial invasive species, however there are no invasive species likely to be	No	No potential for effects in combination with other PPPs have been identified.	No

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
		introduced or spread which would impact the annex I habitats present. Works will only take place above MHWS. There is therefore negligible risk of spreading or introducing marine INNS.			
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Bottlenose dolphin *Tursiops truncatus*	Habitat loss/ community simplification	The works will take place above the Mean High-Water Spring (MHWS) and works will not result in loss of marine habitat. Therefore, there will be no loss of habitat suitable for Bottlenose dolphin.	No	No potential for effects in combination with other PPPs have been identified.	No
	Noise and visual disturbance	The works will take place above the Mean High-Water Spring (MHWS) however operations during the construction phase, including pilling, could cause noise disturbance to Bottlenose dolphin within the SAC.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Bottlenose dolphin within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works will take place above the Mean High-Water Spring (MHWS) and therefore no Bottlenose dolphin	No	No potential for effects in combination with other	No

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
		within the SAC should be directly harmed during or as part of the proposed works.		PPPs have been identified.	
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Otter *Lutra lutra*	Habitat loss/ community simplification	There is the potential for Otter to be present in the works area for foraging and commuting. The works will result in a small area of temporary beach habitat loss, however there is ample alternative habitat available, and any potential impact on Otter habitat would be negligible. Habitat loss would be temporary for the duration of on-site works.	No	No potential for effects in combination with other PPPs have been identified.	No
	Noise and visual disturbance	Operations during the construction phase could cause noise and visual disturbance to Otter in the surrounding area	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Otter within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Physical damage/mortality	The works area is relatively small scale and no holts or resting sites for Otter are present on site. Any Otter present in the works area can	No	No potential for effects in combination with other PPPs have been identified.	No

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
		reasonably be expected to move away from harm.			
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Grey seal *Halichoerus grypus*	Habitat loss/ community simplification	The works area is not a known hauling out spot for seals, although it is possible it is occasionally used as such. The works will result in a small area of temporary beach habitat loss, however there is ample alternative habitat available, and any potential impact on Grey Seal habitat would be negligible. Habitat loss would be temporary for the duration of on-site works. Works will not result in loss of marine habitat.	No	No other works impacting Grey Seal habitat, either terrestrial or marine, have been identified that are likely to act in combination with these works.	No
	Noise and visual disturbance	Operations during the construction phase could cause noise and visual disturbance to Grey seal that are hauled out in the surrounding area.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Grey seal within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
	Physical damage/mortality	The works will take place above the Mean High Water Spring (MHWS). While it is possible for seals to be hauled out on the beach during the works, works would not continue if seals were present and likely to be harmed.	No	No potential for effects in combination with other PPPs have been identified.	No
Northern Cardigan Bay SPA					
Non-breeding Red-throated diver *Gavia stellata*	Habitat loss/ community simplification	The works will take place above the Mean High-Water Spring (MHWS) and works will not result in loss of marine habitat. Therefore, there will be no loss of habitat suitable for non-breeding Red-throated diver within the SPA.	No	No potential for effects in combination with other PPPs have been identified.	No
	Noise and visual disturbance	Operations during the construction phase could cause disturbance to Red-throated diver foraging or resting at sea within the SPA.	Yes	In combination assessment carried forward to Appropriate Assessment	
	Water pollution	During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Red-throated diver within the SPA, in the absence of suitable on-site avoidance and mitigation measures.	Yes	In combination assessment carried forward to Appropriate Assessment	

Qualifying Feature	Risk (Pressure)	Likely Significant Effect Alone	Yes or No	Likely Significant Effect in Combination	Yes or No
	Physical damage/mortality	The works area is not known to contain foraging habitat for Red-throated diver. Any birds present in the works area can reasonably be expected to move away from harm.	No	No potential for effects in combination with other PPPs have been identified.	No

5.4 Screening Statement Conclusion

At stage 1 certain effects could not be screened out without appropriate management strategies put in place, those effects requiring appropriate assessment are summarised in Table 5-3 below.

Table 5-3. Summary of screening conclusions for the project showing all screened in hazards and European Sites.

Qualifying Feature	Hazard	Likely significant effect alone or in combination
Lleyn Peninsula and the Sarnau SAC		
Annex I habitats that are a primary reason for selection of this site: • Estuaries • Coastal lagoons • Reefs • Sandbanks which are slightly covered by sea water all the time	Water pollution	Alone
Annex I habitats that are a primary reason for selection of this site: • Large shallow inlets and bays	Habitat loss/ community simplification	Alone
	Water pollution	Alone
	Physical damage/mortality	Alone
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Mudflats and sandflats not covered by seawater at low tide	Habitat loss/ community simplification	Alone
	Water pollution	Alone
	Physical damage/mortality	Alone
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia* maritime) • Submerged or partially submerged sea caves	Water pollution	Alone
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Bottlenose dolphin *Tursiops truncatus*	Noise and visual disturbance	Alone
	Water pollution	Alone
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Otter *Lutra lutra*	Noise and visual disturbance	Alone
	Water pollution	Alone
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Grey seal *Halichoerus grypus*	Noise and visual disturbance	Alone
	Water pollution	Alone

Qualifying Feature	Hazard	Likely significant effect alone or in combination
Northern Cardigan Bay SPA		
Non-breeding Red-throated diver *Gavia stellata*	Noise and visual disturbance	Alone
	Water pollution	Alone

6 Appropriate Assessment

6.1 Introduction

Stage 2 of the HRA process is an Appropriate Assessment, which is required because likely significant effects caused by the proposed works have been identified on the Lleyn Peninsula and the Sarnau SAC and the Northern Cardigan Bay SPA. The Appropriate Assessment determines whether a project or plan would have an adverse impact on the integrity of a European site. In this assessment, avoidance or mitigation measures are applied to a point where the effects identified are no longer significant. If no significant impact on site integrity can be demonstrated beyond reasonable scientific doubt, the project or plan can proceed. If sufficient avoidance or mitigation measures cannot be applied, the project should not be taken forward in its current form unless there is a demonstration of no suitable alternatives and there are reasons of overriding public interest.

6.2 European Sites

Table 6-1 below shows the European sites that have been screened into the Appropriate Assessment, as summarised in Table 5-3.

Table 6-1. European sites screened into this assessment.

Site Name	Proximity to site
Pen Llŷn a'r Sarnau/ Lleyn Peninsula and the Sarnau Special Area of Conservation (SAC)	Within site
Gogledd Bae Ceredigion/ Northern Cardigan Bay Special Protection Area (SPA).	1.5km

6.3 General Scheme Mitigation Measures

6.3.1 Pollution Prevention Measures

Appropriate pollution prevention measures will be implemented to ensure that the habitats within proximity of the works, including the interest features and supporting habitats of the the Lleyn Peninsula and the Sarnau SAC and the Northern Cardigan Bay SPA are not

degraded as a result of pollution events during the construction phase. This mitigation will include:

- Reduced interaction between the waterbody and concrete; all pumped concrete should be injected into void spaces when the tide is receding, opposed to incoming. This will provide additional time for the concrete to cure.
- Plant machinery should avoid movement on the beach, particularly when using concrete, when the tide is in. Work should be conducted during dry conditions. This will require tide tables and weather forecasts to be referenced and work schedules arranged accordingly in advance of any works taking place.
- Following relevant guidance e.g. CIRIA Guidance: Control of water pollution from construction sites. Guidance for consultants and contractors (C532D) (Masters-Williams, 2001), including the delivery of toolbox talks to site staff.
- Any chemical, fuel and oil stores will be located on impervious bases within a secured bund with a storage capacity 110% of the stored volume.
- Biodegradable oils and fuels will be used where possible.
- Drip trays will be placed underneath any standing machinery to prevent pollution by oil/fuel leaks. Refuelling of vehicles and machinery will be carried out on an impermeable surface in one designated area well away from the high tide mark with capture of any spillages.
- Emergency spill kits will be available on site and staff trained in their use.
- Operators will check their vehicles on a daily basis before starting work to confirm the absence of leakages. Any leakages will be reported immediately.
- Daily checks will be carried out and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to be defective will be removed from site immediately or positioned in a place of safety until such time that it can be removed.
- This mitigation is industry standard practice and as a result will be incorporated into the project through the Environmental Management Plan (EMP).

6.4 In-combination Effects

Other plans and projects with potential in-combination impacts were reviewed through the Cyngor Gwynedd planning portal. No plans were identified that could potentially act in-combination with the proposed works. All of the planning applications within 1km of each of the site are all small-scale works that have no direct connection to the site. There are no Nationally Significant Infrastructure projects within 1km of the site.

6.5 Appropriate Assessment of Project Impacts and Mitigation

Taking into account the prevailing site conditions, screened in qualifying features, and the typical habitats and species necessary to the conservation of these features, the proposed works and mitigation measures and the conservation objectives for each European site, the following table details the Appropriate Assessment undertaken for the project. In Table 6-2 avoidance and mitigation measures are presented, and an assessment is made on whether an adverse impact remains after the mitigation is applied.

Table 6-2. Appropriate Assessment of Hazards and Mitigation

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
Annex I habitats that are a primary reason for selection of this site: • Estuaries • Coastal lagoons • Reefs • Sandbanks which are slightly covered by sea water all the time	Water Pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
Annex I habitats that are a primary reason for selection of this site: • Large shallow inlets and bays	Habitat loss/ community simplification - The proposed works are located within the Tremadog Bay coastal water body. The works will be confined to the existing concrete seawall embankments and sandflats at the rear of the beach and will be limited to areas of the beach which are dry or inundated only at high tides. The proposed placement of rock armour at the base of the seawall embankment will result in a small-scale loss of sandflat habitat. There may also be further temporary losses within the construction areas at the top of the beach during construction works.	Yes	Any habitat loss via the construction works will be temporary and localised. The proposed placement of rock armour at the base of the seawall embankment will result in a small-scale loss of sandflat habitat. This loss of habitat will be minimal and localised and will not affect the overall integrity of the SAC.	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes
	Physical damage/mortality: There is the potential for works to cause damage or disturb Tremadog Bay present within/adjacent to the proposed works area, during the construction phase.	Yes	Any damage to habitats present within the sites via the construction works will be temporary and localised. To minimise disturbance and habitat degradation plant will keep to agreed haul routes and not stray outside of these areas. It is considered that in this case the haul routes will rapidly recover following the completion of the works.	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Mudflats and sandflats not covered by seawater at low tide	Habitat loss/ community simplification: The works will be confined to the existing concrete seawall embankments and sandflats at the rear of the beach and will be limited to areas of the beach which are dry or inundated only at high tides. The proposed placement of rock armour at the base of the sewall embankment will result in a small-scale loss of sandflat habitat. There may also be further temporary losses within the construction areas at the top of the beach during construction works.	Yes	Any habitat loss via the construction works will be temporary and localised. The proposed placement of rock armour at the base of the seawall embankment will result in a small-scale loss of sandflat habitat. This loss of habitat will be minimal and localised and will not affect the overall integrity of the SAC.	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes
	Physical damage/ mortality: There is the potential for works to damage sandflats, which are a feature of the SAC during the construction phase.	Yes	Any damage to habitats present within the sites via the construction works will be temporary and localised. To minimise disturbance and habitat degradation plant will keep to agreed haul routes and not stray outside of these areas. It is considered that in this case the haul routes will rapidly recover following the completion of the works.	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia* maritime) • Submerged or partially submerged sea caves	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes
Annex II species present as a qualifying feature, but not a primary reason for site selection:	Noise and visual disturbance: The works will take place above the Mean High-Water Spring (MHWS) however operations during	Yes	Soundex Noise Sound Barriers will be erected at the proposed site during the proposed pilling works. Noise Sound barriers will reduce noise to <60dbs	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
• Bottlenose dolphin *Tursiops truncatus*	the construction phase, including pilling, could cause noise disturbance to Bottlenose dolphin within the SAC.			
	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Bottlenose dolphin within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Otter *Lutra lutra*	Noise and visual disturbance: Operations during the construction phase could cause noise and visual disturbance to Otter in the surrounding area	Yes	The works area is not a known to contain any holts or resting sites for Otter, although it is possible Otter use the area for foraging and commuting. There is ample alternative habitat available, and	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
			therefore any potential impact on Otter habitat would be negligible. Prior to works commencing each day, the works area and immediate vicinity will be checked for Otter presence. Should an Otter be encountered on site during the works, all works should cease immediately, and advice be obtained from an experienced ecologist. Soundex Noise Sound Barriers will be erected at the proposed site during the proposed pilling works. Noise Sound barriers will reduce noise to <60dbs and act as a visual barrier to reduce human visual presence. Works should not be undertaken at night and watercourses should not be illuminated by lighting, such as security lights, during works. Excavations left overnight	

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
			should either be covered, or an escape ramp installed to prevent the trapping of Otter.	
	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Otter within the SAC, in the absence of suitable on-site avoidance and mitigation measures.	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes
Annex II species present as a qualifying feature, but not a primary reason for site selection: • Grey seal *Halichoerus grypus*	Noise and visual disturbance: Operations during the construction phase could cause noise and visual disturbance to Grey seal that are hauled out in the surrounding area.	Yes	The proposed scheme is not located near any known breeding colonies. The works area is not a known hauling out spot for seals, although it is possible it is occasionally used as such by some individuals. There is ample alternative habitat available, and therefore any potential impact on	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
			Grey Seal habitat would be negligible. Prior to works commencing each day, the works area and immediate vicinity will be checked for hauled out seals. If any seals are present within 200m of the works, site staff will keep their distance and no works will take place until the seal has moved off of its own accord. Soundex Noise Sound Barriers will be erected at the proposed site during the proposed pilling works. Noise Sound barriers will reduce noise to <60dbs and act as a visual barrier to reduce human visual presence	

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Grey seal within the SAC, in the absence of suitable on-site avoidance and mitigation measures	Yes	Standard construction industry practices and associated measures for the management of pollution prevention are required throughout the duration of the proposed works. These measures are outlined in section 6.3.1.	Yes
Non-breeding Red-throated diver *Gavia stellata*	In the absence of appropriate mitigation, the proposed works have the potential to disturb interest features (Red throated diver) associated with the SPA, through increased noise and human disturbance, resulting in disturbance or abandonment of preferred habitats, which is likely to be significant at a local level of importance.	Yes	A suitably qualified ecologist will be assigned to the project and will monitor bird behaviour throughout the proposed works and if necessary, halt works where disturbance is observed. Soundex Noise Sound Barriers will be erected at the proposed site during the proposed pilling works. Noise Sound barriers will reduce noise to <60dbs and act as a visual barrier to reduce human visual presence. The works should be timed to avoid the overwintering period for birds in order to reduce impacts.	Yes

Qualifying Feature	Description of adverse effect(s)	Can adverse effect(s) be mitigated	Description of mitigation measures and how they would be applied	Can adverse effect on site integrity be ruled out
	Water pollution: During the construction phase, accidental fuel or concrete spills could cause changes in water chemistry and impact upon the habitats used by Red-throated diver within the SPA, in the absence of suitable on-site avoidance and mitigation measures.			

6.6 Implementation of Mitigation

The mitigation measures listed above are to be included in the Method Statement produced by the contractor who will be undertaking the works. The appointed contractor will therefore be responsible for ensuring that all on-site mitigation measures are implemented effectively.

7 Appropriate Assessment Conclusions

The proposed scheme will not have an adverse impact upon the Lleyn Peninsula and the Sarnau SAC and the Northern Cardigan Bay SPA either alone or in combination with any other plans or projects, providing the following mitigation measures are implemented:

- Industry standard pollution prevention measures, particularly addressing the risks of fuel and concrete spills.
- Prior to works commencing each day, the works area and immediate vicinity will be checked for hauled out seals. If any seals are present within 200m of the works, site staff will keep their distance and no works will take place until the seal has moved off of its own accord.
- Prior to works commencing each day, the works area and immediate vicinity will be checked for Otter. Should an Otter be encountered on site during the works, all works should cease immediately, and advice be obtained from an experienced ecologist.
- Soundex Noise Sound Barriers will be erected at the proposed site during the proposed pilling works to reduce disturbance to Bottlenose dolphin, Grey seals, Otter and Red-throated diver.
- The works will be timed to avoid the over-wintering period in order to reduce impacts to Red-throated diver.

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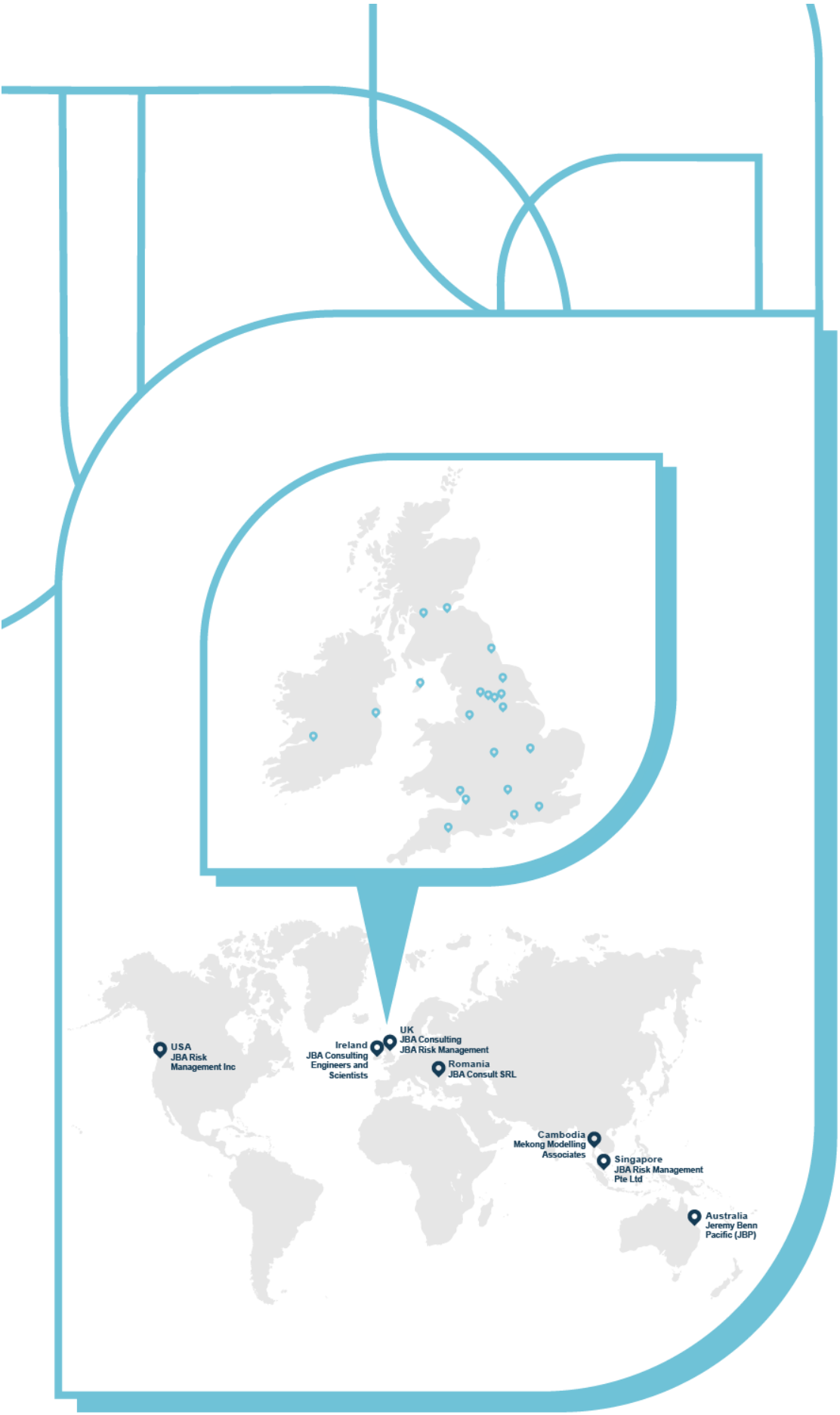

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