

2022

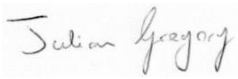
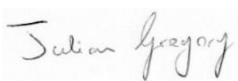
Pwll CERD

Preliminary Ecological Appraisal



AMCO GIFFEN



DOCUMENT INFORMATION			
Project	Pwll CERDs		
Location	Address: Millennium Coastal Path, Llanelli Rural, Llanelli, Carmarthenshire, SA15 4DT Grid Ref: SN 46676 00843 to SN 49244 00259		
Title	Preliminary Ecological Appraisal		
Document Ref	EV001019/5/PEA-1	Issue / Revision	1.0
File reference	EV001019/8/5/PEA-1		
Start Date	15/08/2022		
	Name	Signature	Date
Assessment Undertaken by	Owain Waters		8/2022
Document prepared by	Owain Waters		8/2022
Checked by	Julian Gregory		9/2022
Authorised by	Julian Gregory		9/2022

DOCUMENT CONTROL		
Rev.	Date	Description
0	08/22	Draft
1	09/22	Issued

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1 TECHNICAL SUMMARY

1.1.1 The summary below is based on the current understanding of the survey remit. Recommendation on future remit are based on best available information on potential future requirements. Further consultation will be required once design recommendation have been made follow the technical assessment and survey being undertaken by AMCO Giffen.

1.1.2 Please refer to Section 5 for legislative context and more detailed description of recommendations.

Table 1: Technical Summary Table

Feature or Species	CERD Survey Remit	Future Remits
Habitat	Limited impact likely during survey stage.	Further surveys dependent of design proposal
Designated Sites	Appropriate Assessment (HRA) and S28G Notice required for survey works. Marine License Band to be determined following consultation with NRW Marine Team.	Hold the Line (HTL) Policy valid until 2125.
Bird Species	Wader species foraging and roosting will be considered within the project HRA.	Dependant on future works remit. E.g., potential for further surveys or timing restrictions.
Common Amphibian and Reptile	Best practice and toolbox talk measures required. Reptiles should be assumed north of the site within the dune systems.	Dependant on future works remit. E.g., potential for further surveys, such as HSI or population surveys.
Priority Species	Otter and Grey Seal recorded within vicinity of defences. Works should work around low tide conditions during the daytime. Hazel Dormouse recorded within 400m of defence rear path. Any clearance remit for survey access is to be discussed with an ecologist prior to works progressing. Badger may potentially be close to access footprint. Further discussions regarding access required.	Dependant on future works remit. E.g., potential for further surveys or timing restrictions.
Invasive Species	Toolbox talks	Dependant on future works remit.
Aquatic Species	Generation of underwater noise should assessed within the HRA.	Dependant on future works remit.



2 INTRODUCTION

2.1 PROJECT BACKGROUND

- 2.1.1 EcoVigour was instructed by AMCO Giffen Ltd to undertake a Preliminary Ecological Appraisal (PEA) of six Rail Sea Defence Assets as part of the wider Coastal Estuaries River Defences (CERDs) asset appraisal and future design remits. AMCO have been commissioned to assess these six sites and propose future proofing designs to ensure long term resilience of the assets in relation to sea level rise and climate change.
- 2.1.2 The fifth site was Pwll. The study is required to inform AMCO Giffen Ltd of the ecological constraints present, ahead structure assessment, topographical surveys and sampling (bed and structure coring). This report documents the findings of the PEA and will serve as a supporting document to Appropriate Assessments (e.g., TLSE's or HRA's).
- 2.1.3 The objectives for the survey were:
- ◆ To undertake an ecological assessment of the site;
 - ◆ To identify ecological features within the site that could pose a constraint to the proposed development;
 - ◆ To identify opportunities for incorporating biodiversity enhancements into the development proposals;
 - ◆ To assess the site's potential to support protected species and make recommendations for further survey, where required to clarify potential ecological constraints;
 - ◆ To make recommendations for any valuable habitats to be considered, through retention or enhancement, or if this is not possible, by habitat mitigation or compensation;
 - ◆ To identify the presence of any invasive non-native species on site.
- 2.1.4 The ecological report has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance document 'Guidelines for Preliminary Ecological Appraisal - Second Edition' (CIEEM, 2017). The objective of the report is to provide a preliminary ecological assessment of the site based on the current design.
- 2.1.5 An initial ecological overview of the site is provided and potential ecological constraints and impacts of the current proposals are assessed. Recommendations for further surveys are provided where necessary.



2.2 SURVEY AREA DESCRIPTION

- 2.2.1 The survey area concerns the section of sea defence along the south east facing shore at Sudbrook, several hundred meters north (upstream) of the second River Severn road crossing, between SN 46676 00843 to SN 49244 00259.
- 2.2.2 Figure 1 below is a copy of the location specification outlined by AMCO Giffen. The compound is to be located within open areas at the Sudbrook pumphouse station, with personnel access possible via access steps to a rear of the pumphouse and an access path from the north, which allows for plant vehicle access to the beach area.
- 2.2.3 Access during the survey was possible during low tide, via a public footpath to the south of the defences.

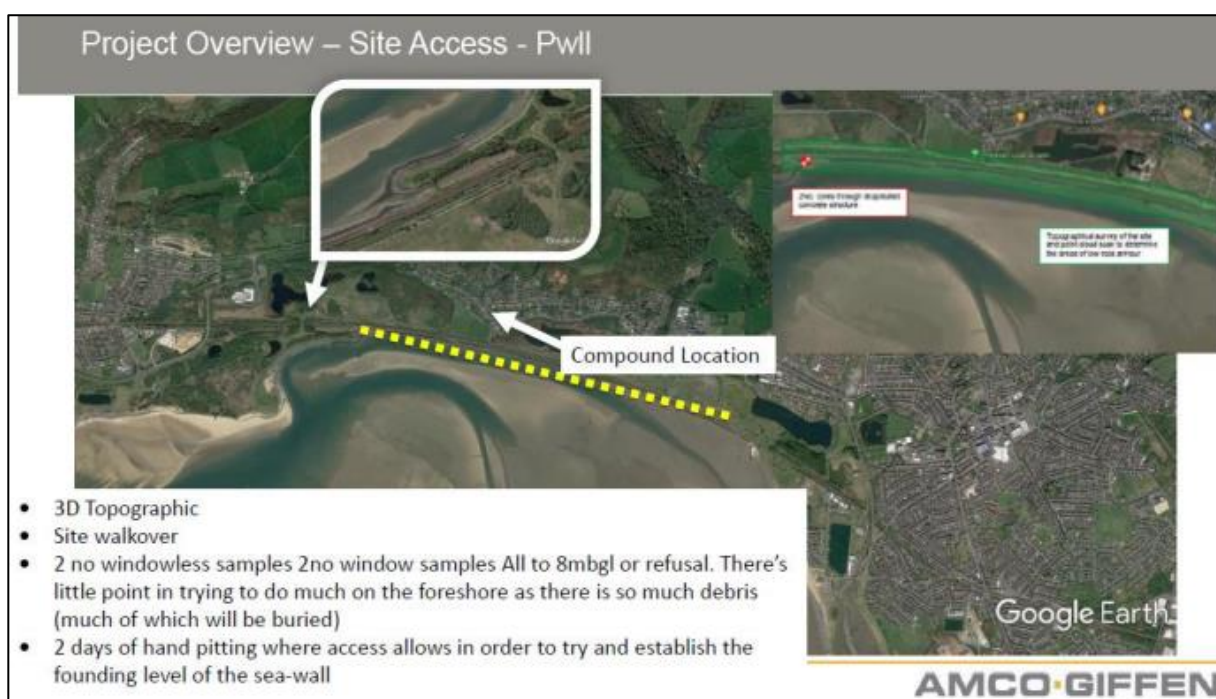


Figure 1: General project layout.

2.3 WORKS REQUIRED

- 2.3.1 The project is still in the design phase. AMCO Ltd engineers require access for small GI Machine rigs and topographical surveys to confirm the final design. These minor works will broadly involve:
- ◆ Vehicle and Personnel access and movement
 - ◆ Temporary Compound setup
 - ◆ GI sampling of beach and rail asset



3 METHODOLOGY

3.1 DESK STUDY

- 3.1.1 A desk study was conducted to assist with the overall site assessment. Statutory and non-statutory designated sites within 2km of the site boundary were identified. Broad habitat boundaries and types were identified from online aerial imagery.
- 3.1.2. The relevance of the reasons for designation of the protected sites within 2km of the site boundary has been considered during subsequent assessment of whether the proposed works will have any impact upon the biological integrity of such sites.

The desk study also included the following sources:

- ◆ Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website;
- ◆ Online aerial imagery resources;
- ◆ Ancient Woodland Inventory 2011;
- ◆ Natural Resources Wales (NRW);
- ◆ Joint Nature Conservation Committee (JNCC) and
- ◆ A review of OS mapping for waterbodies within 250-500 metres of the site.
- ◆ WWBIC Data Search – Ref: NA

- 3.1.3 **Note:** Records outlined below are not for the public domain and should not be forwarded to unauthorised third parties. The records below are intended for project purposes only.

3.2 WALKOVER SURVEY

- 3.2.1 The walkover was conducted by Owain Waters an experienced EcoVigour Ltd environmental consultant supported by the Client representative. The survey was conducted using methods outlined in the Joint Nature Conservation Committee (JNCC)'s 'Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit' (JNCC, 2010). The survey consisted of a visual survey of the site, identifying the broad habitat types present, identifying the suitability of the site to support protected and priority species.
- 3.2.2 Incidental observations of protected and/or priority species and the potential for such species to occur on site (and in the surrounding landscape where relevant) were also noted, however no specific protected/priority species surveys were undertaken as part of this preliminary ecological assessment.
- 3.2.3 A search for plant species as included in Schedule 9 of the Wildlife and Countryside Act (1981) as amended, was made during the survey. Under the Act it is an offence to spread, or cause the spread of, these species.

3.3 LIMITATIONS

- 3.3.1 Third party biological records do not represent a full species list for the area. The absence of records does not necessarily indicate absence of a species or habitat but rather that these have not been recorded or are perhaps under-recorded within the search area. The results of the survey and assessment undertaken by EcoVigour Ltd are representative at the time of survey.
- 3.3.2 This document does not contain a comprehensive list of botanical species on site with only plant species characteristic of each habitat and any incidental observations of notable plant species recorded. In addition, many plant species are only evident at certain times of the year; therefore, some plant species may have been undetected. No targeted ecological surveys were undertaken as part of this assessment to determine the presence of specific species.



4 RESULTS

4.1 DESIGNATED SITES

4.1.1 There is 5 statutory designated sites within 2km of the site boundary, details are provided in Table 2 below and locations in relation to the project in figure 2.

Table 2: Statutory designated sites within 2km.

Site Name	Designation	Reason for Designation	Distance from Site (km)
Pwll Lagoon	Site of Special Scientific Interest (SSSI)	Biological	<250m
Burry Inlet and Loughor Estuary	Site of Special Scientific Interest (SSSI)	Mixture	0.0km
Carmarthen Bay and Estuaries	Special Area of Conservation (SAC)	Mixture	0.0km
Burry Inlet	Special Protection Area (SPA)	Mixture	0.0km
Burry Inlet	RAMSAR	Bird Assemblage and Supporting Habitat	0.0km



Figure 2: Statutory Designated Sites within 2km

4.1.2 The boundary of the 4 of the 5 statutory sites overlap with the foreshore and seaward sections of the Pwll Defences.



4.1.3 There are also 2 non-statutory designated sites within 2km of the site boundary.



Figure 3: Non-statutory sites within 2km.

Table 3: Non-statutory sites within 2km.

Site Name	Designation	Reason for Designation	Distance from Site (km)
Ashpits Pond – Pwll Lagoon	LNR	Mixture	<250m
North Dock Dunes	LNR	Mixture	>500m

4.1.4 None of the Wildlife sites overlaps with the sea defence area or likely project footprints.

4.2 ANCIENT WOODLAND

4.2.1 There are several Ancient Semi Natural Woodland (ASNW) and Restored Ancient Woodland sites within 1km of the project area. None however are within an impact radius of the works and do not require further assessment at this time.

4.3 WATERBODIES

4.3.1 From available maps, there are several large ponds/lakes to the north and south of the site. These ponds have not been assessed to date.



4.4 SURVEY FIGURES

- 4.4.1 The figures below provide a visual summary of the walkover. This is not an extensive collection of the images collected from the survey. Additional images are available upon request.



Figure 4: Rear of sea wall behind network rail boundary.



Figure 5: Seawall defence protected by significant rock armour embankment.



Figure 6: Pebble and rocky foreshore habitat at the base of the rock armour defence ahead of sand beach.



Figure 7: Outfall situated between rock armour and defence wall.



4.5 COMBINED FIELD SURVEY AND DATA SUMMARY

4.5.1 **Habitat:** A full updated Phase I survey of the entire survey area has not been undertaken to date, the data set below (Figure 9) is based on available mapping from Sewbrec and NRW dataset and should be used as a rudimentary representation of the habitat present.

Habitat below the sea defence is predominantly, intertidal sand/mud and shingle/gravel habitats at the toe of the significant rock armour protection which spans the length of the defence.

To the rear of the defences are the large amenity grasslands and public path (Millennium Coastal Path). Within these areas, large ponds, sections of small woodland and improved grasslands.

The proposed location for the temporary compound is to be suited on existing gravel/hard standing which allows access to the rear of the sea wall via the public path, which is wide enough for road vehicles.



Figure 8: Phase I Habitat Data (Cofnod 2022)



- 4.5.2 **Bird Species** - The survey was undertaken during latter portion the traditional bird breeding season (March – August inclusive). Habitat is optimum i.e. surrounding vegetation, sources of fresh water (large ponds/lakes), and elevated areas to perch (nearby woodland blocks).

Within the data search, numerous bird records within 2km. In closer proximity to the sea wall, species such as Black-tailed Godwit, Scaup, Eurasian Skylark, Common Loon, Lapwing, Linnet, Starling, Common Reed Bunting, Eurasian Bullfinch, Red-throated Loon, Song Thrush, Dunnock etc. A comprehensive list of bird species can be found within the Appendix.

Habitats behind the seawall likely provide shelter to wader species during challenging weather conditions.

- 4.5.3 **Bat Species** - No definitive features pertaining to the presence of bats were identified within the surveyed areas.

Records predominantly originated from the large woodland block to the north within Stradey Woods.

The closest records originate from the nearby sewage treatment works close to the Pwll sea defence. The large ponds and relatively undisturbed areas of the Millennium Coastal Path likely support a more diverse population of bats than is recorded.

The sea defence itself, appears offers poor roosting opportunities.



Figure 9: Bat Record Locations in relation to structure.



4.5.4 **Common Mammal Species** – Species records within Cofnod data set in this region include: Badger, Common Shrew, Water Shrew, Hedgehog and Weasel.

4.5.5 **Priority Mammal Species** – In terms of priority species, Otter, Water Vole, Hazel Dormouse and Grey Seal have been recorded within 2km of the project footprint.

Hazel Dormice have been recorded within woodland blocks to the north of the project area, with the closest records being within 400m of the sea defence within the Pwll Lagoon SSSI site.

Otter spraint has been recorded close to the sea wall at the rear of the defence line, indicating there a suitable links to this area and the wider estuary suitable for otter.

Grey seal have been recorded further south west and east in the wider bay.

Badger are also recorded within 400m, with snuffle marks noted along some sections of the public footpath which may indicate local populations of badgers are foraging along the footpath edges.



Figure 10: Priority species including Badger, in relation to project.



- 4.5.6 **Common Amphibian and Reptile Species** – Common amphibian and reptiles are records appear in relative diversity within the dataset. GCN have been recorded a significant distance inland, while smooth newt have been recorded near the Afon Dysynni confluence. It is possible the ponds noted during the desktop survey are able to support these species, given the proximity of the record.

The dune habitat observed during the walkover north of the sea defence is suitable for reptiles, with several records of Slow Worm noted within this area. The historic manmade structures and rock armour of the sea defence may provide a reptile hibernacula and basking opportunities.



Figure 11: Common Amphibian and Reptile species in proximity to works.

- 4.5.7 **Invasive non-native plant species** – No Invasive Non-Native Species (INNS) such as Japanese Knotweed or Himalayan balsam have been identified to date within the survey area.
- 4.5.8 **Aquatic Species** – Within the available data, there is a diverse range of species record. See Table and Figure below indicating the species and range of recordings.

Table 4: List of recorded fish species.

Latin Name	English Name
Pomatoschistus minutus	Sand goby
Cottus gobio	Bullhead



5 ASSESSMENT AND RECOMMENDATIONS

This section provides a broad assessment of the information gathered and scopes out potential ecological vectors before remaining considerations and actions are proposed in the following recommendations and opportunities sections below.

5.1 DESIGNATED SITES AND RELIVANT SMP2 UNITS

5.1.1 The proximity of the designated sites necessitates Appropriate Assessments to be undertaken. The Special Area of Conservation (SAC) and Special Protection Area (SPA) / RAMSAR are of primary importance in this instance, however the overlapping SSSI will require S28G Notice.

5.1.2 Carmarthen Bay and Estuaries (SAC) annex features are outlined below:

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
- ◆ 1140 Mudflats and sandflats not covered by seawater at low tide
- ◆ 1160 Large shallow inlets and bays
- ◆ 1310 Salicornia and other annuals colonizing mud and sand
- ◆ 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

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

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

- ◆ 1103 Twaite shad *Alosa fallax*

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

- ◆ 1095 Sea lamprey *Petromyzon marinus*
- ◆ 1099 River lamprey *Lampetra fluviatilis*
- ◆ 1102 Allis shad *Alosa alosa*
- ◆ 1355 Otter *Lutra lutra*

5.1.3 Special Protection Area (SPA) is determined by overlapping habitat features and the large wader bird assemblage.

5.1.4 As investigatory works are enquired seaward of MHWS, a Marine License will be required. The specific license Band in question will be determined by the NRW Marine License team.

5.1.5 In relation to the Shore Line Management Plan 2 policy units, this section of sea wall is found within 20 - Lavernock Point to St Ann's Head - Policy Unit PU 12.10.

Table 5: SMP2 Policies

Policy	Epoch
Hold the line	0 – 20 year policy:
Hold the line	20 – 50 year policy:
Hold the line	50 – 100 year policy:



5.2 HABITATS

- 5.2.1 Limited vegetation clearance to allow for GI Rig access the lower sea defence and foreshore may be required, however, overall detrimental impacts to habitat continuity and current overall quality is unlikely. The access and egress path should be discussed with an ecologist to inform the HRA.

5.3 PROTECTED SPECIES - BATS

- 5.3.1 All British bats and any place used for shelter or protection or breeding site or resting place (their roosts) are fully protected by law under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended).
- 5.3.2 Together these protect bats from:
- ◆ Selling, offering for sale, possessing or transporting for the purpose of the sale or publishing advertisements to buy or sell a protected species.
 - ◆ Deliberate, intentional or reckless killing, injury or taking of bats.
 - ◆ Damage to or destruction of or, obstruction of access to any place of shelter, breeding (roost) or rest.
 - ◆ Disturbance of an animal occupying a structure or place.
 - ◆ The deliberate disturbance of any bat species in such a way as to be significantly likely to affect;
 - their ability to survive, hibernate, migrate, breed, or rear or nurture their young; or
 - the local distribution or abundance of that species.
- 5.3.3 No definitive features pertaining to bats have been identified in proximity to the project to date. Bat flight lines and foraging habitat is present further afield, however these are unlikely to be impacted by the current scope of works. Large scale works may require additional assessments (e.g., projects requiring significant lighting).

5.4 BADGERS

- 5.4.1 The Protection of Badgers Act 1992 (as amended) is the main legislation protecting badgers and their habitat in the United Kingdom. Under the Act it is illegal to:-
- ◆ Wilfully kill, injure or take a badger or attempt to do so.
 - ◆ Cruelly ill-treat a badger.
 - ◆ Interfere with a sett by doing any of the following:
 - (i) damage a badger sett or any part of it,
 - (ii) destroy a badger sett,
 - (iii) obstruct access to a badger sett,
 - (iv) cause a dog to enter a sett,
 - (v) disturb a badger while it is occupying a sett,
- 5.4.2 No features pertaining to badgers has been confirmed to date, however this species be a component of toolbox talks as best practice. In addition, access requirements should be discussed with an ecologist, with any potential clearance or access over vegetated ground highlighted and those specific areas assessed prior to works commencing.



5.5 BIRD SPECIES

- 5.5.1 The Wildlife and Countryside Act 1981 (as amended) is the principal legislation affording protection to UK wild birds. All birds, their nest and eggs are protected by law under this legislation, it is an offence (with certain exceptions), to recklessly or intentionally:
- ◆ Intentionally kill, injure or take any wild bird.
 - ◆ Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.
 - ◆ Intentionally take or destroy the egg of any wild bird.
 - ◆ Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.
- 5.5.2 **Note:** Nesting birds found outside of nesting season are protected by the same level of protection as that within the standard nesting period.
- 5.5.3 Following best practice, vegetation clearance is required during the main bird breeding season. Any vegetation scheduled to be removed must be checked by an ecologist for active nests no more than 48 hours prior to the start of works.
- 5.5.4 If nests are present, then a minimum 5m exclusion zone should be established around the nest(s) and no de-vegetation or other heavy machinery work should be carried out within the exclusion zone(s) until it is confirmed that the nest(s) is completed and that the young have fledged.
- 5.5.5 If nests are present, then a minimum 5m exclusion zone should be established around the nest(s) and no de-vegetation or other heavy machinery work should be carried out within the exclusion zone(s) until it is confirmed that the nest(s) is completed and that the young have fledged.
- 5.5.6 The site is within proximity to an SPA site with several Schedule 1 species. The contractor must refer to the HRA and any specific conditions outlined by NRW in relation to priority bird species. Ponds to the rear of the sea wall may support the wider bird assembles, primarily wading species.

5.6 GREAT CRESTED NEWT

- 5.6.1 As a European Protected Species (EPS), GCN receive full protection under the Wildlife and Countryside Act 1981 (as amended), the 2017 Conservation and Species Regulations (as amended) and the Countryside and Rights of Way Act (CROW) 2000, which make it illegal to:
- ◆ Sell, offer for sale, possess, advertise or transport for the purpose of sale;
 - ◆ Intentionally or deliberately capture, injure or kill GCN;
 - ◆ Deliberately disturb GCN;
 - ◆ Damage or destroy a breeding site or resting place;
 - ◆ Intentionally or recklessly disturb GCN from, or damage, destroy or obstruct access to, a place used for shelter or protection.
- 5.6.2 As a precaution, this species should feature in toolbox talks, but the likelihood of encountered is considered low.



5.7 COMMON REPTILES & AMPHIBIANS

- 5.7.1 The presence of reptiles and amphibians was not visually confirmed during the ecological assessment (presence or absence surveys have not been undertaken). However, nearby dune habitat and proximity of records dictates that the presence of Reptile species should be assumed.
- 5.7.2 All commonly occurring reptile species (common lizard, slow worm, grass snake and adder) are protected by UK law, making it an offence to injure or kill them. Care must be taken to avoid killing or injuring reptiles & amphibians. All commonly occurring reptile species (common lizard, slow worm, grass snake and adder) are protected by UK law, making it an offence to injure or kill them. Care must be taken to avoid killing or injuring reptiles & amphibians. All reptile species are partially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This legislation protects reptiles from:
- ◆ Reckless or intentional killing and injury.
 - ◆ Selling, offering for sale, possessing or transporting for the purpose of the sale or publishing advertisements to buy or sell a protected species.
- 5.7.3 Where these animals are confirmed as present on land that is to be affected by development, guidance recommends that:
- ◆ The animals should be protected from injury or killing during construction operations;
 - ◆ Mitigation should be provided to maintain the conservation status of the species locally.
- 5.7.4 Precautionary methods to avoid injury or death of reptiles potentially present on site may include:
- ◆ Staged cutting of vegetation. Any vegetation being removed will be strimmed using hand tools to a **height of no less than 150mm and left for 48 hours** so that any animals within can disperse, with no vegetation will be removed below 150mm;
 - ◆ Vegetation removal must be undertaken in a **slow, systematic manner** to allow any animals present to disperse safely away from the site and adjacent suitable habitat;
 - ◆ Dismantling of refugia/hibernacula by hand or carefully by machine and scraping through ballast with a toothed bucket;
 - ◆ If, during the works, a reptile is found, **works will stop (this is a legal requirement)** and the project ecologist will be contacted. To aid accurate species identification, a photograph of the animal should be taken and sent to the project ecologist. The animal (if unharmed) should be allowed to disperse of its own accord;
 - ◆ Works should be undertaken within the reptile active period (March to early October), on warm days, when reptile species are more active and can readily escape any disturbance. If this is not possible due to construction timescales, an ecologist on site will dismantle by hand any hibernation features. Any reptiles discovered in this period should be covered over and remain in situ where possible or moved to a safe place outside of the works area with hibernacula used to shelter them.
 - ◆ If any injured reptiles are found during the works on site, these will be carefully placed into a clean bucket containing some vegetation and covered over in a quiet place away from the works and an ecologist or local wildlife hospital must be contacted immediately.
- 5.7.5 If any non-protected amphibian species are found during the works, then these will be moved to safety by the supervising ecologist.
- 5.7.6 Toolbox talks on reptiles should be provided.



5.8 OTHER PROTECTED SPECIES

- 5.8.1 Hedgehogs are protected in England under Schedule 6 of the Wildlife and Countryside Act (1981) and are also listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). Wales under the Environment (Wales) Act 2016. This species has not been confirmed by is likely present within the wider urban area.
- 5.8.2 The Wild Mammals Protection Act (1996) makes it an offence to crush or asphyxiate any wild mammal. This may apply during site clearance works, particularly where burrowing mammals such as rabbit and fox are present, as such animals could be crushed or asphyxiated in their burrows by heavy machinery. No features pertaining to common mammals has been identified within the likely access routes or the structure itself.
- 5.8.3 If only walking access from the north is required, then no further assessment in relation to the potential setts is required. However, should future works dictate that machines need to use the nearby rail vehicle crossing, then further surveys will be required due to their proximity.

5.9 PRIORITY SPECIES IN PROXIMITY TO WORKS

- 5.9.1 Otter and Grey Seal have been recorded within proximity to the structure. Working over water during high tide is unlikely, however works on protected sections of the wall landward of MHWS may occur.
- 5.9.2 Consequently, the following precautionary measures are recommended:
- ◆ Where possible, works should be carried out during daylight hours (up to 30 minutes after sunrise and 30 minutes before sunset) where possible, to avoid disturbance to commuting or foraging otters.
 - ◆ Any use of task lighting should be directional to avoid illumination of the river corridor at night. Access for otter along up and down stream of the waterbodies will be maintained during construction.
 - ◆ The principal contractor will nominate a member of the site team to act as a warden. Should an otter been seen within proximity to the works, the warden will request works to be temporarily ceased if safe to do so and allow the animal to move in its preferred position and disperse from the area of its own volition.
 - ◆ Any sightings of otter will be reported to the project environmental coordinator. The principal contractor must ensure that equipment at the lower section of the structure is well secured and not in a fashion that could ensnare or trap otter (or any other animal).
 - ◆ Toolbox talks must be provided to the project team ahead of the works.
 - ◆ The principal contractor must adhere to the Biosecurity Measures outlined within the Marine License documentation and all relevant GPP's.
- 5.9.3 The Gwynedd Marine Code should be adhered to as much a practically possible.
- 5.9.4 Water vole are unlikely to be encountered during the assessment works.
- 5.9.5 Hazel Dormice may require further surveys dependant on specific access requirements if vegetation clearance or tracking through vegetated areas is required. This should be discussed with an ecologist prior to works commencing.



5.10 AQUATIC SPECIES - WORKING NEAR OF IN A WATERCOURSE

- 5.10.1 All works near the watercourses within the survey area will be conducted in line with industry standard best practice, Guidance for Pollution Prevention (GPPs). This will avoid the risk of polluting the watercourse through chemical contamination or substrate run off. This includes:
- ◆ Any chemicals required will be stored in designated places and banded to prevent leakages;
 - ◆ Spill kits will be on site to deal with any leakage of fuel, wet concrete or chemicals;
 - ◆ Vehicles will be inspected regularly to identify leaks and fuelling will be carried out off site;
 - ◆ On completion of the works the working area will be reinstated on a like-for-like basis.
- 5.10.2 Toolbox talks can be used to inform personnel undertaking works on the correct site protocol with regards to refuelling and general site behaviour (**i.e. No refuelling on site, all equipment stored on spill nappies, no night works and no materials to be left on site**).
- 5.10.3 Regarding fish spawning periods, the works are scheduled to be completed before the peak winter period and consequently should be able to avoid significant impacts to migrating species. A specific consideration to spawning periods at this section of the Ceredigion Bay should be noted, and will be outlined during the Marine License consultation process by NRW.
- 5.10.4 The potential for underwater noise will be assessed within the HRA.

5.11 INVASIVE SPECIES

- 5.11.1 Schedule 9 invasive species (Japanese Knotweed) of the Wildlife and Countryside Act in England and Wales has been confirmed to be present further downstream of the project. It is an offence to plant or otherwise cause to grow these species in the wild. It can result in fines or imprisonment if the species is spread due to negligence or deliberate intent. Soil or plant material contaminated with non-native and invasive plants can cause ecological damage and must be disposed off-site safely.
- 5.11.2 A Biosecurity Plan will be a component of a Marine License application.



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Table 6: The qualifying interest features and supporting habitats of the Burry Inlet SPA. (Burry Inlet SPA and Ramsar Site: Regulation 33 Advice from CCW and Natural England, June 2009).

Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC	
English Name	Latin Name
Pintail	Anas acuta
Shoveler	Anas clypeata
Teal	Anas crecca
Wigeon	Anas penelope
Turnstone	Arenaria interpres
Dunlin	Calidris alpina alpina
Knot	Calidris canutus
Oystercatcher	Haematopus ostralegus
Curlew	Numenius arquata
Grey Plover	Pluvialis squatarola
Shelduck	Tadorna tadorna
Redshank	Tringa totanus



Table 7: Bird Species recorded within WWBIC dataset.

Scientific Name	Common Name	Scientific Name	Common Name
Numenius phaeopus	Eurasian Whimbrel	Phalacrocorax carbo	Cormorant
Larus argentatus	European Herring Gull	Fulica atra	Eurasian Coot
Charadrius hiaticula	Common Ringed Plover	Oenanthe oenanthe	Wheatear
Branta bernicla bernicla	Dark-bellied Brent Goose	Tadorna tadorna	Shelduck
Chroicocephalus ridibundus	Black-headed Gull	Motacilla cinerea	Grey Wagtail
Numenius arquata	Curlew	Sterna hirundo	Common Tern
Ichthyaeetus melanocephalus	Mediterranean Gull	Alca torda	Razorbill
Tringa nebularia	Greenshank	Aythya ferina	Pochard
Limosa limosa	Black-tailed Godwit	Aegithalos caudatus	Long-tailed Tit
Aythya marila	Scaup	Actitis hypoleucos	Common Sandpiper
Alauda arvensis	Eurasian Skylark	Curruca communis	Whitethroat
Gavia immer	Common Loon	Phalacrocorax aristotelis	Shag
Vanellus vanellus	Lapwing	Regulus regulus	Goldcrest
Linaria cannabina	Linnet	Anthus pratensis	Meadow Pipit
Sturnus vulgaris	Starling	Hirundo rustica	Swallow
Emberiza schoeniclus	Common Reed Bunting	Sterna paradisaea	Arctic Tern
Pyrrhula pyrrhula	Eurasian Bullfinch	Riparia riparia	Sand Martin
Gavia stellata	Red-throated Loon	Larus marinus	Great Black-backed Gull
Turdus philomelos	Song Thrush	Gallinago gallinago	Snipe
Prunella modularis	Dunnock	Apus apus	Swift
Fringilla montifringilla	Brambling	Picus viridis	European Green Woodpecker
Accipiter gentilis	Goshawk	Cinclus cinclus	Dipper
Podiceps nigricollis	Black-necked Grebe	Phylloscopus trochilus	Willow Warbler
Falco columbarius	Merlin	Chloris chloris	Greenfinch
Bucephala clangula	Goldeneye	Uria aalge	Common Murre
Falco peregrinus	Peregrine	Puffinus puffinus	Manx Shearwater
Limosa lapponica	Bar-tailed Godwit	Lymnocyptes minimus	Jack Snipe



Anas acuta	Pintail	Saxicola rubetra	Whinchat
Melanitta nigra	Common Scoter	Mareca penelope	Wigeon
Passer domesticus	House Sparrow	Calidris ferruginea	Curlew Sandpiper
Tringa glareola	Wood Sandpiper	Somateria mollissima	Eider
Alcedo atthis	Kingfisher	Stercorarius parasiticus	Parasitic Jaeger
Hydrocoloeus minutus	Little Gull	Mergellus albellus	Smew
Pandion haliaetus	Western Osprey	Scolopax rusticola	Woodcock
Podiceps auritus	Slavonian Grebe	Tringa erythropus	Spotted Redshank
Milvus milvus	Red Kite	Fulmarus glacialis	Fulmar
Cettia cetti	Cetti's Warbler	Turdus viscivorus	Mistle Thrush
Falco tinnunculus	Kestrel	Fratercula arctica	Puffin
Pluvialis apricaria	Golden Plover	Asio flammeus	Short-eared Owl
Regulus ignicapilla	Common Firecrest	Hydrobates pelagicus	European Storm Petrel
Poecile montanus	Willow Tit	Gavia arctica	Black-throated Loon
Locustella naevia	Grasshopper Warbler	Parus major	Great Tit
Tyto alba	Western Barn Owl	Carduelis carduelis	Goldfinch
Turdus torquatus	Ring Ouzel	Branta bernicla	Brant Goose
Upupa epops	Eurasian Hoopoe	Cygnus olor	Mute Swan
Dryobates minor	Lesser Spotted Woodpecker	Cyanistes caeruleus	Eurasian Blue Tit
Poecile palustris	Marsh Tit	Egretta garzetta	Little Egret
Anthus trivialis	Tree Pipit	Mareca strepera	Gadwall
Motacilla flava	Western Yellow Wagtail	Anser anser	Greylag Goose
Gavia	Indet. Diver	Turdus merula	Blackbird
Botaurus stellaris	Eurasian Bittern	Mergus merganser	Common Merganser
Acanthis cabaret	Lesser Redpoll	Columba oenas	Stock Dove
Turdus iliacus	Redwing	Saxicola rubicola	Stonechat
Spatula querquedula	Garganey	Dendrocopos major	Great Spotted Woodpecker
Chlidonias niger	Black Tern	Rissa tridactyla	Kittiwake
Turdus pilaris	Fieldfare	Motacilla alba yarrellii	Pied Wagtail
Phoenicurus ochruros	Black Redstart	Rallus aquaticus	Water Rail



<i>Loxia curvirostra</i>	Red Crossbill	<i>Anser brachyrhynchus</i>	Pink-footed Goose
<i>Falco subbuteo</i>	Hobby	<i>Delichon urbicum</i>	Common House Martin
<i>Clangula hyemalis</i>	Long-tailed Duck	<i>Anthus petrosus</i>	Eurasian Rock Pipit
<i>Cuculus canorus</i>	Cuckoo	<i>Sitta europaea</i>	Eurasian Nuthatch
<i>Ficedula hypoleuca</i>	European Pied Flycatcher	<i>Spinus spinus</i>	Siskin
<i>Recurvirostra avosetta</i>	Avocet	<i>Calidris minuta</i>	Little Stint
<i>Puffinus mauretanicus</i>	Balearic Shearwater	<i>Larus michahellis</i>	Yellow-legged Gull
<i>Calidris pugnax</i>	Ruff	<i>Accipiter nisus</i>	Sparrowhawk
<i>Phylloscopus sibilatrix</i>	Wood Warbler	<i>Strix aluco</i>	Tawny Owl
<i>Emberiza citrinella</i>	Yellowhammer	<i>Certhia familiaris</i>	Treecreeper
<i>Curruca undata</i>	Dartford Warbler	<i>Acanthis flammea</i>	Common (Mealy) Redpoll
<i>Sternula albifrons</i>	Little Tern	<i>Larus glaucoides</i>	Iceland Gull
<i>Turdus philomelos clarkei</i>	<i>Turdus philomelos clarkei</i>	<i>Buteo buteo</i>	Buzzard
<i>Muscicapa striata</i>	Spotted Flycatcher	<i>Anthus spinoletta</i>	Water Pipit
<i>Oceanodroma leucorhoa</i>	Leach's Storm Petrel	<i>Larus hyperboreus</i>	Glaucous Gull
<i>Ardea cinerea</i>	Grey Heron	<i>Periparus ater</i>	Coal Tit
<i>Arenaria interpres</i>	Turnstone	<i>Motacilla alba alba</i>	White Wagtail
<i>Tringa totanus</i>	Redshank	<i>Athene noctua</i>	Little Owl
<i>Calidris alba</i>	Sanderling	<i>Ardea alba</i>	Great White Egret
<i>Larus fuscus</i>	Lesser Black-backed Gull	<i>Aythya fuligula</i>	Tufted Duck
<i>Thalasseus sandvicensis</i>	Sandwich Tern	<i>Anas platyrhynchos</i>	Mallard
<i>Anas crecca</i>	Teal	<i>Calidris alpina</i>	Dunlin
<i>Haematopus ostralegus</i>	Oystercatcher	<i>Spatula clypeata</i>	Shoveler
<i>Pluvialis squatarola</i>	Grey Plover		
<i>Larus canus</i>	Common Gull		
<i>Morus bassanus</i>	Gannet		
<i>Mergus serrator</i>	Red-breasted Merganser		
<i>Calidris canutus</i>	Knot		