

2022

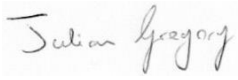
Llanaber CERD

Preliminary Ecological Appraisal



AMCO GIFFEN



DOCUMENT INFORMATION			
Project	Llanaber CERDs		
Location	Address: Melin y Plas Caravan Park, A496, Gwenfain, Barmouth, Llanaber, Gwynedd, LL42 1RR Grid Ref: SH 59546 18912 to SH 60276 17258		
Title	Preliminary Ecological Appraisal		
Document Ref	EV001019/3/PEA-1	Issue / Revision	1.0
File reference	EV001019/8/3/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

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.

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

1.1.1

Table 1: Technical Summary Table

1.1.2

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 (TLSE or HRA) required. Works not within designated site boundary however. Marine License Band to be determined following consultation with NRW Marine Team.	Hold the Line (HTL) Policy valid until 2125 in the current SMP2. Future works as the policy currently stands would not deviate from the policy.
Bird Species	Wader species foraging and roosting will be considered within the project HRA.	Dependant on future works remit.
Common Amphibian and Reptile	Best practice and toolbox talk measures required.	Dependant on future works remit. E.g., potential for further surveys, such as HSI or reptile population surveys.
Priority Species	Otter recorded within vicinity of defences. Works should work around low tide conditions during the daytime predominantly.	Dependant on future works remit. E.g., potential for further surveys or timing restrictions.
Invasive Species	No current INNS identified within the working areas.	Dependant on future works remit.
Aquatic Species	Generation of underwater noise should be avoided by working during low/receding tide conditions.	Dependant on future works remit.



2 INTRODUCTION

PROJECT BACKGROUND

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

The third site was Llanaber. The study is required to inform AMCO Giffen Ltd of the ecological constraints present, ahead of 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).

2.1.1

2.1.2

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.

2.1.3

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.



SURVEY AREA DESCRIPTION

The survey area concerns the section of the shore of Llanaber north of Barmouth, between SH 59546 18912 to SH 60276 17258. Figure 1 below is a copy of the location specification outlined by AMCO Giffen. The compound is to be located on an existing hard standing near Plas-canol Holiday site.

Access was possible from the Pebble Beach to the south, a access ramp behind Llanaber station and a beach ramp adjacent to the vehicle rail crossing at the Holiday site.

The defence is comprised of rock armour protecting a raised embankment along the northern length, with sandy beach habitat below.

The central stretch of sea wall is formalised hard defence, concrete sloped wall, with a reinforced toe beam. Some rock armour protection appears to be present in front of this toe, however this was submerged during the survey.

Along the southern length, the defence wall ties into further rock armour which merges with a relatively steep pebble beach embankment.



Figure 1: General project layout.

WORKS REQUIRED

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 corridor
- ◆ Structural coring of defence asset



3 METHODOLOGY

DESK STUDY

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 2.1.2. 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.
- 3.1.1

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.
- ◆ Cofnod Data Search – Ref: CO/E10322

- 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

- 3.2.3 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.

3.3

- 3.3.1 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.

LIMITATIONS

- 3.3.2 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.

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

DESIGNATED SITES

There are 5 statutory designated sites within 2km of the site boundary, details are provided in Table 1 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)
Barmouth Hillside	Site of Special Scientific Interest (SSSI)	Biological	< 1km
Aber Mawddach	Site of Special Scientific Interest (SSSI)	Mixture	1.2km
Pen Llyn a'r Sarnau (PLAS)	Special Area of Conservation (SAC)	Mixture	<0.1km
Coedydd Derw a Safleodd Ystlumod Meirion	Special Area of Conservation (SAC)	Mixture (Bat Site)	< 1km
Northern Cardigan Bay	Special Protection Area (SPA)	Bird Assemblage and Supporting Habitat	2km



Figure 2: Statutory Designated Sites within 2km

None of the designated site boundaries overlap with the proposed sampling locations in this area.



There are also 6 non-statutory designated sites within 2km of the site boundary.

Table 3: Non-statutory sites within 2km.

Site Name	Designation	Reason for Designation	Distance from Site (km)
Wern Mynach	Wildlife Sites	Mixture	>500m
Garn	Wildlife Sites	Mixture	1km
Tyddyn-y-nant	Wildlife Sites	Mixture	>500m
Ffridd y Graig & South to Garn	Wildlife Sites	Mixture	>500m
Ceilwart-ganol	Wildlife Sites	Mixture	>500m
Dinas Oleu	Wildlife Sites	Mixture	1km



Figure 3: Non-Statutory sites in proximity to Sea Defences.

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

ANCIENT WOODLAND

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.

WATERBODIES

From available maps, there appear to be no large static waterbodies within 250m to 500m of the sea wall at Llanaber. This assessment can't account for potential ephemeral or unmapped waterbodies however.



SURVEY FIGURES

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.

4.4

4.4.1



Figure 4: View of lower defence toe reinforcement below Llanaber Station.



Figure 5: School of fish observed during high tide below wall toe.



Figure 6: Rock armour interfaces with end of formalised hard defence wall.



Figure 7: Rock armour merges with pebble beach (Barmouth promenade seen in the distance-south)



Figure 8: Rock armour south of holiday park.



Figure 9: Vegetated embankment behind armour and pebble beach.



COMBINED FIELD SURVEY AND DATA SUMMARY

Habitat: A full updated Phase I survey of the entire survey area has not been undertaken to date, the data set below (Figure 11) is based on available mapping from Cofnod and NRW dataset and should be used as a rudimentary representation of the habitat present.

4.5 Habitat below the sea wall is predominantly, intertidal sand, shingle/mud and shingle/coble habitats. The latter appearing to provide shelter for juvenile fish among the larger rocks (see figure 5).

4.5.1

Further south an exposed vegetated rail embankment is situated to the rear (east) of the rail corridor. Vegetation is dense in some areas with sporadic instances of mature trees. From available vantage points, these areas have been managed (vegetation clearance) in recent years.

The sea wall appears to have no observable vegetation growing from defects on the seaward facing sides.

The proposed location for the temporary compound is within an existing hard standing. Material piles were noted with tufty grass species established along the boundary fence of the rail corridor.

Semi-improved fields and dense boundary vegetation are present to the rear of the rail corridor along the northern rock armour length section.

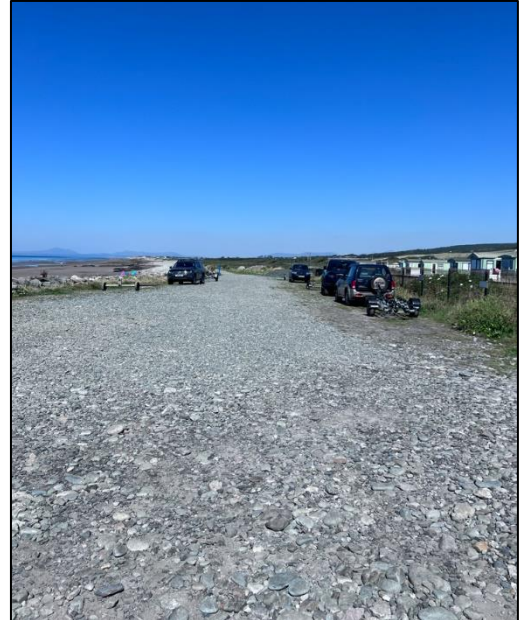


Figure 10: Hard standing next to rail crossing through holiday park.



Figure 11: Phase I Habitat Data (Cofnod 2022)



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

Within the data search, numerous bird records within 2km. In closer proximity to the sea wall, species such as Black-headed Gull, Common Scoter, Herring Gull, Oystercatcher, Pied Wagtail, Raven, Reed Warbler and Stonechat are noted. An extensive list of bird species is available in the appendix.

4.5.2

Inland vegetated areas behind the sea wall, semi-improved grassland and residential gardens are likely valued foraging and nesting locations.

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

4.5.3

Records predominantly originated from the residential or agricultural homes to the northwest. Soprano pipistrelle have been recorded above the beach adjacent to the northern rock armour section.

The rail corridor itself with the relatively dense vegetated boundaries may serve as a bat flight line. From the walkover, many older buildings were noted, including Llanaber church, which may yield local roosting potential closer to the rail corridor.

No features that could be observed on the concrete structure itself appeared to yield any roosting potential.



Figure 12: Bat Record Locations in relation to structure.



Common Mammal Species – Species records within Cofnod data set in this region include: Polecat, Hedgehog, hare and Badger. Badger have been recorded in numerous areas, many unfortunately as road collisions along the A497, however this does indicate a mobile population and it is likely badger are in the general vicinity of the rail corridor.

Priority Mammal Species – In terms of priority species, Otter have been recorded on Llanaber beach north of the defence structures.

4.5.4

There are some records of road collisions near the Dyffryn Ardudwy, which flows below the A496 and into the bay, suggesting Otters can be under disturbance pressure in this area. The majority of records occur within areas close to the Ceunant Egryn, which flows into the bay further north of the sea wall (500m+).

4.5.5

It is likely that otters forage within the bay during optimal conditions.



Figure 13: Priority species including Badger, in relation to project.



Common Amphibian and Reptile Species – Common amphibian and reptiles records appear in relative diversity within the dataset. No records of GCN have been identified within the search, nor more common newt species (palmate and smooth).

It is possible there is habitat in the wider area suitable enough to support a viable newt population. However, the habitat within the rail corridor itself and in front of the wall is not high suitability for newts and common amphibians.

4.5.6

The semi-improved grassland habitats behind the rail corridor appear suitable for reptile species. The sea wall itself is of poor suitability for these species, however the rail corridor may allow for localised movement of populations between habitats along the boundaries.



4.5.7

Figure 14: Common Amphibian and Reptile species in proximity to works.

4.5.8

Invasive non-native plant species – No Invasive Non Native Species (INNS) have been identified to date within the survey area.

Aquatic Species – Within the available data, there are 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	Welsh Name
Squatina squatina	Monkfish	Maelgi
Ammodytes tobianus	Lesser Sand-eel	Llymrien
Dicentrarchus labrax	Sea Bass	Draenogyn Mor
Pholis gunnellus	Butterfish	Llyfrothen
Scyliorhinus canicula	Lesser Spotted Dogfish	Morgi



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

The proximity of the designated sites necessitates Appropriate Assessments to be undertaken. Special Area of Conservation (SAC) primarily in this instance, however the adjacent SSSI will require S28G Notice and acknowledgement of the SPA further afield.

Pen Llŷn a'r Sarnau/ Lleyr Peninsula and the Sarnau annex features are outlined below:

5.1.1

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

5.1.2

- ◆ 1110 Sandbanks which are slightly covered by sea water all the time
- ◆ 1130 Estuaries
- ◆ 1150 Coastal lagoons * Priority feature
- ◆ 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 maritima*)
- ◆ 8330 Submerged or partially submerged sea caves

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

5.1.3

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

5.1.4

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

In relation to the Shore Line Management Plan 2 policy units, this section of sea wall is found within 21 - St Ann's Head to Great Ormes Head - Policy Unit 11.16

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

No vegetation clearance to access the main sea defence structures is envisaged, overall impacts to habitat continuity and quality from survey works is unlikely. However, should substantial remedial measures be required to secure the rail asset, in the future, then further impact assessments will be required.

5.3 PROTECTED SPECIES - BATS

5.2.1 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).

Together these protect bats from:

- 5.3.1 ♦ 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.
- 5.3.2 ♦ 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. However, further assessments may be required dependant on overall project scope once known.

5.3.4 Toolbox talks in relation to potential defects/cavities within defence structures should be provided as precautionary measure.

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,
 - 5.4.2 (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,

No features pertaining to badgers have been confirmed to date, however this species should be a component of toolbox talks.



BIRD SPECIES

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.
- 5.5 ◆ 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.
- 5.5.1 ◆ 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.

Note: Nesting birds found outside of nesting season are protected by the same level of protection as that within the standard nesting period.

5.5.2 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.

5.5.3 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.

5.5.4

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.

5.6

5.6.1 GREAT CRESTED NEWT

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;
- 5.6.2 ◆ 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.

There are no records of this species with the 2km record buffer. As a precaution, this species should feature in toolbox talks, but the likelihood of them being encountered is considered low.



COMMON REPTILES & AMPHIBIANS

The presence of reptiles and amphibians was not visually confirmed during the ecological assessment (presence or absence surveys have not been undertaken). The limited available records, from the rail corridor habitat, is likely due to limited footfall or persons inclined to submit recordings, than any indication of limited populations.

5.7 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.

Where these animals are confirmed as present on land that is to be affected by development, guidance recommends that:

- 5.7.3
- ◆ 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.

Precautionary methods to avoid injury or death of reptiles potentially present on site may include:

- 5.7.4
- ◆ 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.
- 5.7.5
- ◆ 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.

If any non-protected amphibian species are found during the works, then these will be moved to safety by the supervising ecologist.



OTHER PROTECTED SPECIES

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 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.
- 5.8.1

5.8.2

PRIORITY SPECIES OTTER AND BOTTLE NOSE DOLPHIN IN PROXIMITY TO WORKS

- 5.9 Otter have been recorded within proximity to the structure. Working over water during high tide is unlikely, however works on sections of the wall landward of MHWS but close to the waterline may occur.

- 5.9.1 Consequently, the following precautionary measures are recommended:

- 5.9.2
- ◆ 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 area below MHWS 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. From experience otters are inquisitive and will often take an interest in new activity.
 - ◆ 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).

- 5.9.3
- ◆ 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.

In relation to species that have not been recorded, but likely present, such as seal and bottle-nose dolphin, the Gwynedd Marine Code should be adhered to as much a practically possible.



AQUATIC SPECIES - WORKING NEAR OF IN A WATERCOURSE

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:

- 5.10 ♦ Any chemicals required will be stored in designated places and bunded to prevent leakages;
- 5.10.1 ♦ 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.

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**).

- 5.10.2 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.
- 5.10.3

- 5.10.4 The potential for underwater noise will be assessed, with working practices encouraged towards working during low tide to avoid this potential disturbance vector.

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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7 APPENDIX



Table 6: Bird Species List from Cofnod Data.

Scientific Name	English Name	Welsh Name
Accipiter gentilis	Goshawk	Gwalch Marthin
Alauda arvensis	Skylark	Ehedydd
Aythya marila	Scaup	Hwyaden Benddu
Charadrius hiaticula	Ringed Plover	Cwtiad Torchog
Chroicocephalus ridibundus	Black-headed Gull	Gwylan Benddu
Clangula hyemalis	Long-tailed Duck	Hwyaden Gynffon-Hir
Emberiza schoeniclus	Reed Bunting	Bras y Cyrs
Falco peregrinus	Peregrine	Hebog Tramor
Gavia arctica	Black-throated Diver	Trochydd Gyddfddu
Gavia immer	Great Northern Diver	Trochydd Mawr
Gavia stellata	Red-throated Diver	Trochydd Gyddfgoch
Larus argentatus	Herring Gull	Gwylan y Penwaig
Linaria cannabina	Linnet	Llinos
Locustella naevia	Grasshopper Warbler	Troellwr Bach
Melanitta fusca	Velvet Scoter	Môr-Hwyaden y Gogledd
Melanitta nigra	Common Scoter	Mor-Hwyaden Ddu
Milvus milvus	Red Kite	Barcud
Numenius arquata	Curlew	Gylfinir
Numenius phaeopus	Whimbrel	Coegylfinir
Passer domesticus	House Sparrow	Aderyn y To
Podiceps auritus	Slavonian Grebe	Gwyach Gorniog
Prunella modularis	Dunnock	Llwyd y Gwrych
Puffinus mauretanicus	Balearic Shearwater	
Pyrrhonorax pyrrhonorax	Chough	Brân Goesgoch
Stercorarius parasiticus	Arctic Skua	Sgiwen y Gogledd
Sturnus vulgaris	Starling	Drudwen
Troglodytes troglodytes	Wren	Dryw
Turdus philomelos	Song Thrush	Bronfraith
Emberiza citrinella	Yellowhammer	Bras Melyn
Pyrrhula pyrrhula	Bullfinch	Coch y Berllan
Fringilla montifringilla	Brambling	Pinc y Mynydd
Ficedula hypoleuca	Pied Flycatcher	Gwybedog Brith
Pluvialis apricaria	Golden Plover	Cwtiad Aur
Vanellus vanellus	Lapwing	Cornchwiglen
Cuculus canorus	Cuckoo	Cog
Falco tinnunculus	Kestrel	Cudyll Coch
Falco columbarius	Merlin	Cudyll Bach
Turdus pilaris	Fieldfare	Socan Eira
Limosa lapponica	Bar-tailed Godwit	Rhostog Gynffonfraith
Platalea leucorodia	Spoonbill	Llwybig
Tyto alba	Barn Owl	Tylluan Wen
Anas crecca	Teal	Corhwyaden
Anas platyrhynchos	Mallard	Hwyaden Wylt



<i>Anthus pratensis</i>	Meadow Pipit	Corhedydd y Waun
<i>Anthus spinoletta</i>	Water Pipit	Corhedydd y Dwr
<i>Apus apus</i>	Swift	Gwennol Ddu
<i>Ardea cinerea</i>	Grey Heron	Crëyr Glas
<i>Calidris alba</i>	Sanderling	Pibydd y Tywod
<i>Calidris alpina</i>	Dunlin	Pibydd y Mawn
<i>Cephus grylle</i>	Black Guillemot	Gwylog Ddu
<i>Corvus frugilegus</i>	Rook	Ydfran
<i>Haematopus ostralegus</i>	Oystercatcher	Pioden Fôr
<i>Hirundo rustica</i>	Swallow	Gwennol
<i>Larus canus</i>	Common Gull	Gwylan y Gweunydd
<i>Larus fuscus</i>	Lesser Black-backed Gull	Gwylan Gefnddu Leiaf
<i>Larus marinus</i>	Great Black-backed Gull	Gwylan Gefnddu Fwyaf
<i>Mergus serrator</i>	Red-breasted Merganser	Hwyaden Frongoch
<i>Morus bassanus</i>	Gannet	Hugan
<i>Oenanthe oenanthe</i>	Wheatear	Tinwen y Garn
<i>Phalacrocorax aristotelis</i>	Shag	Mulfran Werdd
<i>Phalacrocorax carbo</i>	Cormorant	Mulfran
<i>Puffinus puffinus</i>	Manx Shearwater	Aderyn Drycin Manaw
<i>Rissa tridactyla</i>	Kittiwake	Gwylan Goesddu
<i>Thalasseus sandvicensis</i>	Sandwich Tern	Môr-Wennol Bigddu
<i>Turdus viscivorus</i>	Mistle Thrush	Brych y Coed
<i>Podiceps cristatus</i>	Great Crested Grebe	Gwyach Fawr Gopog
<i>Uria aalge</i>	Common Guillemot	Gwylog
<i>Accipiter nisus</i>	Sparrowhawk	Gwalch Glas
<i>Aegithalos caudatus</i>	Long-tailed Tit	Titw Cynffon-Hir
<i>Chloris chloris</i>	Greenfinch	Llinos Werdd
<i>Parus ater</i>	Coal Tit	Titw Penddu
<i>Streptopelia decaocto</i>	Collared Dove	Turtur Dorchog
<i>Arenaria interpres</i>	Turnstone	Cwtiad y Traeth
<i>Cygnus olor</i>	Mute Swan	Alarch Dof
<i>Riparia riparia</i>	Sand Martin	Gwennol y Glennydd
<i>Tadorna tadorna</i>	Shelduck	Hwyaden yr Eithin
<i>Cinclus cinclus</i>	Dipper	Bronwen y Dwr
<i>Larus glaucoideus</i>	Iceland Gull	Gwylan yr Arctig
<i>Mareca penelope</i>	Wigeon	Chwiwell
<i>Phylloscopus trochilus</i>	Willow Warbler	Telwr yr Helyg
<i>Sterna hirundo</i>	Common Tern	Môr-Wennol Gyffredin
<i>Tringa totanus</i>	Redshank	Pibydd Coesgoch
<i>Phoenicurus phoenicurus</i>	Redstart	Tingoch
<i>Strix aluco</i>	Tawny Owl	Tylluan Frech
<i>Acrocephalus schoenobaenus</i>	Sedge Warbler	Telwr yr Hesg
<i>Alca torda</i>	Razorbill	Llurs
<i>Anthus petrosus</i>	Rock Pipit	Corhedydd y Graig
<i>Buteo buteo</i>	Buzzard	Bwncath
<i>Carduelis carduelis</i>	Goldfinch	Nico



<i>Corvus corax</i>	Raven	Cigfran
<i>Fulmarus glacialis</i>	Fulmar	Aderyn Drycin y Graig
<i>Motacilla alba yarrellii</i>	Pied Wagtail	Siglen Fraith
<i>Saxicola rubicola</i>	Stonechat	Clochdar y Cerrig
<i>Stercorarius skua</i>	Great Skua	Sgiwen Fawr
<i>Mergus merganser</i>	Goosander	Hwyaden Ddanheddog
<i>Motacilla alba</i>	Pied/White Wagtail	Siglen Fraith/Wen
<i>Cyanistes caeruleus</i>	Blue Tit	Titw Tomos Las
<i>Dendrocopos major</i>	Great Spotted Woodpecker	Cnocell Fraith Fwyaf
<i>Parus major</i>	Great Tit	Titw Mawr
<i>Sitta europaea</i>	Nuthatch	Delor y Cnau
<i>Sylvia atricapilla</i>	Blackcap	Telor Penddu
<i>Acrocephalus scirpaceus</i>	Reed Warbler	Telor y Cyrs
<i>Phylloscopus collybita</i>	Chiffchaff	Siff-Siaff
<i>Columba palumbus</i>	Woodpigeon	Ysguthan
<i>Certhia familiaris</i>	Treecreeper	Dringwr Bach
<i>Egretta garzetta</i>	Little Egret	Crëyr Bach
<i>Branta canadensis</i>	Canada Goose	Gwydd Canada