



Gwydir Mawr Preliminary Ecological Assessment

Project Number CPF 12814



Document Control Sheet

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Method of works and Drawings - Contractor to provide

Cofnod document PDF to be enclosed

Habitat Map

1.0 Introduction

YGC were commissioned to undertake a Preliminary Ecological Appraisal (PEA) of the proposed repair of a damaged sewer overflow pipe at Gwydir Mawr, Trefor, national Grid ref SH3769147260. The work includes repairing the existing damaged overflow pipe, details of the works will be included with the contractor's plans. The works are scheduled to be completed during the dry summer months when the overflow rates are reduced.

Works are expected to commence in May 2025. Details of proposals and location are shown in the drawing contained in Appendix A (Contractor to provide) of this document.

The appraisal includes a desk study and site habitat survey. The survey area and land in the area of the proposed works mostly comprises of high, medium and low intertidal zone at Traeth Trefor. A hedgerow consisting of blackthorn *Prunus spinosa* and ivy *Hedera helix* is present above the outlet.



Figure 1 – Site Location Gwydir Mawr, Trefor
(Area of works teal spot)

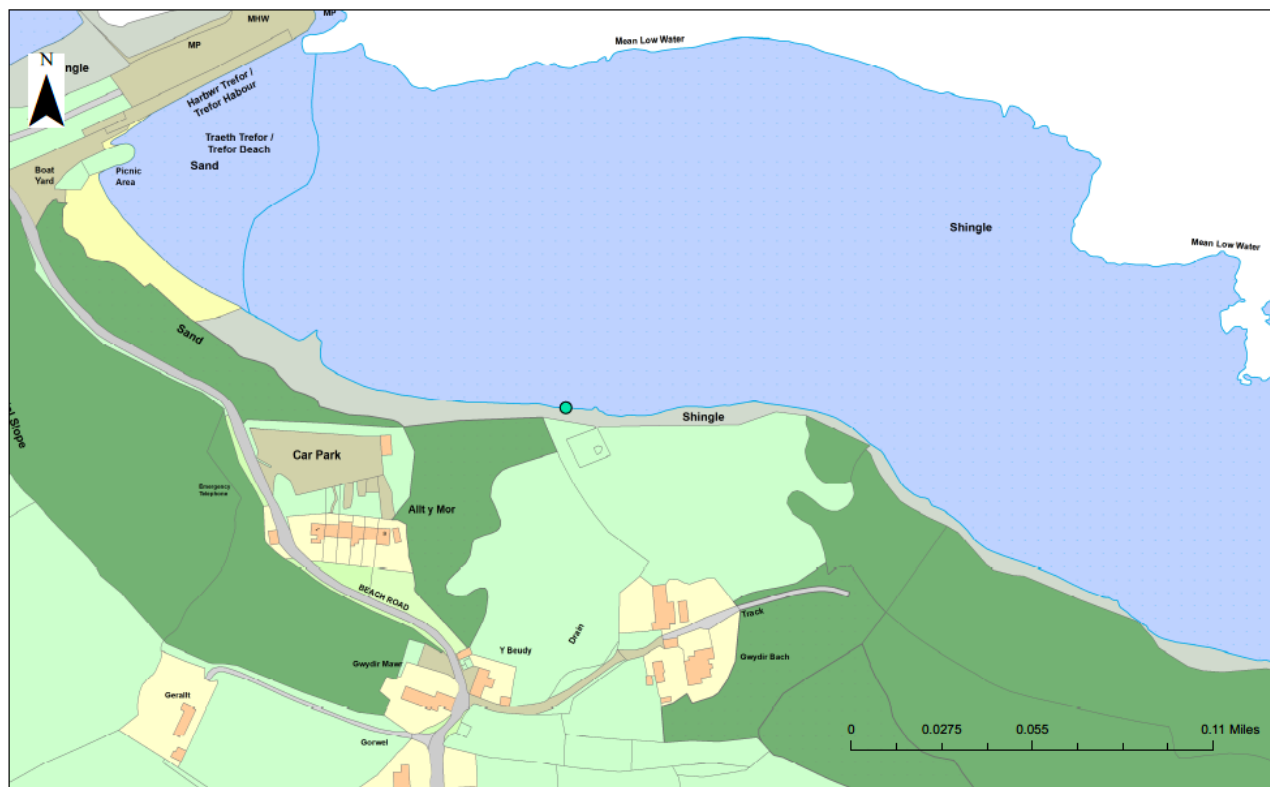


Figure 1a – location zoomed in (teal spot)

1.1 Background and Purpose of the Report

The work involves repairing damaged existing drainage pipe (The General Arrangement Drawing can be seen in the Appendix 1). This report will identify protected habitats and species on site, which could be affected by the works.

As a PEA, the purpose of this report is as follows:

- to identify key ecological constraints to the proposal;
- to allow significant ecological effects to be avoided or minimised wherever possible;
- to allow further ecological surveys needed to inform an ecological impact assessment to be identified and appropriately designed;
- to inform the development of potential mitigation and/or compensation measures; and
- to form a basis for the scope of an ecological impact assessment if required.

2.0 Planning Policy and Legislation

2.1 Policy

The national and local policy described below may be relevant to the proposal.

Technical Advice Note (TAN) 5: Nature Conservation and Planning (2009)

TAN 5 provides advice to local planning authorities on the application of the law relating to planning and nature conservation and its impact within the land use planning system. The most recent revision of TAN 5 brings it in line with the strategic policy in Planning Policy Wales (PPW) 2016 and advises how planning policy with regard to ecology needs to be interpreted to comply with Planning Policy Wales. It provides advice on the following:

- Positive planning for nature conservation;
- Nature conservation and Local Development Plans;
- Nature conservation in development management procedures;
- Development affecting protected internationally and nationally designated sites and habitats;
- Development affecting protected and priority habitats and species.

Wales Environment Strategy (2006 to 2026)

The Environment Strategy is the Welsh Government's long-term strategy for the environment of Wales setting the strategic direction for the next 20 years. The strategy has five main themes:

- Addressing climate change;
- Sustainable resource use;
- Distinctive biodiversity, landscape and seascapes;
- Our local environment; and
- Environmental hazards.

Local Biodiversity Action Plans (LBAPs)

In 1992, the UK signed the Convention on Biological Diversity at the Rio Earth Summit pledging to develop national strategies for the conservation and sustainable use of biological diversity. The UK Government subsequently produced *Biodiversity: The UK Biodiversity Action Plan* in 1994 that described the biological resources of the UK as a whole and in turn led to the production of Biodiversity Action Plans for individual habitats and species. *Biodiversity: The UK Biodiversity Steering Group Report* was published in 1995. This recognised that to successfully implement the UKBAP at a local level and translate national policy into action, it would be necessary to produce Local Biodiversity Action Plans across the UK. In response to this, local authorities throughout the UK produced LBAPs; Ynys Môn LBAP is of relevance to the proposed works and the species and habitats included within it have been considered and included within this assessment where relevant.

2.2 Legislation

The following legislation is likely to be relevant to the proposal:

Environment (Wales) Act (2016)

This Act became law in Wales on 21st March 2016 and includes legislation that supersedes the Natural Environment and Rural Communities (NERC) Act 2006. Part 1 of the Act sets out Wales' approach to planning and managing natural resources at a national and local level with a general purpose linked to statutory 'principles of sustainable management of natural resources' defined within the Act.

Section 6 of the Act places a duty on public authorities to 'seek to maintain and enhance biodiversity' so far as it is consistent with the proper exercise of those functions. In doing so, public authorities must also seek to 'promote the resilience of ecosystems.' Public authorities will be required to report on the actions they are taking to improve biodiversity and promote ecosystem resilience.

Section 7 replaces the duty in Section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living organisms and types of habitats in Wales, which they consider are of principle importance for the conservation and enhancement of biodiversity in Wales. The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and habitats included in any list published under this section and encourage others to take such steps. A number of habitats and species included under Section 7 of this act have been recorded near the Scheme and are therefore considered in the assessment.

Conservation of Habitats and Species Regulations (Amended) EU Exit) Regulations 2019

Conservation of Habitats and Species Regulations (Amended) (EU Exit) Regulations 2019 transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the EC Habitats Directive) into national law. The Regulations provide for the designation and protection of European sites and the protection of European protected species and habitats as listed in the EC Habitats Directive and EC Birds Directive (Council Directive 2009/147/EC). The regulations provide guidance on undertaking assessment of impacts on European and Protected Sites (Special Areas of Conservation - SACs, Special Protection Areas – SPAs and Ramsar sites) through the Assessment of Implications on European Sites (AIES) process. Two SPAs are located within 1km of the survey area and therefore needs to be considered under this legislation. The survey area also provides potential habitat for foraging bats and otters, which are European protected species, protected under this legislation.

Wildlife and Countryside Act (1981, as amended)

The Wildlife and Countryside Act (WCA) governs the designation and protection of Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR), and protection of various plant and animal species. Schedule 1 of the Act lists protected bird species, Schedule 5 lists other protected animal species, and Schedule 8 lists protected plant species. Schedule 9 of the Act lists invasive alien species that it is an offence to introduce or allow to spread in the wild. There are SSSIs located within 1km of the survey area and bats and otters have full protection under Schedule 5 and have previously been recorded within 1km of the survey area.

Hedgerow Regulations 1997

The Hedgerow Regulations 1997 were made under Section 97 of the Environment Act 1995 and came into operation on 1st June 1997. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification.

Badgers Act 1973 and Protection of Badgers Act 1992

Badgers are given protection under these acts and offences include:

1. Taking, injuring or killing badgers.
2. Cruelty.
3. Interfering with badger setts.
4. Selling and possession of live badgers.
5. Marking and ringing.

3.0 Methodology

3.1 Desk Study

A desktop study was undertaken to inform the baseline conditions, impact assessment and scoping process, including data from the following sources:

- A search of biodiversity records held by the North Wales Environmental Information Service (Cofnod) was undertaken in February 2024, providing records of sites, habitats and priority species within a 1km buffer of the survey area
- Gwynedd Council's GIS system (Map Gwynedd) provided information on statutory¹ and non-statutory designated sites (within a 1km buffer);
- Detailed information about protected sites was obtained from the JNCC (Joint Nature Conservation Committee) and NRW websites; and
- Information about drainage and watercourses was obtained from Map Gwynedd².

3.2 Field Survey

A phase 1 habitat survey of the site was undertaken on 24th January 2025 by YGC Ecologist Bethan Moseley BSc (hons) PIEMA ACIEEM, in order to identify the habitats present and search for any signs of protected species within the survey area. Target notes were used to describe and highlight features of interest with regard to habitat types, protected species and invasive plant species on the Phase 1 Habitat Plan provided in Appendix 1 above and a species list was compiled of species recorded during the survey can be found in section 4.2 below. Habitat survey methodology and mapping was based on the standard Phase 1 methodology provided in the Nature Conservancy Council's 'Handbook for Phase 1 Habitat Survey (2010). With respect to legally protected species, the following characteristics were specifically searched for:

¹ Statutory sites data originally sourced from NRW

² Watercourse data originally sourced from NRW

- Suitable habitat for roosting bats including buildings and/or trees with cracks, crevices, holes and/or substantial growth of ivy that may potentially provide roosting locations and field signs of roosting bats (e.g. droppings, fur oil and urine staining, scratch marks and feeding remains);
- Suitable habitat for and field signs of otter *Lutra lutra* activity (e.g. holts, resting places, spraints, tracks, feeding remains, runs and pathways);
- Suitable habitat for and field signs of water vole *Arvicola amphibious* activity (e.g. burrows, latrines, feeding stations, tracks, runs and pathways);
- Suitable habitat for and field signs of reptile and amphibian species such as great crested newt *Triturus cristatus* (GCN), common lizard *Lacerta vivipara*, slow worm *Anguis fragilis*, grass snake *Natrix natrix*, adder *Vipera berus*, common toad *Bufo bufo* and common frog *Rana temporaria*;
- Suitable habitat for and field signs of badger *Meles meles* (e.g. setts, footprints, trapped hairs, dung-pits/latrines, foraging scrapes, runs and pathways).

In addition to the protected species mentioned above and in accordance with the guidelines of the Chartered Institute of Ecology and Environmental Management (CIEEM), evidence of any other protected, priority and/or invasive species found during the course of the survey has been highlighted in this report.

The weather on 24th January 2025 was dry and sunny during the survey with temperatures between lows of 3°C and highs of 11°C and wind 45mph from a south-westerly direction. These conditions imposed no limitations on the survey.

4.0 Baseline Ecological Conditions

4.1 Designated Sites

4.1.1 Internationally Designated Sites

Internationally designated sites (as protected under the Conservation of Habitats and Species Regulations (Amended) (EU Exit) Regulations 2019 considered to be potentially affected by the proposal include all those within 10km of the survey area boundary.

SACs sometimes require consideration within a larger buffer distance such as 25km for bats and 30km for otters. The internationally protected sites considered within this assessment are therefore listed in Table 1 and shown in Figure 2 below.

Table 1 – International Sites

Name	Distance from works	Features
Clogwyni Pen Llŷn Special Area of Conservation (SAC)	4km Southwest	Annex I habitats that are a primary reason for selection of this site. Vegetated sea cliffs of the Atlantic and Baltic Coasts.
Corsydd Eifionydd SAC	6km East	Annex I habitats that are a primary reason for selection of this site. Transition mires and quaking bogs Annex II species that are a primary reason for selection of this site Marsh fritillary butterfly Euphydryas (Eurodryas, Hypodryas) aurinia Slender green feather-moss Drepanocladus (Hamatocaulis) vernicosus

Glynllifon SAC	8km Northeast	Annex II species that are a primary reason for selection of this site Lesser horseshoe bat <i>Rhinolophus hipposideros</i>
Pen Llŷn a'r Sarnau SAC	10km southwest	Annex I habitats that are a primary reason for selection of this site Sandbanks which are slightly covered by sea water all the time. Estuaries Coastal lagoons * Priority feature Large shallow inlets and bays Reefs 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 Salicornia and other annuals colonizing mud and sand Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) Submerged or partially submerged sea caves Annex II species present as a qualifying feature, but not a primary reason for site selection Bottlenose dolphin <i>Tursiops truncatus</i> Otter <i>Lutra lutra</i> Grey seal <i>Halichoerus grypus</i>



Figure 2: Internationally designated site within 10km of the proposed works (see Table 1 above for list)

Clogwyni Pen Llŷn SAC is located 4km southwest from Gwydir Mawr its designated for its vegetated sea cliffs of the Atlantic and Baltic Coasts. Corsydd Eifionydd SAC is located 6km east it is designated for its Annex I habitats that are a primary reason for selection of this site including transition mires and quaking bogs. It is also designated because of its (Annex II species that are a primary reason for selection of this site) Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia* and Slender green feather-moss *Drepanocladus* (*Hamatocaulis*) *vernicosus*. Glynllifon SAC is located 8km northwest and is designated for its (Annex II species that are a primary reason for selection of this site), population of Lesser horseshoe bat *Rhinolophus hipposideros*. Pen Llŷn a'r Sarnau SAC is located 10km southwest it is designated for its special habitats listed in table 1 above. It is also designated for its population of bottlenose dolphin, otter and grey seal.

Otters are likely to use the beach area at Gwydir Mawr, for commuting and foraging, but no otter resting sites or holts were present in the area of the works. Otters are predominantly nocturnal, and as the works will be completed at low tide during daylight hours otters are unlikely to be affected by the works. With regards to seals and bottlenose dolphins again as the works will be completed during low tide with little to no noise such as blasting, naval sonar or other anthropogenic noise therefore these mammals are unlikely to be affected.

Because of the localised, nature and scale of the works the works are not expected to have any effects on the features of the International Sites.

4.1.2 Nationally Designated Sites

Table 2

Name	Distance	Feature
Gwydir Bay Site of Special Scientific Interest (SSSI)	147m east	Geomorphological features and is evidence of the Pleistocene of Wales when the first ice sheet enveloped Wales and adjacent sea.
Coed Elernion SSSI	912m south	Wetter ivy-oak/ash <i>Hedera helix-Quercus/Fracinus</i> group of woodlands
Cappas Lwyd SSSI	544m southeast	Marshy grassland, fen, marsh and swamp

Nationally designated sites (as protected under the Wildlife and Countryside Act 1981) considered to be potentially affected by the proposal include all those within 1km of the survey area boundary, as it is not anticipated that the

proposal would have any significant effects on sites located further away. There are no national sites within the area of the works, the nearest site within the search area is Gwydir Bay Site of Special Scientific Interest (SSSI) is 147m east. Gwydir Bay is designated for Geomorphological features and is evidence of the Quaternary of Wales when the first ice sheet enveloped Wales and adjacent sea.

Coed Elernion SSSI is located 912m south of the proposed works. Coed Elernion has been selected as a representative example of the wetter ivy-oak/ash *Hedera helix- Quercus/Fracinus* group of woodlands. The woodland, although apparently secondary in origin, is composed of mainly native tree species and is situated on a gentle or moderate slopes. Capps Lwyd SSSI is located 544m southeast from the proposed works. This site is designated for its marshy grassland, fen, marsh and swamp (see Table 2 above and Figure 3 below:). There is no direct connection between the site and the proposed works, and no impacts on the protected sites is expected.



Figure 3 : Gwydir Bay Site of Special Scientific Interest (SSSI) grey shaded area to the east, Coed Elernion SSSI Grey shaded area to the south and Capps Lwyd SSSI grey shaded area southeast in relation to the works area teal spot.

4.1.3 Regionally Important Sites (RIGS)

There are no RIGS sites on site at Gwydir Mawr, the nearest sites are Pier Trefor 554m northwest and Trwyn y Tal 867m southwest. The works of repairing damaged pipe at Gwydir Mawr will not affect any of the RIGS sites because the works are localised to the pipe area only.



Figure 4 – RIGS Regional Important Geodiversity Site Pier Trefor blue shaded area northwest and Trwyn y Tal blue shaded area southwest.

4.1.4 Pen Llŷn Area of Outstanding Natural Beauty (AONB)

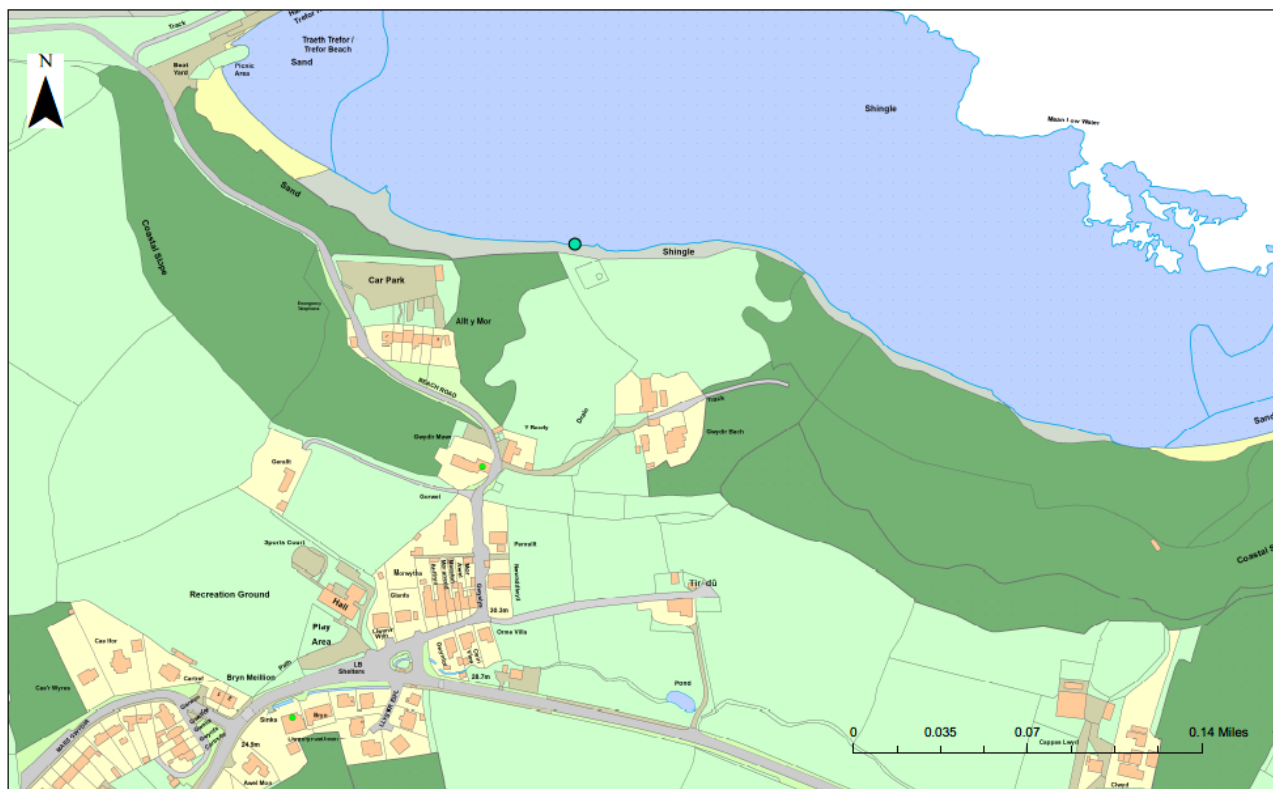
The proposed works are within Pen Llŷn AONB and the works are not likely to have any effect on this designation (see Figure 5 below:).



Figure 5 –Pen Llŷn AONB pink shaded area in relation to the works teal spot.

4.1.5 Other Sites

There are no Local Wildlife Sites within the search area or area of the works at no impacts are expected on LWS further away as there is no direct connectivity between the sites.



The phase 1 habitat survey conducted on 24th of January 2025 found the area of the damaged pipe to comprise of H3.2 intertidal habitat of shingle, gravel above Mean High Water (MHW), the tide was out during the survey but seaweed could be seen where the water had been at a higher level during the recent high tide. The land between the beach area and adjacent fields contains a small slope face containing till deposit. Blackthorn and ivy was present growing on top of the terrestrial land to the south with H8.4 coastal grassland in the field beyond the hedge (see site photos 4 below:).

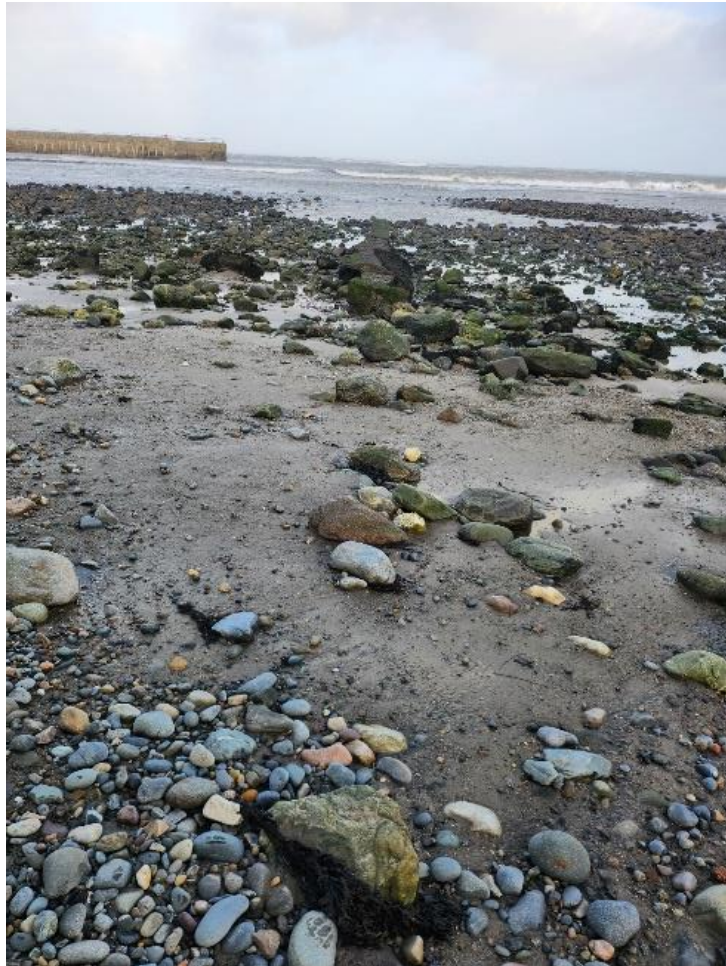
The area of the works was surveyed for signs of nesting birds, otter, bats, water voles and badgers by Bethan Moseley YGC ecologist. The site was surveyed for signs of otter, including spraint, footprint, feeding remains and resting sites including holts and couches. The area was also surveyed for bats and signs of bats such as Potential Roost Features (PRF), droppings, and staining etc.



Site Photograph No 1 – View of one of intertidal zone on site.



Site Photograph No 2 – Damaged pipe.



Site Photograph No 3 – Area where pipe used to be before it was broken off and intertidal zone.



Site Photograph No 4 – Terrestrial area and till deposit.



Site Photograph No 5 – Blackthorn on top of the cliff area.

The habitats present within the survey area that either are of importance to nature conservation locally or on a wider geographical scale, are described below.

4.2.1. Trees

There are trees above the area of the drainage pipe, including blackthorn *Prunus spinosa* and ivy *Hedera helix* no tree removal is associated with these works of repairing the damaged pipe. Cyngor Gwynedd have been contacted to see if there are any tree preservation orders on site. Trees are listed on Schedule 7 priority Habitat. UK, Environment (Wales) Act 2016 Section 7 – list of the habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. The works of repairing the damaged drainage pipe is not expected to affect the trees on top of the slope area. The contractor must adhere to Trees in Relation to Design, Demolition and Construction British Standards 5837 (2012) therefore root protection must be included to ensure no damage to the tree roots on site.

4.2.2 Rivers and streams

An unnamed stream runs out to sea approximately 10m west from the damaged drainage pipe and the water was clear at low level during the survey. Rivers and streams are extremely important LBAP habitats. Rivers and streams, including their bankside vegetation as well as providing a habitat for otters and water voles, rivers and their banks act as corridors for many species. Rivers are of great importance to both habitats and species, which are listed on Schedule 7 priority habitat.

Rivers and streams are listed on the Gwynedd biodiversity Action Plan they provide main Links/ Common Interest with Other HAPs and SAPs:

- Otter
- Water voles
- Fish

Rivers and streams are at risk from maintenance and development works because of:

- River deepening and straightening.
- Removal of shoals, gravel, boulders, riffles and bankside vegetation.
- Lack of floodplain functions.
- Lack of dead wood in channels.
- Pollution.
- Poaching by livestock leading to bank collapse and sediment pollution.
- Grazing right up to water's edge leads to loss of natural bankside vegetation.
- Culverting of smaller watercourses.

NRW has statutory responsibility for Main Rivers and the Local Authority has responsibility for the ordinary watercourses, the workers will need to cross over the small watercourse to reach the damaged drainage pipe although there are no works in the river or on the riverbanks therefore no permit is required.

The works of replacing the damaged drainage pipe has potential to disturb and cause a pollution incident therefore the contractor must adhere to the recommendations made in this report. They will make sure no siltation or contaminants enter the intertidal shingle and gravel stream area through good working practices such as creating a dry working area with sandbags, refuel 10m from the intertidal area and riverbank, no storage of materials within 10m of the intertidal area or riverbank and having an emergency response plan in place should there be a fuel leak on site. Following good working practices and adhering to the pollution prevention guidelines effects on the intertidal area and watercourse and water quality can be ruled out.

As the works are within the intertidal zone a Marine Licence will be required from NRW.



Site Photograph No 6 – Culverted unnamed watercourse outlet.

4.2.3 Intertidal shingle and gravel above MHW (H.3.2).

The area of the damaged pipe is within the intertidal and contains shingle and gravel above MHW. The littoral sediment was coarser. The littoral sediments support communities tolerant to some degree of drainage at low tide and often subject to variation in air temperature and reduced salinity in estuarine situations. Very coarse sediments tend to support few macrofaunal species because these sediments tend to be mobile and subject to a high degree of drying when exposed at low tide. The shore is exposed with coarser sediment (gravel, pebbles, cobbles) subject to higher wave exposures. Littoral sediment environments can change markedly over seasonal cycles, with sediment being eroded during winter storms and accreted during calmer summer months. The particle size structure of the sediment may change from finer to coarser during winter months, as finer sediment gets resuspended in seasonal exposed conditions. This may affect the sediment infauna, with some species only present in summer when sediments are more stable.

4.2.4 Coastal grassland (H.8.4)

These are grasslands which include maritime species and which occur on shallow slopes or level areas by the sea, often on cliff tops. Indicator species include spring squill *Scilla verna*, sea plantain *Plantago maritima* and sea thrift *Armeria maritima*. Red fescue *Festuca rubra* is dominant. Other species include mouse ear hawkweed *Hieracium pilosella*, kidney

vetch *Anthyllis vulneraria*, bird's foot trefoil *Lotus corniculatus*, lady bedstraw *Gallium verum* and creeping thyme *Thymus praecox*.

4.2.5 Maritime soft cliff (H8.2)

These are cliffs formed of mud or clay with less than 10% vascular plant cover. The cliff was bare of vegetation during the survey that took place in January 2025.

4.3 Species

4.3.1 Mammals

Otter

There were numerous Cofnod local records of otter, the closest being 456m west from the area of the works. There are Cofnod records of live sightings of otter and cubs in the area to the west and this species are likely to use the coastal area for commuting and foraging. No otter holts, couches or feeding remains were found during the survey.

Otter holts give a more precise estimate of otter population numbers. Maternal holts are used to give birth to around two cubs per year; otters give birth and raise their young in these maternal holts are usually found in areas of undisturbed land with dense scrub or in the voids in tree root systems. Otters can give birth at any time of the year but mainly during November to January. The otter cubs generally stay with their mother until approximately 8 months old but have been known to stay much longer (Chanin 2003).

All the works are expected to take place during daylight hours and the intertidal zone must be left clear with no materials and all excavations must have a slope on one side as a mean of escape. RAMS for otter will be put in place to make sure that otters are not affected by the works.

Bats

There were no Cofnod historical data of bats on site at Gwydir Mawr. The nearest record was of one unknown bat, lesser horseshoe *Rhinolophus hipposideros* and a Myotis Natterers *Myotis nattereri* 784m south of the proposed works.

Bats are likely to use the costal habitat for foraging and commuting from dusk until dawn. No tree removal is associated with this works and all the works will be completed during the daylight hours and will finish one hour before dusk and one hour after dawn so the works will not affect bats.

Bethan completed a bat survey in the area of the works on 24th of January 2025. The survey included searching suitable voids in the trees for bats and signs of bats using a high powered Fenix torch and endoscope.

No bat activity surveys have been undertaken for this PEA although habitats with potential to support foraging bats were identified during the field survey as mentioned above.

All trees will be retained on the top of the costal slope and access route, so they can be available for commuting and feeding bats during and post construction. All bat species are protected Species under the Conservation of Habitats and Species Regulations (Amended) (EU Exit) Regulations 2019 and are fully protected under the Wildlife and Countryside Act (1981). Several species, including Ppip, Ppyg, NSL and Mmys, various myotis species and Brown Long-eared bats found within the Cofnod search area, are listed under Section 7 of the Environment (Wales) Act 2016 and on Gwynedd LBAP.

Other Mammals

The following additional mammal species of importance to nature conservation have also previously been recorded within the 1km search area according to the Cofnod data:

- Ferrel goat *capra hircus* 746m west at Trwyn y Tal.

There were no signs of any of the other species on site at Gwydir Mawr during the survey on 24th of January 2025. All excavations should have a slope on one side to allow a means of escape for small mammals. The ecologist will check the area of the costal slope above the works for nesting birds etc before the works start.

4.3.2 Birds

There were numerous Cofnod records within the 1km search area the nearest bird records can be seen in table 1 below.

Schedule 1 of the Wildlife and Countryside Act (1981) provides protection for certain bird species while they are nesting, including intentional or reckless disturbance while they are building a nest or are in, on or near a nest containing eggs or young; and also the intentional or reckless disturbance of dependent young of such a species. Numerous bird species listed on Section 7 of the Environment (Wales) Act 2016 and on the Gwynedd LBAPs have also been recorded within the 1km search area according to the Cofnod data, and these are also included in Table 1 below.

Distance	Scientific Name	English Name	Welsh Name	List
108	<i>Passer domesticus</i>	House Sparrow	Aderyn y To	BAP, S7, UKBR, WBA
108	<i>Pyrhacorax pyrrhacorax</i>	Chough	Brân Goesgoch	BDir1, Bern2, RL-VU, S7, WBA, WCA1.1
167	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Gwylan Benddu	BDir2.2, RL-VU, S7, UKBA, WBR
257	<i>Larus argentatus</i>	Herring Gull	Gwylan y Penwaig	BAP, BDir2.2, RL-DD, RL-EN, S7, UKBR, WBR

Table 1: Birds Schedule 1, Section 7 and LBAP bird species that have previously been recorded within 257m of the survey area (Cofnod data or during the field survey for this report)

All bird species are protected from intentional killing, injuring or taking and intentional taking, damaging or destruction of an active nest or eggs under the Wildlife and Countryside Act (1981). The pebbles on the ground above the intertidal zone, cliff area (no signs of sand martins were seen during the survey) and hedgerow above provide suitable nesting habitat for many bird species between 1st March to 31st August. The ecologist should check for nesting birds on site before the works start, if the works is scheduled during the breeding birds' period. If birds are found the works could be delayed until the birds have fledged (birds over 257m distance can be seen in the Appendix).

4.3.3 Reptiles and Amphibians

No reptiles or amphibians were found during the survey, reptiles and amphibians are not likely to be present on the beach area and intertidal zone. There were no Cofnod records of reptiles or amphibians within the search area.

4.3.4 Invertebrates

There were no Cofnod Local Records of Invertebrates on site. The nearest record was of wall *Lasiommata megera* (99m west) from the site. The wall butterfly moth host plant includes wide range of grasses, including false broom *Brachypodium sylvaticum* and tor-grass *Brachypodium pinnate*. The host plants of butterflies and Moths are not likely to be present on site and the butterflies and other insects are not likely to be effected during the repair of the drainage pipe.

4.3.5 Fungi and Algae

There were no Cofnod local records database of Fungi and algae on site near the damaged pipe. Algae found near the proposed works within the search area are listed below:

Distance	Scientific Name	English Name	Welsh Name	Species Group	Listed on
194	<i>Calliblepharis ciliata</i>	Eyelash Weed		Alga	RL-VU
194	<i>Delesseria sanguinea</i>	Sea Beech		Alga	RL-VU
194	<i>Dilsea carnosa</i>	Red Rags		Alga	RL-NT
194	<i>Mesophyllum lichenoides</i>			Alga	RL-NT
194	<i>Polyides rotunda</i>			Alga	RL-NT
194	<i>Ulva fenestrata</i>	Sea Lettuce		Alga	RL-VU

Table 3 – Algae

Algae recorded on site include spiral wrack *Fucus spiralis* and channelled wrack *Pelvetia canaliculate*.



Site Photograph No 7 - Channelled wrack on the left and spiral wrack on the right side.



Channelled wrack was also attached to the broken drainage pipe.

4.3.6 Non-Native Invasive Species

No Invasive non-native plants have been recorded on site.

Distance	Scientific Name	English Name	Welsh Name	Species Group	Listed on
199m	<i>Austrominus modestus</i>			Crustacean	GBNNSIP, INNS, INNS-W

Table 4 – Invasive non-native species

The nearest Invasive Non-Native Species recorded on the Cofnod Local Records can be seen in table 4 above. The small barnacle *Austrominus modestus* with 4 calcified shell plates was recorded 199m north. No *Austrominus modestus* was found on site at Gwydir Mawr during the survey and the works will not encroach on the area of this INNS.

The contractor must put biosecurity measures in place to stop the spread of any invasive non-native species.

4.3.7 Fish species

Plaice *Pleuronectes platessa* and sole *Solea solea* have been recorded 194m northwest from the area of the works. The works on site are not likely to affect the water quality of the sea and fish habitat. The contractor will work at low tide and considerably ensuring nothing enters the sea area during the works.

5.0 Ecological Constraints and Opportunities

5.1 Designated Sites

5.1.1 Internationally Designated Sites

There are no protected sites near the proposed damaged drainage pipe and impacts are not expected on protected sites further away from the works.

No refuelling of plant/machinery or storage of materials within 10m from the intertidal zone or ordinary watercourse area and having an emergency response plan in place should there be a fuel leak on site. Following good working practices and adhering to the pollution prevention guidelines effects on the protected site can be ruled out.

5.1.2 National Sites

There are no National Sites on site near the proposed works on the damaged drainage pipe impacts on SSSI's further away is not expected. The works are not expect to affect the AONB status.

5.1.3 Local Wildlife Sites

There were no LWS in the area of the damaged drainage pipe and it is unlikely that the works would have a significant effect on the designation of the Local Wildlife Site's further away. The works of repairing the damaged pipe is temporary in nature, but the repaired pipe will be a permanent feature that will improve environmental and ecological conditions on site.

5.1.4 Other Sites

There are no scheduled ancient monuments or Listed Buildings in the area of the works. The Heritage Coast and Landscape of outstanding Historical interest will not be affected by the maintenance works and there are no recommendations regarding these.

5.2 Habitats

5.2.1. Trees

There are no trees in the area of the damaged pipe. The blackthorn on top of the slope directly south will not be affected by the works of repairing the damaged pipe. However, the contractor must adhere to Trees in Relation to Design, Demolition and Construction British Standards 5837 (2012) therefore root protection must be included to ensure no damage to the tree roots on site.

5.2.2 Ordinary Watercourse

There are no works in the ordinary watercourse therefore no permit is required. As the works are near the intertidal zone the works has potential to disturb and cause a pollution incident therefore the contractor must adhere to the recommendations made in this report and in the Marine Licence when it arrives. They will make sure no siltation or contaminants enter the intertidal zone through good working practices, refuel 10m from the intertidal zone, no storage of materials within 10m of the riverbank and having an emergency response plan in place should there be a fuel leak on site. Following good working practices and adhering to the pollution prevention guidelines effects on the intertidal zone and water quality can be ruled out.

As there are no in-water works an OWC from Gwynedd Council's Flood Risk and Coastal Management team will not be needed in this instance.

5.2.3 Intertidal shingle and gravel

A narrow strip approximately 1m x 5m of intertidal shingle and gravel will need to be temporarily set aside in the area of the works to enable the new pipe to be put in place (details of the works will be included in the Client's drawings included in the appendix of this report when available). The shingle and gravel will then be replaced over the new pipe. Leaving the material on site will ensure any fauna will remain on site with minimal disturbance.

5.2.4 Coastal Grassland

The Coastal grassland on land to the south of the proposed works will not be affected by the works.

5.2.5 Maritime soft cliff

The maritime soft cliff will not be affected by the works or repairing the existing drainage pipe.

As the works are within the intertidal zone a marine licence will be required and the contract must adhere to the recommendations made in the marine licence.

5.3 Species Recommendations

5.3.1 Mammals

Otter

Otters are known to use the coastal habitat at Trefor and are likely to use the intertidal zone for commuting and foraging, no signs of otter were found and no otter holts or couches were found during the survey.

All the works are expected to take place during daylight hours and the intertidal zone must be left clear of obstructions and all excavations must have a slope on one side as a mean of escape. No effects on otters are expected, even so the works will be completed with Reasonable Avoidance Measures (RAM's) for Otter put in place including no nightworks.

Bats

No bat activity surveys have been undertaken for this PEA although habitats with potential to support foraging bats were identified during the field survey. Dusk and night works should be avoided and the works must stop one hour before sunset and resume one hour after sunrise. Night works should be avoided to limit any disturbance to commuting and foraging bats.

Other Mammals

No records of other mammals were present on site, but all excavations should have a safe route of escape in case of entrapment of small mammals.

Based on their geographical distribution and abundance, it is considered that these species are of importance locally, and that any proposals likely to arise from this study are unlikely to have a significant effect on the conservation status of these species at either a local or a broader geographical scale.

No impacts are expected on marine mammals because of the nature and scale of the works and all the works will be completed during low tide.

5.2.2 Birds

A number bird species have been recorded within 1km of the survey area. The works will be completed outside of the bird-nesting period if possible (March to August inclusive). Should work need to proceed within this period a check for nesting birds should be completed by an ecologist and if active nests are found safe buffer zones should be put in place to protect the birds and fledglings. The cliff face, rocky shoreline top of the cliff including the blackthorn on the site will be checked for nesting birds before the works start. If birds are found the works could be delayed until the birds have fledged.

5.2.3 Reptiles and Amphibians

There were no records of reptiles and amphibians on site at Gwydir Mawr. Reptiles and amphibians are not likely to be present in the foreshore or intertidal shoreline and area of the works.

5.2.4 Non-Native Invasive Species

No Invasive non-native plants have been recorded on site. The small barnacle *Austrominus modestus* was recorded 199m north. No *Austrominus modestus* was found on site at Gwydir Mawr during the survey and the works will not encroach on the area of this INNS.

The contractor must put biosecurity measures in place to stop the spread of any invasive non-native species including *Austrominus modestus*.

5.2.5 Fungi and Algae

Algae recorded on site include spiral wrack *Fucus spiralis* and channelled wrack *Pelvetia canaliculate*. Stones with algae can be moved from the area of the works so they are not disturbed.

To stop any impacts on habitats and species, pollution prevention measures are to be put in place to avoid siltation entering the shore, the contractor should use silt fencing or sandbags (or equivalent) and adhere to GPP5 works and maintenance in or near water.

All mitigation described above needs to be incorporated into a CEMP for approval prior to commencement.

5.2.6 Fish

The works on site are not likely to affect the fish and its habitat or water quality of the sea. The contractor will work at low tide ensuring no materials enters the sea area during the works. Any stones in the intertidal area that are moved may have fish sheltering under them. All fish are to be rescued and relocated during any material shift by hand.

6. Enhancement and Compensation

Ecological engineering:

Modifications will be made to the new pipe in the intertidal zone, to mimic natural habitats this will encourage colonization by various marine species.

The key goal will be to increase the complexity of the habitat by adding features like crevices, ledges, and varied textures to any concrete works associated with the installation of the new pipe to provide shelter and attachment points for a wider range of organisms (see Appendix for examples of habitat creation).

7.0 Conclusions

To conclude, the following mitigation measures are required for the proposals:

- The contractor should use silt fencing/sandbags (or equivalent) during excavation to stop any silt or run-off from entering the surrounding habitat.
- Spill kits to be present on site with staff trained and competent to use them.
- No refuelling within 10m of the shore and waterbodies.
- Proposals requiring excavation at the site should be completed under a marine organism, nesting birds, watching brief by a suitably experienced and qualified ecologist.
- The works on the drainage pipe must be completed outside of the bird-nesting period (March to August inclusive). Should work need to proceed within this period a check for nesting birds should be completed by an ecologist and if active nests are found safe buffer zones should be put in place to protect the birds and fledglings. The cliff face, blackthorn on top of the cliff face and the shingle and gravels on the foreshore would need to be checked for nesting birds before the works start.
- Arising's from the works should be carefully moved to one side and then replaced over the pipe when the works are completed. Should any materials need to be removed off site, they must be collected and disposed of in accordance with the relevant waste regulations.
- Reuse any suitable excavated material on site.
- The contractor will adhere to GPP 5 works and maintenance in or near water to lower any impacts on the coastal/marine habitat and species.

Works must start at least one hour after dawn and end one hour before dusk to avoid impacts on nocturnal animals including bats and otters that use the shoreline for foraging and commuting. All works to be carried out in the dry over low water. If intertidal stones are moved any fish will be rescued and replaced under nearby stones.

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- Any excavations should have a mammal ladder or battered back sides to allow escape.
- All trees on top of the cliff will be retained. However, the contractor must adhere to Trees in Relation to Design, Demolition and Construction British Standards 5837 (2012) therefore root protection must be included to ensure no damage to the tree roots on site.
- Biosecurity measures should be implemented for machines and personnel to prevent the spread of the possible *Austraminus modestus* into the area of the works.
- Modifications will be made to the new pipe in the intertidal zone to mimic natural habitats this will encourage colonization by various marine species.
- The key goal will be to increase the complexity of the habitat by adding features like crevices, ledges, and varied textures to any concrete works associated with the installation of the new pipe to provide shelter and attachment points for a wider range of organisms (see Appendix for examples of habitat creation) would be a welcomed enhancement on site for the special habitat and all animals that use it.

- All mitigation described above needs to be incorporated into a CEMP for approval prior to commencement.

8.0 References

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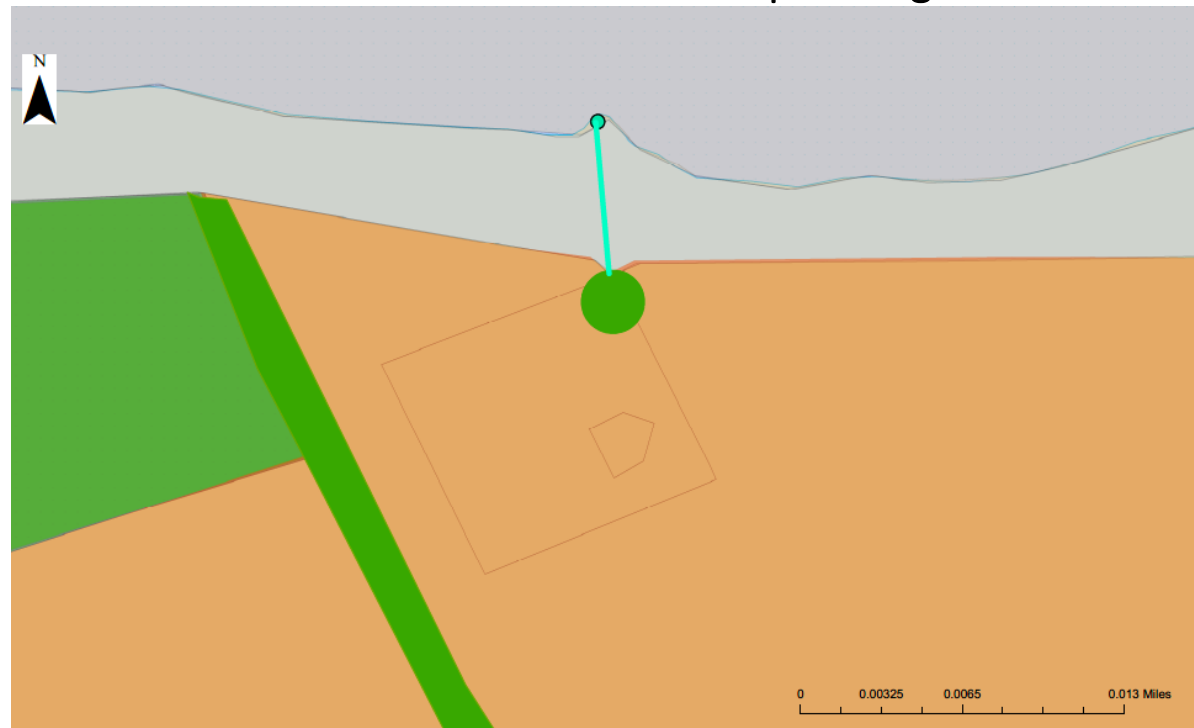
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APPENDIX I: Works Details Method of Works – contractor to provide.

Appendix II – Cofnod attachments (50 pages)

APPENDIX II: Phase 1 Habitat Map & Target Notes



Legend

-  Location of works
-  H 1.2 Intertidal cobbles and shingle
-  A 2.1 Dense Scrub
-  H.8.4 Coastal Grassland
-  Intertidal shingle and gravels above MHW

Teal line – showing the works area

Example of habitat enhancement

Description Retrofitting rock armour or concrete surfaces with habitat features by drilling small and varied diameter holes - pits (A), grooves (B) and/or recessed crevices. The aim is to provide water retaining features and/or refuge and/or secure anchor points which improve ecosystem heterogeneity.	
 (A) [Source: Hall et al. (2018)]	 (B) [Source: Hall et al. (2018)]
Effectiveness: benefits assessment • Increase in species diversity compared with business as usual in both holes and grooved treatments. 6 of 10 functional groups were unique to the drilled pits (Firth et al., 2014). • The increase in species diversity was greatest on the grooved treatments (Naylor et al. 2017). • Species of commercial importance were only found in the enhanced areas demonstrating that this technique provided supporting ecosystem services (Naylor et al. 2017). • Limestone had higher overall species richness and diversity than the granite rock armour (Naylor et al. 2017).	Challenges: limitations and risks • Need to be certain that structural integrity / durability will not be affected – may require a sacrificial layer of concrete. • Over time, effects lessened as the pits were filled with sessile species reaching a biodiversity maximum. • Due to local hydrodynamics the bed level of the foreshore rose unevenly resulting in some features being 'lost'. • Since many experiments are at the plot scale rather than at the full structure, it's unclear whether interventions actually enhance biodiversity or aggregate organisms already on the structure.