Barmouth Beach Management

Habitats Regulations Assessment (HRA)

August 2023

CPF8200

Document Control Sheet

Document Title:	Habitats Regulations Assessment
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Project Ref / Title:	CPF 8200 – Barmouth Beach Management
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Revision History

Date	Version No.	Summary of Changes
19/12/2023	0.01	Initial Draft
29/03/2023	0.02	2nd draft following review
24/08/23	0.03	Update to include further consideration of sediment transportation.

Reviews

Name	Title	Date	Version
David Harries	Principal Ecologist	29/03/2023	0.01

Approvals

Name	Title	Date	Version
Rhydian Roberts	Principal Engineer	12/09/2023	0.03

Distribution

Name	Title	Date	Version

ISO9001:2015 FS526386 ISO14001:2015 EMS 526388 ISO45001 OHS 526389

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List of Abbreviations

AA	Appropriate Assessment
AIES	Assessment of Implications on European Sites
cSAC	Candidate Special Area of Conservation
EMS	European Marine Site
ES	Environmental Statement
FCS	Favourable conservation status
HRA	Habitats Regulations Assessment
IEEM	Institute of Ecology and Environmental Management
IROPI	Imperative Reasons of Over-riding Public Interest
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
OMS	Offshore Marine Site
PEU	Plainly Established and Uncontroversial
PPG	Pollution Prevention Guideline
pRamsar	Possible Ramsar Site
pSAC	Possible Special Area of Conservation
pSPA	Potential Special Protection Area
SAC	Special Area of Conservation
SPA	Special Protection Area

Executive Summary

This report comprises a Habitats Regulations Assessment (HRA) for Beach management activities at Barmouth, Gwynedd. An HRA is an assessment of impacts on European protected sites of importance for nature conservation.

The proposed works consist of proposals to move wind blown sand which collects at the sea wall, and on the promenade area of Barmouth. The collected sand is to be moved to a nearby location within the existing dune system on the beach, along with another location on the beach, towards the northern end of the promenade.

Works will take place adjacent to a European protected site, and within close proximity to other sites which have mobile species as qualifying features.

Following a Screening Assessment, the first stage of the HRA identified that there could be 'Likely Significant Effects' for Pen Llyn a'r Sarnau SAC and Afon Eden – Cors Goch Trawsfynydd SAC. Therefore, the assessment progressed to Stage 2 'Appropriate Assessment' stage, which considered the potential for the works to have an adverse effect on the integrity of the sites, taking proposed mitigation measures into account. It should be noted that the information included in this report relating to Stage 2 forms a Statement to inform an Appropriate Assessment (SIAA), as the Appropriate Assessment itself will be made by the Competent Authority.

The assessment concluded that without mitigation the two SAC's could be affected, by pollution effects, but mitigation measures could be implemented that would eliminate the chance of any residual effects on the integrity of the sites.

1.0 INTRODUCTION

YGC have been commissioned to undertake a Habitats Regulations Assessment (HRA) for proposed works to manage wind blown sand along the foreshore of Barmouth, Gwynedd. The proposed works are located at the beach and promenade area of Barmouth (NGR: SH 61238 15619, see figure 1 below). The purpose of this HRA is to assess the impact of the proposals on sites of international importance for biodiversity.

Barmouth (Abermaw), Gwynedd, is located on the northern shore of the mouth of the Mawddach Estuary. There is an ongoing issue with wind-blown sand along the promenade towards the southern end of the town. Historically, Gwynedd Council have been managing the build up of sand in front of the sea wall by removing the sand from this area and depositing it further down the beach (see figure below). In previous years this has involved transporting the sand northwards and depositing the sand on the foreshore at the northern extent of the promenade (see figure 3 below). This had the benefit of contributing material to an area where beach levels have dropped significantly over the years.

More recently, as the wind blown sand has become more of a prominent issue, with increase in the level of the main beach at the southern extent of the prom, the sand has been deposited near the dune system rather than at the north end of the prom (figure 2). This has allowed more sand to be moved due to reduced transportation cost. An options report into the management of wind blown sand has been produced (KPAL, 2022), and this has suggested encouraging further growth of the dune system adjacent to the causeway through deposition of sand collected from the area in front of the sea wall. This will be supplemented with additional measures including installation of chesnut fencing to trap mobile sand.

Sand blown over the sea wall also collects along the prom, the highway and the car parks in this area (figure 2). This has historically been collected as required, and deposited on the foreshore at the northern end of the promenade (figure 3). It is proposed that this practice will continue.

Barmouth experiences a mean spring tidal range of approximately 4.3 m, and a wide intertidal zone is exposed at low tide, especially along the southern part of the frontage. During storm surges predicted high water levels may be increased by up to 1 m and the upper beach is typically covered by storm tides on a small number of occasions each winter. However, for much of the year a wide area of the upper beach is unaffected by tides and is exposed to wind action. Sand can be moved by winds from any direction, but incursion onto the southern part of the promenade, road and car park is most frequently associated with strong winds from the northwest and west.

The dominant net sediment drift direction in the nearshore zone within Barmouth bay is from south to north, but in the intertidal zone there is a sediment drift divide just to the north of Barmouth which give rise to net southerly sediment drift along Barmouth Beach (KPAL, 2016). The northern part of Barmouth Beach has experienced net sediment loss and falling levels for decades, whereas the southern part of the beach (between the Min y Mor Hotel and Barmouth Harbour) has been experiencing sediment accretion and rising beach levels (KPAL, 2016). Refer to Appendix G which provides information on the coastal processes.

Removal of sand to take place using excavator and dumper to transport / deposit. The deposition of sand onto the foreshore at the dune area will require vehicle access onto and through the intertidal area at the southern end of the beach (using 5t- 8t dumpers). Access on to the foreshore will be via designated slipways (see figure 2). Sand will be transported to the North Prom disposal site via the road, using 20t dumpers. The sand will initially be deposited on the promenade here, and an excavator will be positioned to collect sand from the stockpile and deposit onto the beach over the

sea wall. This removes the need for any plant to be positioned on the foreshore and also the need to access the beach via the slipway at the north end. The excavator at the north end of the prom will spread the deposited sand across the beach (north and south) within this designated area, to prevent the creation of a single large stockpile.

The proposed works are located adjacent to the Pen Llyn a'r Sarnau SAC, and in close proximity to other European protected sites, as detailed further in this report. No works are proposed to take place directly within the SAC.

Summary of proposals:

- Programme to move accumulated sand from the area directly in front of the promenade sea wall twice a year, in the autumn/early winter and again at the end of winter. The aim will be to create a hollow in front of the sea wall to the same depth every time.
- Any additional sand that blows over is to be collected from the promenade, the road and the car park at the rear when the levels are sufficient to create access or safety issues to the users of these areas.
- Sand collected from the sea wall to be moved to the dune area as recommended in the KPAL report. This will take place whilst there is capacity within the identified receptor site within the dunes (estimated 1 or 2 years). Once the dune receptor site is deemed at capacity, sand from sea wall will be transported to the deposit area at the north end of the beach.
- Sand collected from the promenade, road, car park area (figure 2) to be moved to the designated deposit area at the north end of the beach (figure 3).
- Additional fencing to be placed on the beach next to the dune system, in line with recommendations outlined in the KPAL report.
- Continued monitoring of beach levels and wind data to analyse and contextualise the success of the above measures.

1.2 Authors

This HRA has been prepared by:

- Rhys Meilyr Thomas, PGDip, with 5 years of ecological consultancy experience, including HRA and Environmental Impact Assessment (EIA) of large projects;
- David Harries MSc CIEEM CEnv with over 15 years of ecological consultancy experience, including HRA and Ecological Impact Assessment (EcIA) of large projects

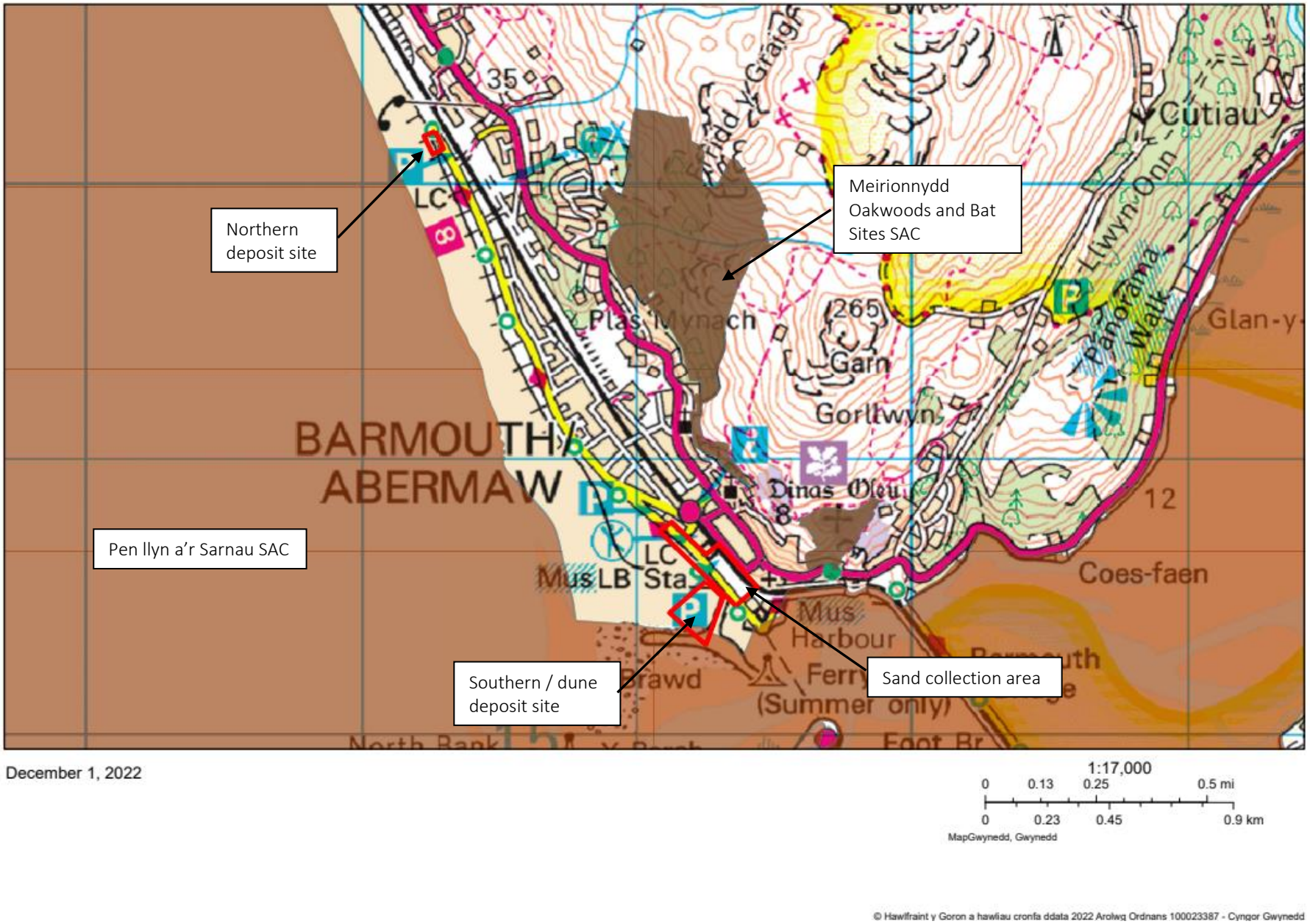

Figure 1: Location of proposed works (outlined red) in relation to internationally protected sites (SAC - brown shading)

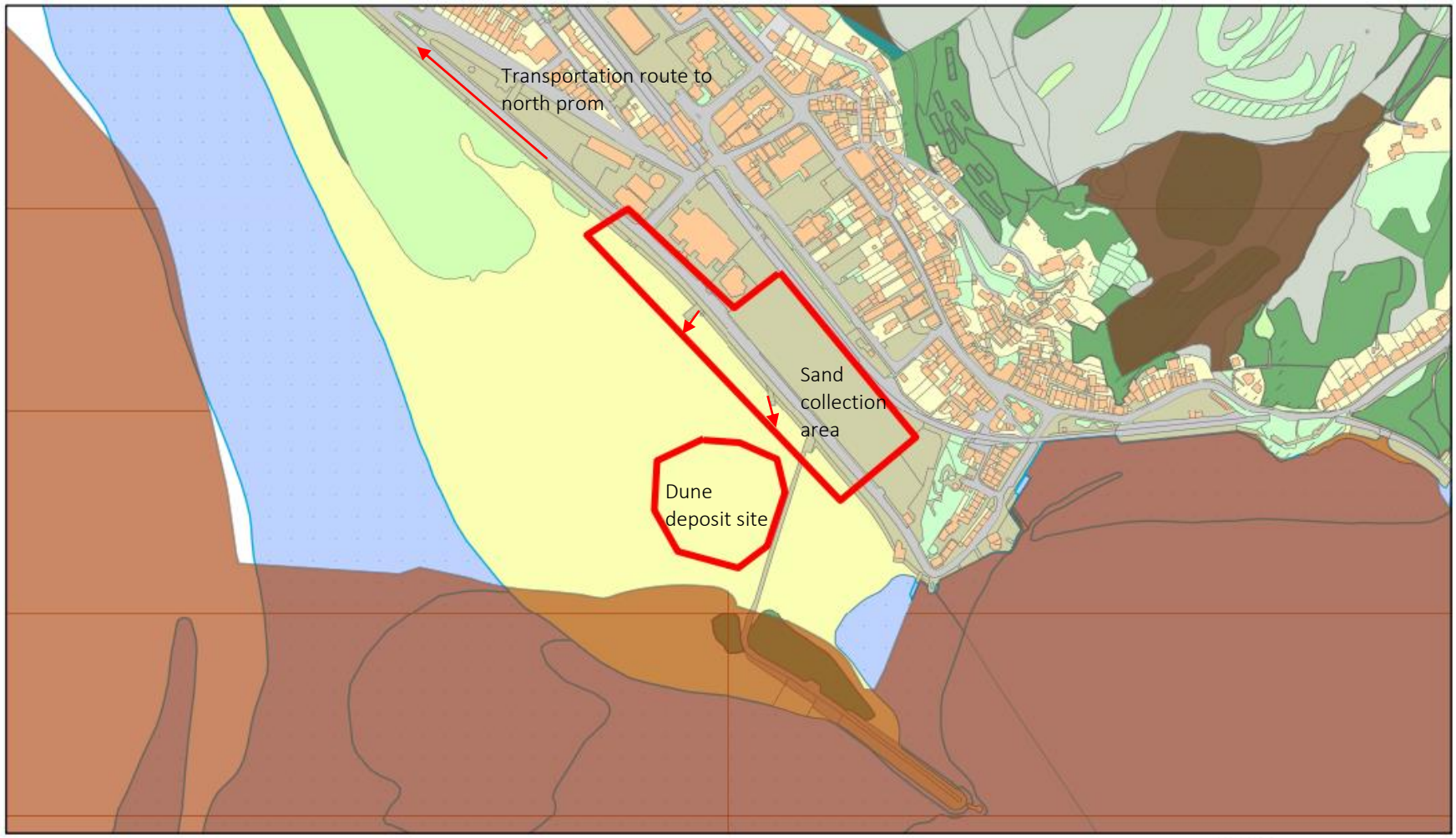

Figure 2: Location of sand collection and deposition area at main beach towards southern end of promenade. Red arrows show slipway access onto foreshore (Internationally protected sites, SAC shaded brown).

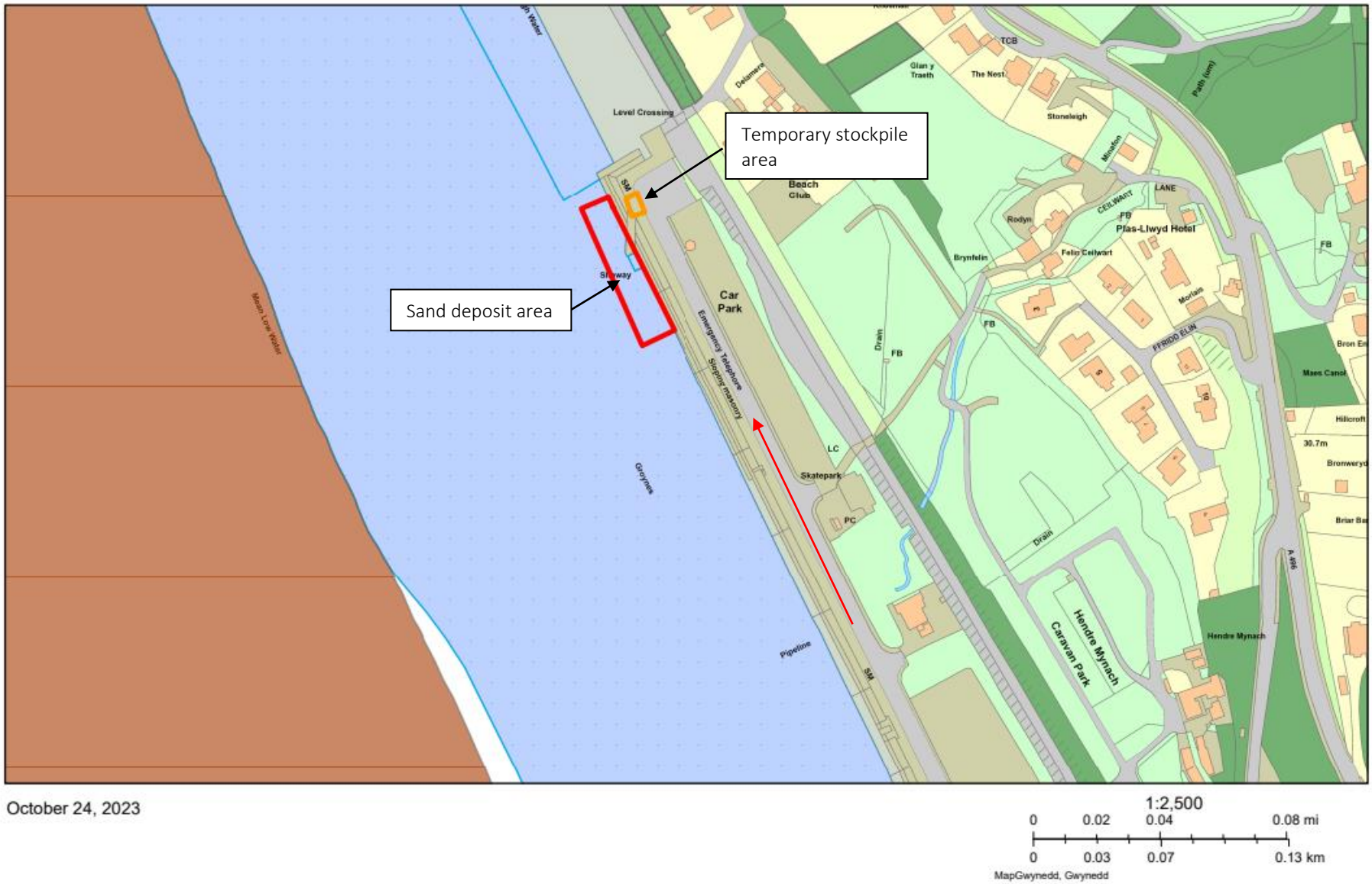

Figure 3: Location of sand deposition area at north end of prom (outlined red) in relation to Pen Llyn a'r Sarnau SAC (brown shading). Red arrows show access routes.

1.3 European Sites and Ramsars

The EU Habitats Directive requires competent authorities to assess the impacts of plans and projects on the Natura 2000 network of protected sites, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). In England and Wales, the Directive is implemented by the Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2017 (the 'Habitats Regulations'). These set out the requirement for a Habitats Regulations Assessment (HRA) where necessary, comprising a series of mandatory tests.

According to Government policy and advice, 'Wetlands of International Importance' or Ramsar sites, although not subject to the Habitats Regulations, should be treated within the planning system in the same way as SACs and SPAs (or 'European sites'). The same level of protection is also given to potential or proposed sites (i.e. pSPA, pSAC and pRamsar), which have not yet been formally designated.

1.4 The HRA of Projects

HRA asks specific, mandatory questions of development projects. Firstly, a pre-screening process establishes whether a project can be exempted, excluded or eliminated, either because it is directly connected with the conservation management of the protected site, or it doesn't qualify as a 'project' (within the meaning and scope of the Habitats Directive), or because it couldn't conceivably affect any protected sites. If it cannot be discounted for these reasons, it has to undergo a process involving the four stages outlined in Table 1 and Figure 2 below.

The first stage is to screen the project to identify if it may result in a likely significant effect, whether alone or in-combination with other plans or projects. Provided that these significant effects can be ruled out, then no further assessment is needed. Following recent case law (People over Wind, 2017), mitigation cannot be taken into consideration at this stage.

If likely significant effects cannot be ruled out, then the project will proceed to the 'Appropriate Assessment' stage which explores the impacts in terms of the site's conservation objectives. This is to identify whether it can be ascertained that *it will not adversely affect the integrity of the European site*. It is only at this stage that mitigation measures can be considered or imposed (such as changes to design or timing of works). If the Appropriate Assessment can rule out any adverse effects on the integrity of the European site (with or without mitigation), the project may then be consented.

If adverse effects cannot be ruled out, then the assessment progresses to stages three and four and specific derogations may be sought. These determine whether alternative solutions exist and if not, whether imperative reasons of overriding public interest apply and if so, whether compensation is feasible. It should be noted that use of the derogations is regarded as a last resort and should be considered only in exceptional circumstances. The majority of projects are resolved during stages 1 and 2 of the HRA process, as few would manage to pass the strict tests of stages 3 and 4.

Table 1: Summary of the four-stage HRA process

Stage	Test	Task
1	Screening	If the project cannot be excluded from the process (pre-screening), this stage determines if the project will lead to a 'likely significant effect' on a European site alone or in-combination with other plans or projects. This stage uses a very precautionary approach, without consideration of mitigation measures. This stage involves gathering information about the protected sites but is not a detailed analysis of the impacts
2	Appropriate Assessment and Integrity Test	If 'likely significant effects' cannot be ruled out, a more thorough 'appropriate assessment' must be carried out to assess whether it is possible to ascertain whether the project will have an 'adverse effect on the integrity of the site' (AEOI) or not. Mitigation can be considered at this stage but not before
3	Alternative Solutions	If 'AEOI' cannot be ruled out, the HRA must explore whether less damaging 'alternative solutions' could deliver the overall objective of the project
4	Imperative Reasons of Over-riding Public Interest (IROPI) and Compensation	If no alternative solutions exist, the project can only proceed if 'IROPI' apply and 'compensatory measures' must be delivered before consent can be granted

This HRA uses guidance provided by the Habitats Regulations Assessment Handbook (DTA, 2013, February 2019 edition), which draws on best practice and case law from the UK and across the EU to inform best practice. The definitions of HRA terminology used in the assessment can be found in the HRA Handbook.

This document contains information for Stage 1 (Screening) - Test of Likely Significant Effects and information to inform Stage 2: Appropriate Assessment – the consideration of the impact of the project on the integrity of the internationally protected sites, either alone or in combination with other projects or plans.

Extent of knowledge, use of professional judgement and the precautionary principal of professional judgment have been used in the gathering of data and in the interpretation of results gained in relation to the potential impacts, mitigation and significance of any residual impacts, and consideration against conservation objectives. If information is unknown about a potential impact on a species, then the precautionary principal has been used.

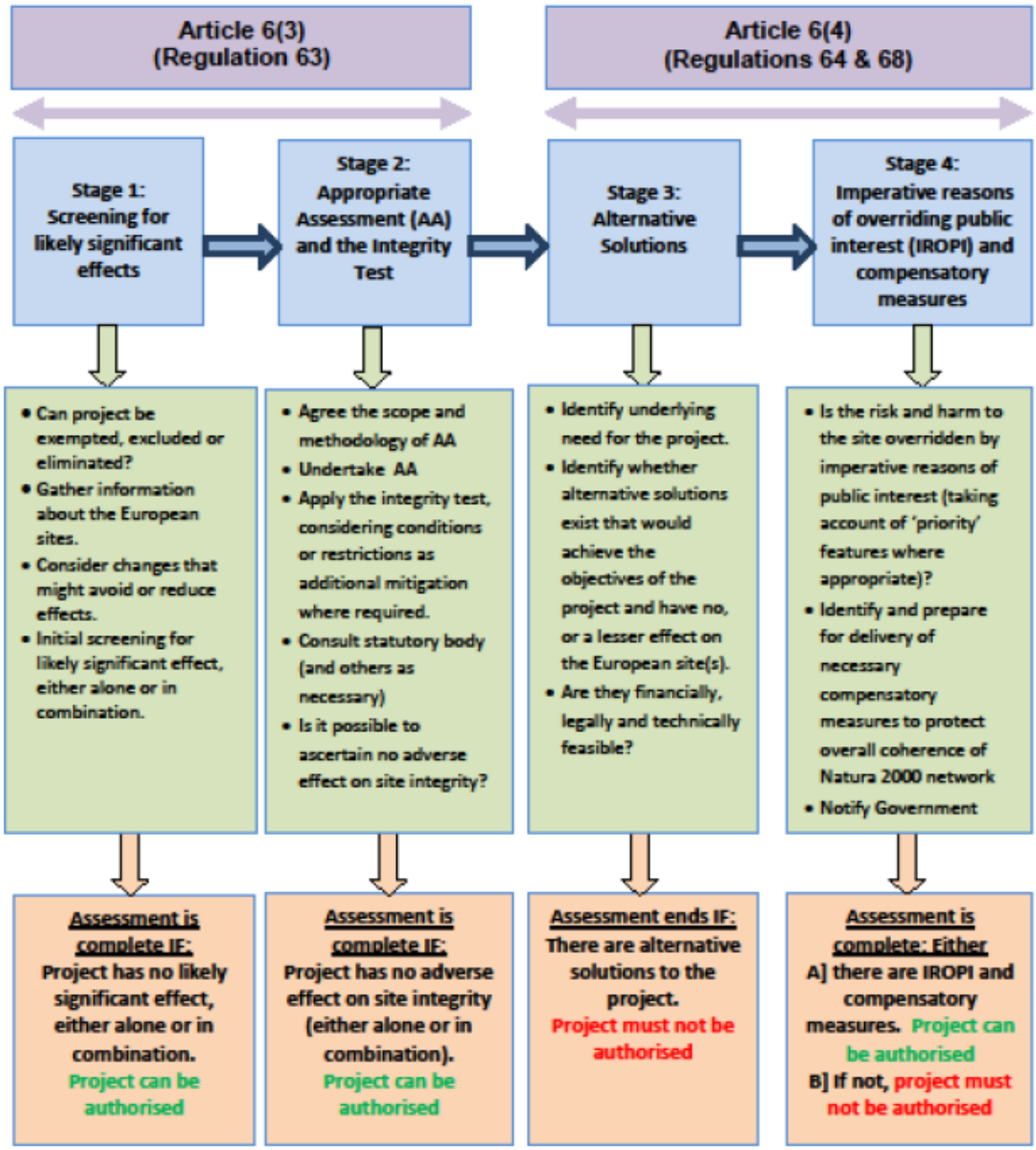

Figure 4: Outline of the four-stage approach to the Habitats Regulations Assessment of projects

1.5 Definitions, Evidence and Case Law

Stage One – Screening

In the context of a likely significant effect, 'likely' means a possible (or the risk of a) significant effect whose occurrence cannot be excluded on the basis of objective information. 'Significant' means if it is likely to undermine the conservation objectives of a European / internationally important site. 'Objective information' can be defined as a clear verifiable fact rather than a subjective opinion and when carrying out a screening assessment, it is not that significant effects are probable, it is that a risk is 'sufficient'. However, there must be credible evidence that there is a 'real', rather than a 'hypothetical' risk.

An 'in-combination' assessment is only required when an impact is identified as having an insignificant effect on its own (but residual effects remain) that may become significant when taken into consideration with other plans or projects. This type of assessment is only required during the screening stage, although it can be difficult to distinguish between likely significant effects when considered alone or in-combination. Additionally, the rather coarse nature of the screening stage can sometimes preclude or compromise the necessary analysis and an incorrect choice can sometimes prompt extensive and unnecessary work, which is a limitation of this process. Therefore, unless the issues at the screening stage are clear, this HRA assumes that all likely significant effects apply alone with no residual effects. This will ensure all possible effects are considered and assessed for more thorough analysis in the appropriate assessment if required.

Stage Two – Appropriate Assessment and the Integrity Test

Regulation 63 states that where a plan is 'likely to have a significant effect', it can only be consented if the competent authority can ascertain that it 'will not adversely affect the integrity of the European site.' An Appropriate Assessment is defined as "the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts".

The 'integrity' of a European site is defined as:
'*the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified or listed.'*

The European Commission defined it more recently as follows:
'The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site's conservation objectives.'

As the HRA process is an iterative process, further scrutiny during the Appropriate Assessment will inevitably confirm or challenge the outcomes of the screening exercise. As a result, this may result in changes such as the identification of new or removal of existing effects, or the need for an in-combination screening assessment.

In accordance with the principles of the mitigation hierarchy, if mitigation measures are able to remove an adverse effect, the measure should be adopted regardless of the cost or difficulty.

Favourable Conservation Status

The aim of the Habitats Directive is to maintain or restore the habitats and species (or qualifying features) listed in Annex I and Annex II respectively, to favourable conservation status (FCS) to ensure their long-term survival is secured across their natural range within the EU. This is described in Articles 1(e) and 1 (i) of the Directive as follows:

The conservation status of a natural habitat will be taken as favourable when:

- *Its natural range and areas it covers within that range are stable or increasing;*
- *The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and*
- *The conservation status of its typical species is favourable as defined in (i)*;

[and]
The conservation status of a species will be taken as favourable when:

- *Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;*
- *The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and*
- *There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

These targets may apply across several member states but are delivered by site-based conservation objectives. Site-based conservation objectives can be defined as *'a set of specified objectives to be met in a site in order to make sure that the site contributes in the best possible way to achieving FCS at the appropriate level (taking into account the natural range of the respective species or habitat types)'.*

Priority features

Some of the qualifying features of the Natura 2000 European sites are listed as 'Priority features'. These are treated in the same way as the other features during Stages 1 and 2 of an HRA, but at Stage 4, Imperative reasons for overriding public interest (IROPI) are restricted to those relating to human health, public safety or beneficial effects on the environment if priority features would or could be adversely affected by a plan or project. In other words, IROPI of a social or economic nature alone cannot be considered sufficient reasons for impacts on 'priority features' when assessing the derogations (Stages 3 and 4 of HRA).

Mitigation and case law

The People Over Wind case provided a new interpretation of when and how mitigation measures should be considered in an HRA. In 2017, the European Court of Justice departed from previous decisions, clearly identifying that measures specifically designed to avoid or reduce likely significant effects should not be evaluated at the screening stage, and should be reserved for the Appropriate Assessment stage.

Role of the competent authority

It is the competent authority's responsibility to decide whether or not to adopt this assessment as part of their duty under the Habitats Regulations.

2.0 THE NEED FOR ASSESSMENT AND IDENTIFYING EUROPEAN SITES AT RISK

2.1 Exclusion, Elimination and Exemption from the Need for Assessment

Prior to the identification of vulnerable European sites, Stage 1 of the HRA process encourages a brief 'pre-screening' exercise to determine whether there is actually a need for an HRA. It decides whether a proposed development can be:

- Exempted from the HRA because it is '… directly connected with or necessary for the management of the … European site';
- Excluded from the HRA because 'it is not a project within the meaning and scope of the Habitats Directive'; or
- Eliminated from the HRA because it can easily be shown that although 'it is a project … it could not have any conceivable effect on any European site'.

Following this pre-screening exercise, it is evident that the proposed development does in fact represent a project within the meaning and scope of the Habitats Directive with the potential to cause harm to European sites. As a result, it can neither be excluded nor eliminated from the HRA. Additionally the purpose of the project is not directly connected with or necessary to the management of European sites, and so it cannot be made exempt from the HRA process. Therefore, the first steps of the Stage 1 assessment will need to commence by identifying which European sites (and associated features) may be at risk. The identification of these sites is outlined in the section below.

2.2 Identification of European sites at risk

This HRA has adopted a precautionary 5km radius from the proposed works to search for European protected sites at risk. This distance is considered to be the maximum extent that a project of this nature and scale could reasonably be expected to generate measurable effects. Using the data from 'Map Gwynedd' (the Gwynedd Council GIS database), the sites within this area are listed in Table 2 below and shown in Figure 1 above.

Table 2. European sites within 5km of the proposed works (or further if mobile species features could be affected)

European site	Distance
Pen Llyn a'r Sarnau SAC	Immediately adjacent to the works.
Meirionnydd Oakwoods and Bat Sites SAC	200m north east of the proposed works at its nearest point.
Northern Cardigan Bay SPA	2km west of proposed works at its nearest point.
Cadair Idris SAC	4.5km south east of proposals.
Morfa Harlech a Morfa Dffryn SAC	5km north west of proposals.
Afon Eden - Cors Goch Trawsfynydd SAC	11km east of proposed works.

In some instances, sites require a larger search radius of up to 30km if they support highly mobile qualifying species such as lesser horseshoe bats or otters that could be affected by the proposed works. In this instance there are no other sites with lesser horseshoe bats as a qualifying species feature within 30km of the proposals, other than Meirionnydd Oakwoods and Bat Sites SAC.

Otters are likely to use the estuary habitat adjacent to the proposals. A buffer zone of 25km is typically applied for assessing impacts on sites with otter as a qualifying mobile species. Other than Pen Llyn a'r Sarnau SAC which is within the footprint of the works, the only other site within 25km which includes otter as a qualifying species is Afon Eden - Cors Goch Trawsfynydd SAC. This site is therefore included in this assessment.

Pen Llyn a'r Sarnau SAC is classified as a 'European Marine Site' (EMS). All EMSs are accompanied by bespoke conservation objectives and supplementary advice. The HRA will initially focus solely on the high-level objectives and then, if necessary, further scrutiny of other objectives will be reserved for the appropriate assessment.

The presence of a site on the list in Table 2 doesn't in itself justify its inclusion in subsequent stages of the HRA process, as this depends on the characteristics of the site and the possible impact pathways between the two. Therefore, to encourage a consistent, reliable and repeatable process, the HRA Handbook identifies 22 generic criteria (including sub-criteria) to focus the assessment on relevant sites only, as shown in full in Appendix A. If no European sites are identified in the final column of this table then none will be considered to be at risk and no further scrutiny is needed. In practice, this process can alter the area of search by expanding it (for instance in the case of riverine sites) or shrinking it where the evidence demands that harmful effects are unlikely.

Importantly, although the outcomes of the site identification task will reflect the type and location of the proposed development, and/or the ecological characteristics of the European sites, it does not represent the test for likely significant effect (which follows later).

Of the 22 criteria listed, six were considered to be a credible threat to European sites in the area and are presented in Table 3 below, with Columns 2 and 3 in Appendix A omitted. The remaining criteria have been removed from any further consideration in this HRA as they are not relevant to the proposed works.

Table 3. Scanning and site selection list for European sites that could potentially be at risk from the proposed works

Types of project (or potential effects)	Sites to scan for and check (and additional context)	List of European sites potentially at risk
(2) Projects that could affect wetland features	**Effects considered are those associated with the physical presence of built development and the localised effects on surface/groundwater resources and quality, resulting from changes in run-off, sedimentation, erosion, etc.** The proposed works are partly located adjacent to Pen Llyn a'r Sarnau SAC, a marine site (see Criterion (3) below). Northern Cardigan Bay SPA is hydrologically connected. (see Criterion (3) below) The Meirionnydd Oakwoods and Bat Sites SAC is located 200m north of the site at it's nearest point and could be susceptible to settlement of suspended dust particles during construction, however it is considered highly unlikely that this will impact upon the site's features. There are no direct hydrological connections between the proposed works and the SAC. Effects on the wetland features of this site have been scoped out. Cadair Idris SAC is located 4.5km south east of proposals. There are no direct hydrological pathways between the proposals and the SAC. Given the distance of the site from the proposals, the nature and scale of the works proposed, and the lack of impact pathways, it is considered highly unlikely that the proposals pose a risk of impacting upon the site's features. Effects on Cadair Idris SAC are therefore scoped out. Afon Eden-Cors Goch Trawsfynydd is connected by the Mawddach Estuary, located where the Afon Mawddach enters the estuary, c.11km upstream at its closest point. However, due to the distance of this site and its location upstream of the proposed works, effects on the wetland features of this site have been scoped out.	see Criterion (3) below
(3) Projects that could affect the marine environment	**Effects considered are those associated with the physical presence of built development and the localised effects on surface/groundwater resources and quality, resulting from changes in run-off, sedimentation, erosion, etc.**	Pen Llyn a'r Sarnau SAC

Types of project (or potential effects)	Sites to scan for and check (and additional context)	List of European sites potentially at risk
(Criterion (2): 'Projects that could affect wetland features' is also covered here as the wetland features in this case are all marine)	The proposed works will be taking place directly adjacent to the Mawddach Estuary, which forms part of the Pen Llyn a'r Sarnau SAC. There is some potential for the proposed works to cause adverse pollution impacts on the surrounding Pen Llyn a'r Sarnau SAC habitats during the works, should there be accidental spillage from plant/machinery used to move sand during works. The movement of sand could also mobilise any pollutants or contamination that is present within the sand. Beach management operations have the potential to affect the hydraulic conditions of the surrounding coastal environment, which could lead to impacts upon coastal processes and long term impacts upon nearby habitats. In this case, the sand is being moved within the same coastal cell, therefore it is not likely that there will be any significant change in the hydraulic conditions as a result of the works, however this is to be assessed further. Northern Cardigan Bay SPA is hydrologically connected to the proposed works (2km west) and could potentially be affected by adverse pollution impacts during construction. Given the nature and scale of the works proposed, the distance of the works from the SAC, and the high dilution factor associated with the marine environment, it is not likely that this site would suffer significant effects from pollution during construction. However, there is potential for effects on the habitats of the red-throated diver outside of the SAC, which is considered under criteria 5 below. The very direct and localised nature of beach management operations means it is unlikely that sites remote to the operations will be impacted. **Therefore, at this stage the potential for harmful effects on the Pen Llyn a'r Sarnau SAC and its features cannot be ruled out and further consideration is required.**	
(4) Projects that could affect the coast	**Effects considered are those of a wider, more strategic scale than (2) above. Also see (3) above.** Morfa Harlech a Morfa Dyffryn SAC is located 5km north of the proposals, situated along the same area of coastline. It is feasible that sediment placed at the north end of the prom could be transported to the SAC through coastal processes. This could adversely impact upon the features of	Morfa Harlech a Morfa Dyffryn SAC

Types of project (or potential effects)	Sites to scan for and check (and additional context)	List of European sites potentially at risk
	the SAC, should the sediment be contaminated, however there could be beneficial impacts as long as the sediment is not contaminated.	
(5) Projects that could affect mobile species	**Criterion 5 includes sites whose qualifying features include mobile species which may be affected by the project irrespective of the location of the project or whether the species would be in or out of the site when they might be affected.** Mobile species are those considered to spend part of their life-cycle on land, in water or air beyond the designated site boundary. Typically, it focuses on potential impacts on functionally-linked land and water utilised by the birds, mammals and migratory fish associated with the European sites listed. Otter is a mobile species feature of the Pen Llyn a'r Sarnau SAC and the Afon Eden – Cors Goch Trawsfynydd SAC. This species could utilise land within or adjacent to the area of proposed works for foraging. Lesser horseshoe bat is a mobile species feature of the Meirionnydd Oakwoods and Bat Sites SAC. The proposed works will not involve any interference with suitable roosting or foraging habitat for this species. As such, any potential impact on this species has been scoped out. Grey seal and bottle nose dolphin are features of the Pen Llyn a'r Sarnau SAC, which could be affected by pollution impacts or disturbance during construction. There is also potential for effect on the habitats of the red-throated diver feature of the Northern Cardigan Bay SPA. Note that 'indirect' effects on mobile species on functionally – linked land or water beyond the development site, are considered under other criteria 14 and 15 below.	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC. Northern Cardigan Bay SPA

Types of project (or potential effects)	Sites to scan for and check (and additional context)	List of European sites potentially at risk
	Therefore, at this stage the potential for harmful effects on Pen Llyn a'r Sarnau SAC, Afon Eden – Cors Goch Trawsfynydd SAC, and the Northern Cardigan Bay SPA and their features cannot be ruled out and further consideration is required. *Note: There is a close link between criterion 5 and criteria 14 and 15 below.*	
(14) Projects which could introduce or increase, or alter the timing, nature or location of disturbance to species	**Criterion 14 refers to sites whose qualifying features are considered to be potentially sensitive to disturbance, for example as a result of noise, activity or movement or the presence of disturbing features that could be brought about by the project.** There is a small risk of disturbance to otters, a qualifying feature of the Pen Llyn a'r Sarnau SAC and Afon Eden – Cors Goch Trawsfynydd SAC, during construction. Similarly, the proposed works could lead to disturbance of grey seal and bottlenose dolphin feature of the Pen Llyn a'r Sarnau SAC. Lesser Horseshoe Bats is a mobile species feature of Meirionnydd Oakwoods and Bat sites SAC. The proposed works will not involve any interference with suitable roosting or foraging habitat for this species. As such, any potential disturbance impact on this species has been scoped out. **Therefore, effects that include potential disturbance of otters cannot be ruled out for the Pen Llyn a'r sarnau SAC and Afon Eden – Cors Goch Trawsfynydd, and further consideration is required.** *Note: There is a close link between criterion 14 and criteria 5 and 15.*	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC.
(15) Projects which could introduce or increase or change the timing, nature of location of light or noise pollution	**Criterion 15 includes sites whose qualifying features are considered to be potentially sensitive to the effects of changes in light or noise that could be brought about by the project.** There would be some localised temporary noise pollution during the construction period, which could potentially cause a low level of disturbance to otters, grey seal and bottlenose dolphin features of the Pen Llyn a'r Sarnau SAC. However, this would be minimal as there is already a degree of disturbance in the vicinity of the proposals. Works would also be undertaken during daylight hours when otter	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC.

Types of project (or potential effects)	Sites to scan for and check (and additional context)	List of European sites potentially at risk
	activity is minimal. There would be no additional artificial lighting of the site. As above, the proposed works are likely to create a temporary increase in noise levels during the course of the works, potentially impacting lesser horseshoe bats. Cofnod records do not indicate the presence of a lesser horseshoe bat roost within 1km of the proposed works. No effect on foraging bats is expected as works will be undertaken during daylight hours and there would be no artificial lighting of the site. Therefore, effects on otters from noise pollution on the Pen Llyn a'r Sarnau SAC and Afon Eden – Cors Goch Trawsfynydd SAC cannot be ruled out. *Note: There is a close link between criterion 15 and criteria 5 and 14 above.*	

2.3 Initial outcome of site identification exercise

Following the initial high-level preliminary screening exercise provided by Table 3 above and Appendix A (full version including criteria screened out as well as those screened in), the number of potential threats and sites affected is reduced. Despite this, the nature of the criteria results in considerable overlap in some instances, such as in criteria 5, 14, and 15 which can all effectively be represented by 'disturbance / displacement of mobile species'. Criterion 1 and 3 effectively represent the threats caused by 'pollution' and 'habitat degradation'. These terms will therefore be used in any subsequent assessment, in place of the criteria in Table 3 above.

The outcomes of the site identification exercise are therefore shown in Table 4 below.

Table 4. Summary of potential threat mechanisms and European sites at risk

Potential threat	Relevant Criteria from Table 3	European sites
Pollution of marine environment (including foraging habitat for mobile species features)	(3) and (5)	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC. Northern Cardigan Bay SPA
Impact of sediment deposition and transportation, including alteration of physical processes.	(3) and (4)	Pen Llyn a'r Sarnau SAC Morfa Dyffryn a Morfa Harlech SAC
Disturbance / displacement of mobile species feature	(5), (14) and (15)	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC.

Table 4 above demonstrates that potential impacts on three European sites remain and a formal screening assessment is therefore required.

3.0 SCREENING

3.1 Purpose

The purpose of the screening exercise determines whether or not a plan or project will lead to a 'likely significant effect' or, in other words, whether there is a risk that the proposed works will lead to effects that would 'undermine the conservation objectives' of the site and cannot be 'excluded on the basis of objective information'. An Appropriate Assessment is required when likely significant effects (that are credible and not hypothetical) are identified (or cannot be ruled out).

3.2 Approach

In order to complete the screening stage and identify any likely significant effects on site features, additional information is needed for each site at risk. The screening tables (Table 5 - 8) below therefore collate additional information for each site, including a site description and list of qualifying features, and use this to identify any likely significant effects from the proposed works (based on the threats listed in Table 4 above) and the site features potentially affected. The site-specific information provided in these tables has been collated from the Natural Resources Wales and JNCC

websites. If necessary, more detailed descriptions of the sites will be provided at the Appropriate Assessment stage, including the conservation objectives, but the information in Tables 5 - 6 below is sufficient for the screening stage.

In-depth analysis is not required at the screening stage as it should only operate as a 'trigger' to determine if an Appropriate Assessment is needed. Therefore, detailed examination of each of the conservation objectives of each of the features of the sites will not be undertaken at this stage, and is reserved for the Appropriate Assessment stage. Instead, this section only broadly explores whether it is possible that conservation objectives could be undermined and takes into account the risk of a potential significant effect.

As a result of the 'People Over Wind' decision, the screening stage is able to consider the essential features and characteristics of a project but is not able to take bespoke mitigation measures into account. The consideration of all mitigation for this project is therefore reserved for the Appropriate Assessment stage.

Table 5. Screening Assessment for the Pen Llyn a'r Sarnau SAC

Pen Llyn a'r Sarnau SAC (146,010.52 ha)	**UK0013117**
Qualifying features 1110 Sandbanks which are slightly covered by seawater all the time 1130 Estuaries 1150 Coastal Lagoons *****Priority Feature 1160 Large shallow inlets and bays 1170 Reefs 1140 Mudflats and sandflats not covered by sea water at low tide 1310 Salicornia and other annuals colonizing mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 8330 Submerged or partially submerged sea caves 1349 Bottlenose dolphin *Tursiops truncatus* 1355 Otter *Lutra lutra* 1364 Grey seal *Halichoerus grypus* Description The Pen Llŷn a'r Sarnau SAC encompasses areas of sea, coast and estuary that support a wide range	

of different marine habitats and wildlife. The nature of the seabed and coast and the range of environmental conditions present vary throughout the SAC. Differences in rock and sediment type, aspect, sediment movement, exposure to tidal currents and wave action, water clarity and salinity together with biological and food chain interactions have created a wide range of habitats and associated communities of marine plant and animal species, some of which are unique in Wales.

Potential Threats / Vulnerabilities

1) *Pollution of habitat features and foraging habitat for mobile species:*

It is possible that plant and machinery used for works on site could be a source of pollution, which could directly affect the adjacent intertidal mudflats and sandflats feature of the SAC and other marine / estuary habitats nearby. Material movement activities could also result in increased sedimentation working within and around the water environment. The movement of sand also has the potential to mobilise any pollutants or contaminants that may unknowingly be contained within the material, releasing it into the environment at the deposit sites. The works are located immediately adjacent to the 'intertidal mudflats and sandflats', 'Estuaries' and 'Reefs' features of the European site creating a potential direct pollution risk. Due to the high dilution factor associated with a marine environment and the scale and nature of the proposed works, it is considered unlikely that any habitat further than c.500m away from the proposed works would suffer significant effects from pollution during construction. Therefore, potential effects on other SAC habitat features are scoped out.

It is considered highly likely that the estuary habitat adjacent to the proposed works is used occasionally for foraging by members of the otter population of the SAC. Cofnod records include a foraging otter at the southern end of the Breakwater, approx. 300m south of the proposals (2018). Deterioration in water quality and degradation of habitat could potentially impact on otters and could result in reduction of prey availability (fish). Although this poses a fairly low risk of having a significant effect on the conservation objectives of this feature due to the abundance of suitable foraging habitat elsewhere in the local area and the large range of the otter, it is included here as a likely significant effect on a precautionary basis.

Bottlenose dolphin and grey seal are likely to use the Mawddach Estuary entrance as foraging habitat, however both these species will forage widely and any decline in prey species in one area may not immediately impact the populations. As mentioned above, due to the scale and nature of the works proposed and the high dilution factor associated with the marine environment, any pollution impacts are likely to be local. It is therefore not considered likely that there will be significant effect on bottlenose dolphin and grey seal from pollution impacts.

Outcome: It is considered that the threat from pollution during the sand management activities could potentially undermine the conservation objectives of the site for intertidal mudflats and sandflats, estuaries, reefs and otter features of the SAC and is therefore included as a likely significant effect.

2) *Disturbance / displacement of mobile species features:*

There are no Cofnod records of otter resting sites or holts within or in the vicinity of the proposed works area and none were recorded during the site survey undertaken November 2022. Due to the exposed nature of the site within a populated area of town and the high level of disturbance already experienced within this area, the presence of artificial lighting, and the tidal inundation of the beachfront, it is considered highly unlikely that the proposed works area would support potential holt opportunities or resting sites. However, otters are very likely to be present, at times, on the Mawddach Estuary habitat nearby whilst foraging and commuting.

There is likely to be some temporary noise pollution during the works, above current levels, which could potentially cause a low level of disturbance to foraging otters. This could cause a reduction in foraging opportunities for otter, thus potentially reducing access to food sources. However, such disturbance would be temporary and the works would be undertaken during daylight hours when otter activity is minimal. There would be no additional artificial lighting of the site.

As this risk is so minimal, no resting sites would be disturbed and even if an otter foraging during daylight hours was to be temporarily disturbed within the construction period, it is not considered realistic to imagine that this could have a signfiicant adverse effect on the conservation objectives of the otter feature of the SAC, given the availability of suitable foraging habitat elsewhere in the locality. This impact on otters is therefore scoped out of any further assessment.

Increases in noise pollution could also impact upon the bottlenose dolphin and grey seal features of the SAC, if they are found to be present in the vicinity of the proposed works during sand shifting activity. However, as no proposed works are being carried out in the water column (avoiding tidal inundation to the work area), it is not considered likely that the proposal will have a likely significant effect.

Outcome:
No Likely Significant Effects

3) Sediment deposition and transportation impacting upon physical coastal processes

According to the West of Wales Shoreline Management Plan (SMP2), there is a general drift to the north over the lower foreshore, as evidenced by the shape of the outer banks of the estuary and by the lower shore ridges further north, but that at the upper shoreline the drift is more variable, and particularly north of Llanaber, very weak. The southerly drift along the Barmouth frontage is evidenced by the growth of the beach to the south. The northern part of Barmouth Beach has experienced sediment loss and falling levels for decades, whereas the southern part of the beach has experienced sediment accretion and rising beach levels (KPAL 2016).

It is likely that sediment deposited within the intertidal area at the north end of the prom will be transported in a southerly direction over time, in line with the southerly drift along the Barmouth frontage. However, it is also feasible that some sediment could make its way out to the lower foreshore area, where it would be influenced by the dominant northerly drift in this area (See Appendix G). Considering the scale and frequency of the proposed works, and the fact that most of the sediment is likely to remain within the same cycle along the Barmouth frontage as explained above, it is considered unlikely that the movement of deposited sediment will adversely impact upon the features of the SAC. This is provided that the sediment deposition itself is carried out in a manner that does not alter the beach profile which could potentially alter the physical processes.

Changing the profile of the beach at the north end of the promenade has the potential to modify physical processes in the deposition area. As detailed above and shown in Appendix G, the northern part of Barmouth Beach experiences sediment loss and falling levels. KPAL 2016, demonstrates the changes in surface elevation between Feb 2003 and June 2016 (Appendix G). The north beach, between 2003 and 2016, has experienced a net loss of approximately 20×10^3 m^3 below MHWN (KPAL, 2016).

The proposals involve using a dumper to transport sand collected from the prom adjacent to the southern part of the beach to the deposit area at the northern end of the beach. Considering the plant / machinery used, and the nature and scale of the proposals, it is not considered likely that the deposit of sand on the northern area of the beach will modify the physical processes in play, due to the amount of sand involved. The nature of the work means that transportation time,

loading / depositing time, limits the amount of sand that will be transported within a day (within a tidal cycle). Also, sand will be stockpiled on the north prom, before being lowered down on to the beach by excavator, which will allow the sand to be spread evenly across the deposit area. Therefore, as the operation will be spread out over several days, there will be tidal cycles in between periods of sand deposition, therefore beach profile is not expected to be altered in this area.

Outcome:
No Likely Significant Effects

Summary of Likely Significant Effects and Features requiring Appropriate Assessment

- Pollution of adjacent estuary and intertidal mudflats and sandflats habitat, including otter foraging habitat, during sand movement activities.

Table 6. Screening Assessment for the Afon Eden – Cors Goch Trawsfynydd SAC

Afon Eden – Cors Goch Trawsfynydd SAC (284.29 ha)	**UK0030075**

Qualifying features
7110 Active raised bogs ***Priority Feature**
1029 Freshwater pearl mussel *Margaritifera margaritifera*
1831 Floating water-plantain *Luronium natans*
1106 Atlantic Salmon *Salmo salar*
1355 Otter *Lutra lutra*

Description
The Afon Eden/River Eden is a relatively unmodified river, mainly upland in character, of approximately 10km length. The watershed begins just south of Llyn Trawsfynydd, within an area of gently sloping and poorly drained land. The upper section of the catchment is slow-flowing with a number of deep pools along its length. In the lower two-thirds of the catchment the river flows more steeply into a narrow rocky gorge, with an adjacent area of forestry plantation, known as Coed y Brenin. The Afon Eden joins with the Afon Mawddach, just above the village of Ganllwyd, but the SAC boundary continues downstream to the tidal limit of the Mawddach at Llanelltyd. The Afon Eden is fed by a number of base-poor upland streams, which flow from the eastern flanks of the Rhinog mountains. The Ardudwy leat takes the most acidic waters from the eastern tributaries to Llyn Trawsfynydd. This water is used to maximise the water available for HEP generation by the Maentwrog Power Station.

The area receives high average rainfall, which has contributed to the development of raised bogs, blanket bog, and transition mires and quaking bogs. Two areas of raised bog occur at the top end of the catchment, close to the watershed, where they were once part of a much larger extent of bog, much of which is now flooded by Llyn Trawsfynydd. Transition mires and quaking bogs occur in waterlogged situations where they receive nutrients from the surrounding catchment as well as from rainfall. They are located within the wetlands surrounding the areas of raised bog.

The ecological structure and functions of the site are dependent on hydrological and geomorphological processes (often referred to as hydromorphological processes), the quality of riparian habitats and connectivity of habitats. Animals that are highly mobile such as migratory fish and otters, are also affected by factors operating outside the site.

The river contains the last known recruiting population of freshwater pearl mussels surviving in Wales, they are almost entirely confined to one section of the river. Historically the mussels were

more widespread in the catchment. The mussels rely on salmonid parr hosting, for a short period of time, the glochidial larvae of the mussels on their gills, so the success of migratory and spawning fish in the catchment is crucial to their long-term survival. Atlantic salmon is also an important fish species that breeds in the Mawddach catchment.

In the slow-moving waters just upstream from Pont y Grible is a population of floating water plantain.

Potential Threats / Vulnerabilities

1) Pollution of supporting habitat outside SAC, impacting otter:

The Afon Eden – Cors Goch Trawsfynydd SAC is located approximately 11km to the east of proposals. The SAC is connected fluvially to the proposed works via the Afon Mawddach, however the SAC is located upstream of proposals. The tidal reach of the estuary reaches as far as 500m upstream of the Mawddach / Wnion confluence, therefore does not reach as far as the Afon Eden – Cors Goch Trawsfynydd SAC boundary. For this reason, and considering the scale and nature of the proposals, it is not likely that any potential pollution impacts from the proposed works would directly affect habitat within the SAC.

Otters are known to be widely distributed in the Mawddach catchment, and given that the species can have a range of between 20 – 30km it is highly likely that otters using habitat within the SAC would also be present in the vicinity of the proposed works at Barmouth. There is potential for the works to lead to temporary deterioration in water quality through increase in suspended solids from works next to the water environment, or from pollution through accidental spill from plant or machinery. There is therefore the possibility of contamination of otter foraging habitat outside of the protected site, and a reduction in abundance and availability of prey for otters (fish).

Outcome: It is considered that the threat from pollution during sand management activities could potentially undermine the conservation objectives of the site for otter and is therefore a likely significant effect for this feature only.

2) Disturbance of mobile species features – Otter:

The Afon Eden – Cors Goch Trawsfynydd SAC supports a population of otters which will range within and beyond the boundaries of the SAC to feed and commute using the waterways and riparian land to feed, rest and breed. Otters are known to be widely present in the Mawddach catchment.

There are no Cofnod records of otter resting sites or holts within or in the vicinity of the proposed works area. Due to the exposed nature of the site within a populated area of town and the high level of disturbance already experienced within this area, the presence of artificial lighting, and the tidal inundation of the beachfront, it is considered highly unlikely that the proposed works area would support potential holt opportunities or resting sites. However, otters are very likely to be present, at times, on the Mawddach Estuary habitat nearby, whilst foraging and commuting.

There would be some localised temporary noise pollution during the works, above current levels, which could potentially cause a low level of disturbance to foraging otters. However, this would be minimal and the works would be undertaken during daylight hours when otter activity is minimal. There would be no additional artificial lighting of the site.

As this risk is so minimal, no resting sites would be disturbed and even if an otter foraging during daylight hours was to be temporarily disturbed within the time when works are taking place, it is not considered realistic to imagine that this could have a significant adverse effect on the

conservation objectives of the otter feature of the SAC. This impact on otters is therefore scoped out of any further assessment.

Outcome: No likely significant effect

Summary of Likely Significant Effects and Features requiring Appropriate Assessment

- Pollution of supporting habitat outside SAC: Otter.

Table 7. Screening Assessment for Northern Cardigan Bay SPA

Northern Cardigan Bay SPA (82312 ha)	**UK9020327**

Qualifying features

Red Throated Diver *Gavia stellata*

Description

Northern Cardigan Bay / Gogledd Bae Ceredigion SPA, as the name suggests occupies the northern half of Cardigan Bay on the west coast of Wales.

Several rivers flow into the northern part of Cardigan Bay including the Dwyfach, Glaslyn/Dwyryd, Wnion, Dysynni, Leri, Mawddach and Dyfi. The coastline is dominated by rocky cliffs and shores with occasional sandy beaches and estuaries. Where estuaries flow into northern Cardigan Bay, the sea quickly becomes more than 20 metres deep, but elsewhere remains shallow (less than 10 m deep) for up to 20 km offshore. These shallow areas are sub-tidal shingle reefs, known as the sarnau. All three of the sarnau lie roughly north-east to south-west and are presumed to be formed from glacial deposits left at the end of the last ice age. Sarn Badrig is the largest and most northerly sarn, running parallel with the Llŷn Peninsula from Harlech up to 24 km offshore. Sarn y Bwlch is the smallest sarn, starting from near Tywyn. Sarn Cynfelyn, the most southerly sarn, starts from north of Aberystwyth. These shallow reefs are important ecological habitats within the Northern Cardigan Bay / Gogledd Bae Ceredigion SPA and are important features of the Pen Llŷn a'r Sarnau Special Area of Conservation (SAC), designated under the EC Habitats and Species Directive.

The two tidal streams that enter the Irish Sea, from the north near the Isle of Man and the south through the St George's Channel, meet in the vicinity of Cardigan Bay resulting in weak tidal currents in the area. The tidal range in the bay is up to 4m at a spring tide.

Potential Threats / Vulnerabilities

1) *Pollution of marine environment outside SPA (including foraging habitat for mobile species features)*

The SPA is located 2km west of the proposals. Although the site is hydrologically connected to the proposed works, given the nature and scale of the proposals and the dilution factor associated with the marine environment, it is considered highly unlikely that a pollution event during construction could impact the SPA itself. However, any localised pollution contamination could potentially impact upon the SPA's mobile species feature, the red throated diver, which could potentially be present the marine environment in the vicinity of the proposals for foraging.

It is considered unlikely that any habitat further than c.500m away from the proposed works would suffer significant effects from pollution during construction, therefore any such contamination would

be localised in nature. This could potentially effect upon feeding grounds and prey availability of the red throated diver, however, given the availability of suitable habitat elsewhere and the large range of this species, it is not considered likely that this poses a significant threat to the conservation objective of this feature.

Outcome: No likely significant effect

Summary of Likely Significant Effects and Features requiring Appropriate Assessment

- None

Morfa Harlech a Morfa Dyffryn SAC (1059ha)	**UK0030049**

Qualifying features

2110 Embryonic shifting dunes
2120 "Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")"
2170 Dunes with Salix repens ssp. Argentea (Salicion arenariae)
2190 Humid dune slacks
1395 Petalwort

Description

The Morfa Harlech a Morfa Dyffryn SAC covers two sand dune systems, Morfa Harlech to the north and Morfa Dyffryn to the south. Morfa Harlech is a rapidly accreting dune system gaining sand from the coast to the south including the dune system at Morfa Dyffryn, which is eroding.

The various sand dune communities will through natural processes expand at the expense of others. This may affect the extent of the component SAC features, however, the dynamic processes of the sand dunes and their associated vegetation communities is a valued aspect of the coastal dune systems. The biggest potential conflict is stabilization of dunes and the potential loss of pioneering vegetation communities to fixed dune communities.

Morfa Harlech sand dune system is accreting and is of great importance for its early successional features including its shifting and embryo dunes. The area of dunes away from the beach is very stable with little bare sand. The dune slacks at Morfa Harlech vary from drier slacks which grade into fixed dune grasslands to very damp slacks which undergo frequent flooding and support fen type vegetation communities. Although Petalophyllum ralfsii has been recorded at Morfa Harlech the lack of young slacks in this system means that the species is not abundant.

Morfa Dyffryn is an eroding system which is highly mobile. A high proportion of the site is made up of bare sand. Shifting dunes extend from the shore right through to the landward boundaries of the dune system and are punctuated by extensive dune slacks. The slack vegetation varies from pioneering embryo slack habitats, successionally young slack communities which support the bulk of the population of Petalophyllum ralfsii through to mature, species rich dune slacks.

Potential Threats / Vulnerabilities

1) *Sediment transportation*

Morfa Harlech and Morfa Dyffryn SAC is located approximately 5km north of the proposals, situated

along the same stretch of coastline. As part of the proposals, sediment is to be placed on the foreshore on the north end of the prom at Barmouth. The likelihood and potential impacts of this sediment being transported northwards towards the SAC needs to be assessed.

According to the West of Wales Shoreline Management Plan (SMP2), there is a general drift to the north over the lower foreshore, as evidenced by the shape of the outer banks of the estuary and by the lower shore ridges further north, but that at the upper shoreline the drift is more variable, and particularly north of Llanaber, very weak. The southerly drift along the Barmouth frontage is evidenced by the growth of the beach to the south. The northern part of Barmouth Beach has experienced sediment loss and falling levels for decades, whereas the southern part of the beach has experienced sediment accretion and rising beach levels (KPAL 2016).

It is likely that sediment deposited within the intertidal area at the north end of the prom will be transported in a southerly direction over time, in line with the southerly drift along the Barmouth frontage. However, it is also feasible that some sediment could make its way out to the lower foreshore area, where it would be influenced by the dominant northerly drift in this area (See Appendix G). In this scenario deposited sediment could feasibly be transported towards the SAC. Should the sediment be transported towards the SAC, it can be considered that this would be a benefit to the dune system, and no significant adverse effects are likely. The only scenario where there could be an adverse effect on the SAC is should the deposited sediment be contaminated, however this is considered unlikely given the measures set out in table 5 above.

Outcome: No likely significant effect

Summary of Likely Significant Effects and Features requiring Appropriate Assessment

- None

Evidence provided in Tables 5 – 8 above allows the likely significant effects to European sites to be broken down into threats to specific features of the sites identified, with some features being screened out of any further assessment. Therefore, Table 9 below summarises the results of this screening exercise, listing the European sites identified as being at risk from the proposed works, the likely significant effects and the features of each of the sites that could be affected.

Table 8. Summary of Screening Exercise

European Site	Likely Significant Effects and Features at Risk Likely
	Pollution of habitat features and foraging habitat
Pen Llyn a'r Sarnau SAC	• Intertidal Mudflats and Sandflats • Estuaries • Reefs • Otter
Afon Eden –	• Otter

Cors Goch Trawfynydd SAC	

4.0 FORMAL SCREENING OPINION

The proposed improvement has been screened according to the statutory procedures laid out in the Habitats Regulations 2017 (as amended) using the methodology outlined in the Habitats Regulations Assessment Handbook.

The screening exercise concluded that likely significant effects (LSE) could not be ruled out for the Pen Llyn a'r Sarnau SAC and Afon Eden – Cors Goch Trawsfynydd SAC due to the reasons outlined in Tables 5 and 6 above and summarised in Table 8 above. Therefore, an appropriate assessment is required for these likely significant effects.

5.0 APPROPRIATE ASSESSMENT

5.1 Purpose

Where a project is likely to have a significant effect, the precautionary principle emphasises that consent can only be granted if the competent authority can ascertain that the proposed improvement will not adversely affect the integrity of the European site, following an appropriate assessment. This is the purpose of the appropriate assessment stage.

In accordance with the 'People Over Wind' ruling, the appropriate assessment takes any incorporated mitigation measures into account that are sufficient to remove the likely significant effect. Conversely, if mitigation measures are not proposed, or prove to be inadequate, they can be imposed by the competent authority via conditions or other planning tools.

The role of mitigation is different to that of compensation. Mitigation measures aim to avoid, remove or reduce significant effects on European sites, whereas compensation is only considered under the derogations at the later stages of the HRA if required.

The HRA Handbook outlines the definition of integrity in contemporary planning policy and states that for a consent-making body to conclude the absence of an adverse effect, then it should be 'convinced' that no reasonable scientific doubt remains. As defined by the CJEU (Sweetman) and European Commission, the integrity of the site is 'the lasting preservation of the constitutive characteristics of the site'. For further definitions see Section 1.5 above.

5.2 Approach

The screening assessment found that likely significant effects could not be ruled out for four features of the Pen Llyn a'r Sarnau SAC and the otter feature of the Afon Eden – Cors Goch Trawsfynydd SAC.

These issues are individually subject to further scrutiny through an appropriate assessment (Table 9 below), which considers the site's conservation objectives for the features that have been screened into the assessment (see Table 8 above). Individual effects are assessed with and without mitigation, concluding with an individual Integrity Test including an assessment of whether any residual effects remain with mitigation in place. A list of the mitigation measures proposed is included in Table 10. If no adverse effect on integrity is recorded but residual effects do remain, an in-combination assessment is likely to be required. If an adverse effect on the integrity of the site remains, the assessment would have to proceed to the derogations, or stages 3 and 4 of HRA (see Table 1 and Figure 4 in Section 1 above).

Following an in-combination assessment of any residual effects (if required), an overall Formal Integrity Test for the proposed works will be reported.

Information about the qualifying features of the sites has been obtained from the JNCC and NRW web-sites.

Table 9. Appropriate Assessment for Pollution Impacts

Pen Llyn a'r Sarnau SAC (146,010.52 ha)	<u>Features at risk</u> Estuaries Intertidal Mudflats and Sandflats Reefs Otter (*Lutra lutra*)
Afon Eden – Cors Goch Trawsfynydd SAC (284.29ha)	<u>Features at risk:</u> Otter *(Lutra lutra)*

Assessment without mitigation

The Pen Llyn a'r Sarnau SAC supports a number of estuarine and marine habitats and species, and the proposed works will take place directly adjacent to the SAC. Much of the SAC is marine but extensive intertidal areas are also included. Of the nine habitats for which the site is designated, those in closest proximity to the proposals include 'mudflats and sandflats not covered by seawater at low tide' which is present adjacent to the proposed works area, the broader 'estuaries' habitat which covers the whole of the Mawddach Estuary area, and reefs which are also present nearby.

The Pen Llyn a'r Sarnau SAC is also designated for a number of qualifying species, including its population of otters, which are known to range far and wide within and beyond the boundaries of the SAC to forage, breed, rest and commute. Whilst predominantly aquatic, they will use riparian land for foraging and resting and are susceptible to disturbance or changes in prey availability. Consequently, the presence and availability of resting places, food and freshwater, are key factors in the maintenance of the overall population.

The Afon Eden – Cors Goch Trawsfynydd SAC is designated for its raised bog and blanket bog habitats along with the Afon Eden which is a relatively unmodified river, mainly upland in character. The Afon Eden, approximately 10km, flows from just south of Llyn Trawsfynydd, down toward the village of Ganllwyd where it joins with the Afon Mawddach. The SAC boundary continues downstream to the tidal limit of the Mawddach at Llanelltyd, where the Mawddach flows into the Pen Llyn a'r Sarnau SAC boundary, approx. 11km upstream (east) of the proposals. The ecological structure and functions of the site are dependent on hydrological and geomorphological processes, the quality of riparian habitats and connectivity of habitats. Species that are highly mobile, such as migratory fish and otters, are also affected by factors operating outside the site.

Like the Pen Llyn a'r Sarnau SAC, Otter is also a qualifying species for the Afon Eden - Cors Goch Trawsfynydd SAC. It can be presumed, given the distances involved and the wide-ranging behaviour of the species, and the fact that the site is within the same catchment as the proposals, that otters in the vicinity of the proposals will form part of the Afon Eden – Cors Goch Trawsfynydd SAC population.

As reported in the screening stage (Section 3) of this HRA, it is possible that the machinery used for the proposed works on site could be a source of pollution, which could directly affect the habitat and species features discussed above. Such pollution incidents would cause localised pollution of the immediate habitat and water environment, and depending on the scale, flows and tides at the time, could spread both upstream and downstream. There is a risk therefore of pollution causing degradation of habitat features within and adjacent to the works. Likewise, it is possible that any contamination of the intertidal habitat could lead to a reduction in prey availability for the local otter population.

The movement and deposit of sand could also be a source of pollution, should the material be

contaminated prior to being moved. To better understand this risk, analysis has been undertaken of the sand that collects along the promenade road, to identify if the sand can be returned to the beach safely. Samples were taken of windblown sand collected on the promenade at two separate locations. The samples were taken during December 2022, and this sand had been in situ for at least two weeks. A sample of sand was also taken from the beach itself to provide a representative comparison. The analysis of the samples taken concluded that there were no additional contamination levels found within the sand present on the promenade area (See laboratory test report Appendix F).

It is therefore concluded that the risk of wind blown sand collected on the promenade area and moved back onto the beach being a source of pollution is negligible. Concentrations of polluting material could be released on the promenade in the event of a one-off accident or spillage, and operatives will need to be vigilant to ensure that any such contaminated sand is disposed of accordingly and not taken back onto the beach. Taking a representative sample of sand prior to each movement has been considered, however this is not deemed practical due to the turnaround time of getting the samples analysed and having the results available. This also would not mitigate against the risk of there being some contamination within the sand in one discreet location as a result of an accidental spillage, as this would need to coincide with an area sampled.

Unmitigated, any pollution release to the environment could potentially undermine conservation objectives of the habitats and otter features of Pen Llyn a'r Sarnau SAC, along with the otter feature of the Afon Eden-Cors Goch Trawsfynydd SAC. However, due to the small scale and temporary nature of the work, any pollution incident is likely to be relatively small in scale and there would be a high degree of dilution and dispersion within the marine water environment of the estuary, particularly during tidal cycles. With this in mind, any effects are likely to be short-term. The likelihood of significant effects on these habitat and species features through contamination is low, however, without mitigation, residual effects could be considered to remain.

Conclusion

Without any mitigation measures in place, there is some risk to the intertidal mudflats and sandflats, estuaries, reefs, and otter features of the identified sites from pollution contamination. Conservation objectives (i)(ii)(iii) (as listed in the table below) of Pen Llyn a'r Sarnau SAC's habitat features could potentially by compromised. Conservation Objective (iii) of Pen Llyn a'r Sarnau SAC's otter feature, along with Conservation Objective (i) of Afon Eden – Cors Goch Trawsfynydd's otter feature could also be compromised. Therefore, an adverse effect on the integrity of these sites due to pollution cannot be ruled out without mitigation in place.

Assessment with Mitigation

Given that adverse effects have been identified, this assessment must consider if mitigation measures incorporated within the scheme can provide the competent authority with 'certainty' that no reasonable scientific doubt remains as to the absence of an effect upon the integrity of the European site.

Each of the mitigation measures is considered to cover the criteria identified in the DTA HRA Handbook, namely effectiveness, reliability, timeliness, deliverability, enforcibility and likelihood they will be maintained and persist for however long is necessary. This HRA does not make any distinction between embedded elements of the design that may provide ecological benefits that are secondary to their primary purpose and the bespoke measures specifically designed to avoid, cancel or reduce the impact of the development on site features.

The control of pollution and similar incidents forms a frequent component of most large-scale

developments. Consequently, a range of tried and trusted techniques can be adopted to reduce the risk of such events to an acceptably low level or remove them entirely even where sensitive European sites are concerned. This provides a high degree of confidence that they will be successful.

Application of mitigation measures:
Mitigation measures are included in full in Table 10 below, but those involved with reducing or avoiding the potential impact from pollution and habitat degradation can be summarised as follows:

- A Construction Environment Management Plan (CEMP) is to be prepared which will detail what measures will be in place to protect the surrounding environment. Location of adjacent protected sites shall be clearly highlighted.
- Pollution spill kits to be readily available on site within plant/machinery at all times, with staff suitably trained in how to deploy.
- Contractor to have emergency incident response procedure in place in the case of a spillage. Response to include accurate procedure to swiftly remove any contaminated sand/material from site in the case of accidental spillage.
- Contractor to adhere to pollution prevention best practice guidelines, including;
  - PPG1: Understanding your environmental responsibilities.
  - GGP5: Works and maintenance in or near water.
  - PPG6: Working at construction and demolition sites.
  - GPP21: Pollution response planning.
  - GPP22: Dealing with spills.
- Biodegradable lubricant and hydraulic oil to be used in plant machinery where possible. Biodegradable oils are less toxic than most synthetic oil but should still be stored to the same standards as other oils and prevented from entering the water environment.
- Works to take place at low tide conditions only. No works to be completed within the intertidal area when the adjacent mudflat and sandflats are inundated with seawater.
- Contractor to monitor tidal and weather conditions / forecasts and plan work accordingly.
- Contractor to monitor and visually assess sand collection activities for any visual signs of contamination within the materials. Where contamination is suspected the material is to be left in situ and arrangements made for appropriate testing and disposal.
- Should sand start collecting in car parking areas/bays along the promenade, car parking is to be restricted in these areas until the sand is removed. This will reduce likelihood of potential pollution contamination.
- Materials to be moved directly from collection area to deposit area. No temporary storage shall take place within the foreshore.
- Access to and along the beach area to be via the main slipways and along a designated pathway to keep potential habitat disturbance to a minimum.
- There shall be no access to mid – to lower shore where trafficking of vehicles may directly impact sensitive marine habitats.

Conclusion
With these mitigation measures in place it is considered that the risk is reduced to the extent that there would be no adverse effect on the integrity of the Pen Llyn a'r Sarnau SAC and Afon Eden Cors

Goch Trawsfynydd SAC, with no residual effects on any of the Conservation Objectives of the features of these sites.

Conservation objectives

Impact on Conservation Objectives – Pen Llyn a'r Sarnau SAC	
Conservation Objectives for 'Mudflats and Sandflats not covered by seawater at low tide' and Estuaries'. The vision for this feature is for it to be in favourable conservation status, where all the following conditions are satisfied:	**Outcome**
(i) The overall distribution and extent of the habitat features within the site, and each of their main component parts is stable or increasing. For the intertidal mudflat and sandflat feature these include: - Mya arenaria and polychaetes in muddy gravel - Eel grass Zostera marina beds - Muddy gullies in the Mawddach estuary. For estuaries this includes the stability of sandy sediments in proportion to the muddy sediments. <u>Restoration and recovery</u> As part of this objective it should be noted that; for the estuaries feature, additional land which should form an integral part of the estuarine ecosystem should be restored.	No adverse effect on integrity; No residual effects
(ii) The physical, biological and chemical structure and functions necessary for the long-term maintenance and quality of the habitat are not degraded. Important elements include: - geology - sedimentology - geomorphology, - hydrography and meteorology - water and sediment chemistry - biological interactions. This includes a need for nutrient levels in the water column and sediments to be: - at or below existing statutory guideline concentrations - within ranges that are not potentially detrimental to the long-term maintenance of the features species populations, their abundance and range.	No adverse effect on integrity; No residual effects

Contaminant levels in the water column and sediments derived from human activity to be: - at or below existing statutory guideline concentrations - below levels that would potentially result in increase in contaminant concentrations within sediments or biota - below levels potentially detrimental to the long-term maintenance of the feature species populations, their abundance or range taking into account bioaccumulation and biomagnification. <u>Restoration and recovery</u> As part of this objective it should be noted that; for the estuaries feature the structure and functions of the estuaries that have been damaged/degraded by the constraints of artificial structures such as flood banks, are restored.	
(iii) The presence, abundance, condition and diversity of typical species are such that habitat quality is not degraded. Important elements include: - species richness, - population structure and dynamics, - physiological heath, - reproductive capacity, - recruitment, - mobility, - range.	No adverse effect on integrity; No residual effects
Conservation Objectives for 'Otter', 'Bottlenose dolphin' and 'Grey seal' To achieve favourable conservation status, all the following, subject to natural processes, need to be fulfilled and maintained in the long-term:	Outcome
(i) The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements include: • population size • structure, production • condition of the species within the site. As part of this objective it should be noted that for bottlenose dolphin and grey seal; • Contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression For grey seal populations should not be reduced as a consequence of human activity.	No adverse effect on integrity; No residual effects

(ii) The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future. (iii) As part of this objective it should be noted that for bottlenose dolphin and grey seal: • Their range within the SAC and adjacent inter-connected areas is not constrained or hindered • There are appropriate and sufficient food resources within the SAC and beyond • The sites and amount of supporting habitat used by these species are accessible and their extent and quality is stable or increasing	No adverse effect on integrity; No residual effects
(iv) The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. Important considerations include; • distribution • extent • structure • function and quality of habitat • prey availability and quality. As part of this objective it should be noted that; • The abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term. • The management and control of activities or operations likely to adversely affect the species feature is appropriate for maintaining it in favourable condition and is secure in the long term. • Contamination of potential prey species should be below concentrations potentially harmful to their physiological health. • Disturbance by human activity is below levels that suppress reproductive success, physiological health or long-term behaviour • There are sufficient sources within the SAC and beyond of high quality freshwater for drinking and bathing.	No adverse effect on integrity; No residual effects
Populations should be increasing.	No adverse effect on integrity; No residual effects

Impact on Conservation Objectives – Afon Eden - Cors Goch Trawsfynydd SAC

	Conservation Objectives for '*Otter*'	Outcome
(i)	The population of otters in the SAC is stable or increasing over the long term and reflects the natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour.	No adverse effect on integrity; No residual effects
(ii)	The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories. A number of potential and breeding sites have been identified (Lyles, 2006) in the upper reaches of the Afon Eden. The size of breeding territories may vary depending on prey abundance.	No adverse effect on integrity; No residual effects
(iii)	The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the provision of artificial holts. No otter breeding site is subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance are managed. Survey information shows that otters are widely distributed in the Mawddach catchment.	No adverse effect on integrity; No residual effects
(iv)	The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers.	No adverse effect on integrity; No residual effects
(v)	All factors affecting the achievement of these conditions are under control.	No adverse effect on integrity; No residual effects

Integrity Test

Integrity test:	Pollution Impacts: Without mitigation there is a low risk of pollution leading to degradation of habitats and species adjacent to the proposed works area. This could potentially undermine Conservation Objectives of three habitat features and one species feature of the Pen Llyn a'r Sarnau SAC and one species feature of Afon Eden – Cors Goch Trawsfynydd SAC. However, when the proposed mitigation measures are taken into account, it is considered that the risk would be reduced sufficiently to consider that there would be no adverse effect on the integrity of these protected sites, with no residual effects.
Residual effects / In combination:	As it is considered that the mitigation measures proposed would reduce the risk to such an extent that there would be no residual effects, there is no need to consider these impacts in combination with other plans or projects.

Table 10. Mitigation Measures Proposed to Reduce or Avoid Impacts on European Sites

Mitigation Proposed	Impact Reduced/Avoided	European Site Affected	Site Features Affected
• A Construction Environment Management Plan (CEMP) is to be prepared which will detail what measures will be in place to protect the surrounding environment. Location of adjacent protected sites shall be clearly highlighted. • Pollution spill kits to be readily available on site within plant/machinery at all times, with staff suitably trained in how to deploy. • Contractor to have emergency incident response procedure in place in the case of a spillage. Response to include accurate procedure to swiftly remove any contaminated sand/material from site in the case of accidental spillage. • Contractor to adhere to pollution prevention best practice guidelines, including; - PPG1: Understanding your environmental responsibilities. - GGP5: Works and maintenance in or near water. - PPG6: Working at construction and demolition sites. - GPP21: Pollution response planning. - GPP22: Dealing with spills. • Biodegradable lubricant and hydraulic oil to be used in plant machinery where possible. Biodegradable oils are less toxic than most synthetic oil but should still be stored to the same standards as other oils and prevented from entering the water environment. • Works to take place at low tide conditions only. No works to be completed within the intertidal area when the adjacent mudflat and sandflats are inundated with seawater. • Contractor to monitor tidal and weather conditions / forecasts and plan work accordingly • Contractor to monitor and visually assess sand collection activities for any visual signs of contamination within the materials. Where contamination is suspected the material is to be left in situ and arrangements made for appropriate testing and disposal. • Should sand start collecting in car parking areas/bays along the promenade, car parking is to be restricted in these areas until the sand is removed. This will reduce likelihood of potential	Pollution of marine environment and otter foraging habitat.	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawfynydd SAC.	Estuaries Intertidal Mudflats and Sandflats Reefs Otter Otter

pollution contamination. • Materials to be moved directly from collection area to deposit area. No temporary storage shall take place within the foreshore. • Access to and along the beach area to be via the main slipways and along a designated pathway to keep potential habitat disturbance to a minimum. • There shall be no access to mid – to lower shore where trafficking of vehicles may directly impact sensitive marine habitats.			

6.0 IN-COMBINATION ASSESSMENT

6.1 Purpose

The test for likely significant effect in Regulation 63(1) of the Habitats Regulations is that effects should be assessed 'either alone *or* in combination with other plans or projects'.

For the avoidance of doubt, the Regulations identify that an in-combination assessment is required only during the screening stage and only where an impact is identified which would have an insignifcant effect on its own (a 'residual' effect) but where likely significant effect may arise cumulatively with other plans or projects.

Cumulative effects are those which make the effect more likely or more significant. Thus, where likely significant effects can be ruled out alone, there is no need for an assessment in combination because if there is no effect, it cannot add anything to an in-combination or cumulative assessment.

At the screening stage of the assessment, however, it can be difficult to distinguish between likely significant and insignificant effects where the exercise is meant to be brief. This HRA therefore assumes that any credible effect identified is assessed *alone with no residual effects.* This allows all possible effects to be captured for more detailed scrunity in the appropriate assessment.

Despite this, further scrutiny may modify this opinion and the need for an in-combination assessment may subsequently be required as described in the Handbook:

'…at a later stage when the appropriate assessment concludes that a plan or project screened as having a likely significant effect alone will not, upon further investigation, be likely to have such an effect alone, but could have such an effect in combination. In (this) situation, the approproate assessment will need to be extended, in order to address in combination effects to inform the intregrity test bearing in mind the potential for cumulative effects.'

As a result, in-combination effects are therefore considered in the appropriate assessment, which has two functions. The first function is to consider whether further scrutiny of the appropriate assessment can identify that an effect, previously identified as significant alone, was not of sufficient magnitude to justify this outcome and should have been identified as a residual effect and considered in-combination.

Secondly, it explores if possible residual adverse effects on the integrity of the site that were ruled out alone could lead to a significant adverse effect when considered in-combination. This employs best practice by considering cumulative effects at all stages of the HRA.

As this HRA concluded that the level of risk associated with each of the identified likely significant effects merited appropriate assessment *alone*, there were *no residual effects* and no need for an in-combination assessment. Furthermore, it found that the outcome of the Appropriate Assessment stage was no adverse effect on site integrity with no residual effects for any of the impacts identified. Therefore, there is no need to carry out the additional in-combination assessment of these potential impacts. The individual Integrity Tests for each issue evaluated in the appropriate assessment therefore stand with no need for further scrutiny and can be carried forward into the Formal Integrity Test in Section 7.

7.0 FORMAL INTEGRITY TEST / CONCLUSION

This HRA subjected the potential effects of the proposed works to an appropriate assessment and integrity test in accordance with the statutory procedures laid out in the Habitats Regulations 2017 (as amended) using methodology described in the Habitats Regulations Assessment Handbook (Tyldsley and Chapman, 2018 edition). As a result of this assessment, it can be ascertained that:

In terms of potential pollution of the adjacent estuary habitat during sand management activities leading to degradation of habitat features and of the prey population of the otter feature of the Pen Llyn a'r Sarnau SAC and Afon Eden – Cors Goch Trawsfynydd SAC, it was considered that with mitigation in place, there would be no adverse effect on the integrity of these sites, with no residual effects.

In terms of disturbance of mobile species during the proposed works, the assessment found that although there would be temporary minor increases in noise pollution during the works, due to existing high levels of disturbance in the area and works taking place during daylight hours, any effects would be minimal, and there would be no adverse effects on the integrity of the sites, with no residual effects.

Although this HRA has been prepared to help the Authority discharge its duties under the Habitats Regulations, the Authority remains the competent authority and it must decide whether to adopt the conclusions and recommendations of this report, or otherwise, for the purpose of their own assessment. If accepted, consultation with the statutory nature conservation body is required.

8.0 REFERENCES

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APPENDICES

Appendix A: European sites potentially at risk (full table)

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
(1)All projects (terrestrial, marine, coastal)	Sites within which the project is wholly or partially located	None	This criterion identifies all the European sites within the footprint of the scheme. The proposals do not involve any works within the boundary of an European site. All sand collection and deposition, along with movement of vehicles will take place outside the European site boundary.	None
(2) Projects that could affect wetland features	(a) Sites upstream or downstream of the project location in the case of river or estuary sites (b) Open water, peatland, fen, marsh and other wetland sites with relevant hydrological links to the project, irrespective of distance from the project location	Pen Llyn a'r Sarnau SAC Meirionnydd oakwoods and Bat Sites SAC. Northern Cardigan Bay SPA Cadair Idris SAC Afon Eden – Cors Goch Trawsfynydd SAC	Effects considered are those associated with the physical presence of built development and the localised effects on surface/groundwater resources and quality, resulting from changes in run-off, sedimentation, erosion, etc. The proposed works lie adjacent to Pen Llyn a'r Sarnau SAC, a marine site (see Criterion (3) below). Northern Cardigan Bay SPA is hydrologically connected. (see Criterion (3) below) The Meirionnydd Oakwoods and Bat Sites SAC is located 200m north of the site at it's nearest point and could be susceptible to settlement of suspended dust particles during sand management activities, however it is considered highly unlikely that this will impact upon the site's wetland features. There are no direct hydrological connections between the proposed works and the SAC. Effects on the wetland features of this site have been scoped out.	See Criterion (3) below

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
			Cadair Idris SAC is located 4.5km south east of proposals. There are no direct hydrological pathways between the proposals and the SAC. Given the distance of the site from the proposals, the nature and scale of the works proposed, and the lack of impact pathways, it is considered highly unlikely that the proposals pose a risk of impacting upon the site's features. Effects on Cadair Idris SAC are therefore scoped out. Afon Eden-Cors Goch Trawsfynydd is connected by the Mawddach Estuary, located where the Afon Mawddach enters the estuary, c.11km upstream at its closest point. However, due to the distance of this site and its location upstream of the proposed works, effects on the wetland features of this site have been scoped out.	
(3) Projects that could affect the marine environment	Sites that could be affected by changes in water quality, currents or flows; or effects on the intertidal or sub-tidal areas, or the seabed, or marine species	Pen Llyn a'r Sarnau SAC Northern Cardigan Bay SPA	Effects considered are those of a wider, more strategic scale than (2) above. There is some potential for the proposed works to cause adverse pollution impacts on the immediate and surrounding Pen Llyn a'r Sarnau SAC habitats during proposed works. Beach management operations have the potential to affect the hydraulic conditions of the surrounding coastal environment, which could lead to impacts upon coastal processes and long term impacts upon nearby habitats. In this case, the sand is being moved within the same coastal cell, therefore it is not likely that there will be any significant change in the hydraulic conditions as a result of the works, however this is to be assessed further.	Pen Llyn a'r Sarnau SAC

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
			Direct damage to SAC habitat is considered unlikely given that the works will be taking place outside the boundary. Northern Cardigan Bay SPA is hydrologically connected, however due to the scale and nature of the works proposed and the distance of the site from the proposals, any pollution impacts are unlikely.	
(4) Projects that could affect the coast	Sites in the same coastal 'cell', or part of the same coastal ecosystem, or where there are interrelationships with or between different physical coastal processes	See (3) above. Morfa Harlech a Marfa Dyffryn SAC	Effects considered are those of a wider, more strategic scale than (2) above. Also see (3) above. Morfa Harlech a Morfa Dyffryn SAC is located 5km north of the proposals, situated along the same area of coastline. It is feasible that sediment placed at the north end of the prom could be transported to the SAC through coastal processes. This could adversely impact upon the features of the SAC, should the sediment be contaminated, however there could be beneficial impacts as long as the sediment is not contaminated.	See (3) above. Morfa Harlech a Marfa Dyffryn SAC
(5) Projects that could affect mobile species	Sites whose qualifying features include mobile species which may be affected by the project irrespective of the location of the location of the project or whether the species would be in or out of the site when they might be affected	Pen Llyn a'r Sarnau SAC Meirionnydd Oakwoods and Bat Sites SAC Afon Eden – Cors Goch Trawsfynydd SAC Northern Cardigan Bay SAC	This considers direct impacts of the scheme on mobile species within or outside the designated sites. Mobile species are those considered to spend part of their life-cycle on land, in water or air beyond the designated site boundary. Typically, it focuses on potential impacts on functionally-linked land and water utilised by bird, mammals or fish associated with European sites. Note that 'indirect' effects on mobile species on functionally – linked land or water beyond the development site, is considered under other criteria below, such as '6. Recreational pressure', and '14. Disturbance'.	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC Northern Cardigan Bay SPA

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
			Otter is a mobile species feature of the Pen Llyn a'r Sarnau SAC and the Afon Eden – Cors Goch Trawsfynydd SAC. This species could utilise land within or adjacent to the area of proposed works for foraging. Lesser horseshoe bat is a mobile species feature of the Meirionnydd Oakwoods and Bat Sites SAC. The proposed works will not involve any interference with suitable roosting or foraging habitat for this species. As such, any potential impact on this species has been scoped out. Grey seal and bottle nose dolphin are features of the Pen Llyn a'r Sarnau SAC, which could be affected by pollution impacts or disturbance during construction. There is also potential for effect on the habitats of the red-throated diver feature of the Northern Cardigan Bay SPA.	
(6) Projects that could increase recreational pressure on European sites where qualifying features are sensitive to such pressures	(a)European sites within which the project would be wholly or partly located (b)Such European sites within an agreed zone of influence or other reasonable and evidence-based travel distance of the project location that may be affected by local recreational or other visitor pressure generated by the	None	The project is not considered to increase recreational pressure on European sites. Therefore, direct effects on European sites from increased recreational pressure can be ruled out of any further consideration.	None

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
	project (c) Such European sites within an agreed zone of influence or other evidence-based longer travel distance of the project, which are major (regional or national) visitor attractions such as European sites which are National Nature Reserves where public visiting is promoted, sites in National Parks, coastal sites and sites in other major tourist or visitor destinations			
(7) Projects which could increase the amount of development	(a) Sites that are used for, or could be affected by, water abstraction irrespective of distance from the project	None	The proposed works would not comprise of any such activities. Therefore, direct effects on European sites from increased development can be ruled out of any further consideration.	None
	(b) Sites used for, or could be affected by, discharge of effluent from wastewater treatment works or other waste management streams serving the project, irrespective of distance from the project			
	(c) Sites that could be affected by the provision of new or extended transport or other			

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
	infrastructure			
	(d) Sites that could be affected by increased deposition of air pollution arising from the proposals, including emissions from significant increases in traffic			
(8) Projects comprising linear developments or infrastructure	Sites within a specified distance from the centre line of the proposed route (or alternative routes), the distance may be varied for differing types of site/qualifying features and in the absence of established good practice standards, distances(s) to be agreed by the statutory conservation body	None	This HRA has adopted a 2km radius in which to evaluate the potential impacts of the proposed works. Individual effects are identified in other criteria. This criterion does not identify the types of potential impacts which are, instead, more closely defined by other criteria as listed above or below. Therefore, column 5 has been left blank as attention is drawn to more specific criteria.	See other criteria
(9) Projects that introduce new activities or new uses into the marine, coastal or terrestrial environment	Sites considered to have qualifying features potentially vulnerable or sensitive to the effects of the new activities proposed by the project	None	The project is not considered to introduce new activities or uses into the environment.	None
(10) Projects that could change the	Sites considered to have qualifying features potentially vulnerable or sensitive to the	None	The project is not considered to change the nature, area, extent, intensity, density, timing or scale of existing activites or uses in a way that would pose a threat to any habitat or	None

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
nature, area, extent, intensity, density, timing or scale of existing activities or uses	effects of the changes to existing activities proposed by the project		species features of the protected sites.	
(11) Projects that could change the quantity, quality, timing, treatment or mitigation of emissions or discharges to air, water or soil harvested, extracted or consumed	Sites considered to have qualifying features potentially vulnerable or sensitive to the changes in emissions or discharges that could arise as a result of the project, over and above those already identified	None	The project is not considered to change the the quantity, quality, timing, treatment or mitigation of any emissions or discharges to air, water or soil harvested, extracted or consumed.	None
(12) Projects that could change the quantity, volume, timing, rate or other characteristics of biological resources harvested,	Sites whose qualifying features include the biological resources which the project may affect, or whose qualifying features depend on the biological resources which the project may affect, for example prey species or supporting habitat which may be disturbed by the harvesting,	None	No such activities are proposed and changes to biological resources that might affect qualifying features on all European sites listed can be ruled out of any further consideration.	None

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
extracted or consumed	extraction or consumption			
(13) Projects that could change the quantity, volume, timing, rate, or other characteristics of physical resources extracted or consumed	Sites whose qualifying features rely on the physical resources which the project may affect, for example, as habitat or a physical environment on which habitat may develop or which may be disturbed by the extraction or consumption	None	The proposed works would not cause changes to any physical resources extracted or consumed.	None
(14) Projects which could introduce or increase, or alter the timing, nature or location of disturbance to species	Sites whose qualifying features are considered to be potentially sensitive to disturbance, for example as a result of noise, activity or movement or the presence of disturbing features that could be brought about by the project	Pen Llyn a'r Sarnau SAC Meirionnydd Oakwoods and Bat Sites SAC Afon Eden – Cors Goch Trawsfynydd SAC	There is a small risk of disturbance to otters, a qualifying feature of the Pen Llyn a'r Sarnau SAC and Afon Eden – Cors Goch Trawsfynydd SAC, during construction. Similarly, the proposed works could lead to disturbance of grey seal and bottlenose dolphin feature of the Pen Llyn a'r Sarnau SAC. Lesser Horseshoe Bats is a mobile species feature of Meirionnydd Oakwoods and Bat sites SAC. The proposed works will not involve any interference with suitable roosting or foraging habitat for this species. As such, any potential disturbance impact on this species has been scoped out.	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC
(15) Projects which could introduce or increase or change the	Sites whose qualifying features are considered to be potentially sensitive to the effects of changes in light or noise that could be brought	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC	There would be some localised temporary noise pollution during the construction period, which could potentially cause a low level of disturbance to otters, grey seal and bottlenose dolphin features of the Pen Llyn a'r Sarnau SAC. However, this would be minimal as there is already a	Pen Llyn a'r Sarnau SAC Afon Eden – Cors Goch Trawsfynydd SAC

Types of project (or potential effect)	Sites to scan for and check	Initial list of potentially affected sites	Additional context	Final list of European sites potentially at risk
timing, nature or location of light or noise pollution	about by the project	Meirionnydd Oakwoods and Bat Sites SAC	degree of disturbance in the vicinity of the proposals. Works would also be undertaken during daylight hours when otter activity is minimal. There would be no additional artificial lighting of the site. As above, the proposed works are likely to create a temporary increase in noise levels during the course of the works, potentially impacting lesser horseshoe bats. Cofnod records do not indicate the presence of a lesser horseshoe bat roost within 1km of the proposed works. No effect on foraging bats is expected as works will be undertaken during daylight hours and there would be no artificial lighting of the site.	
(16) Projects which could introduce or increase a potential cause of mortality of species	Sites whose qualifying features are considered to be potentially sensitive to the source of new or increased mortality that could be brought about by the project	None	The project would not introduce or increase a potential cause of mortality of species.	None

Appendix B: Extract of KPAL Report.

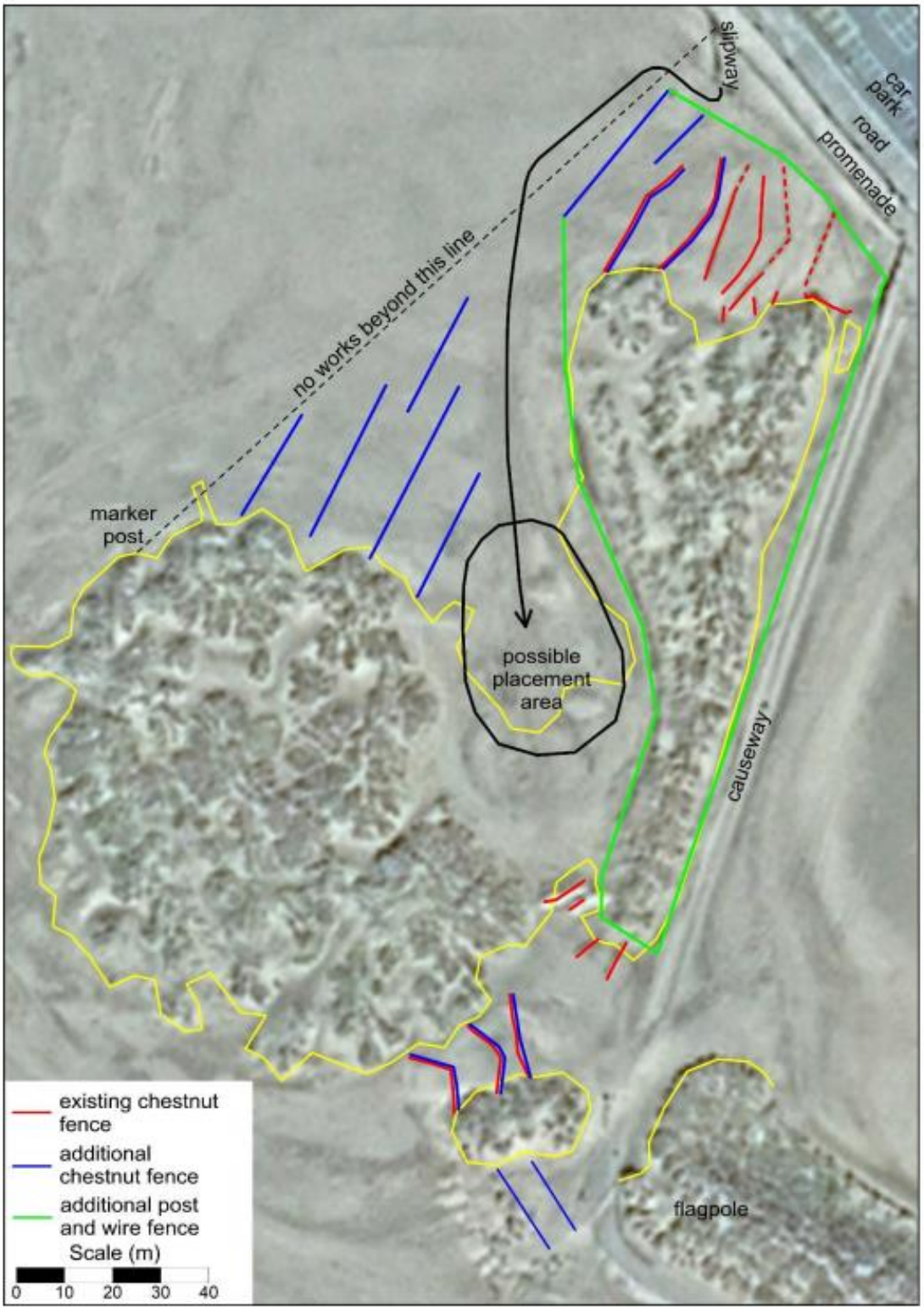
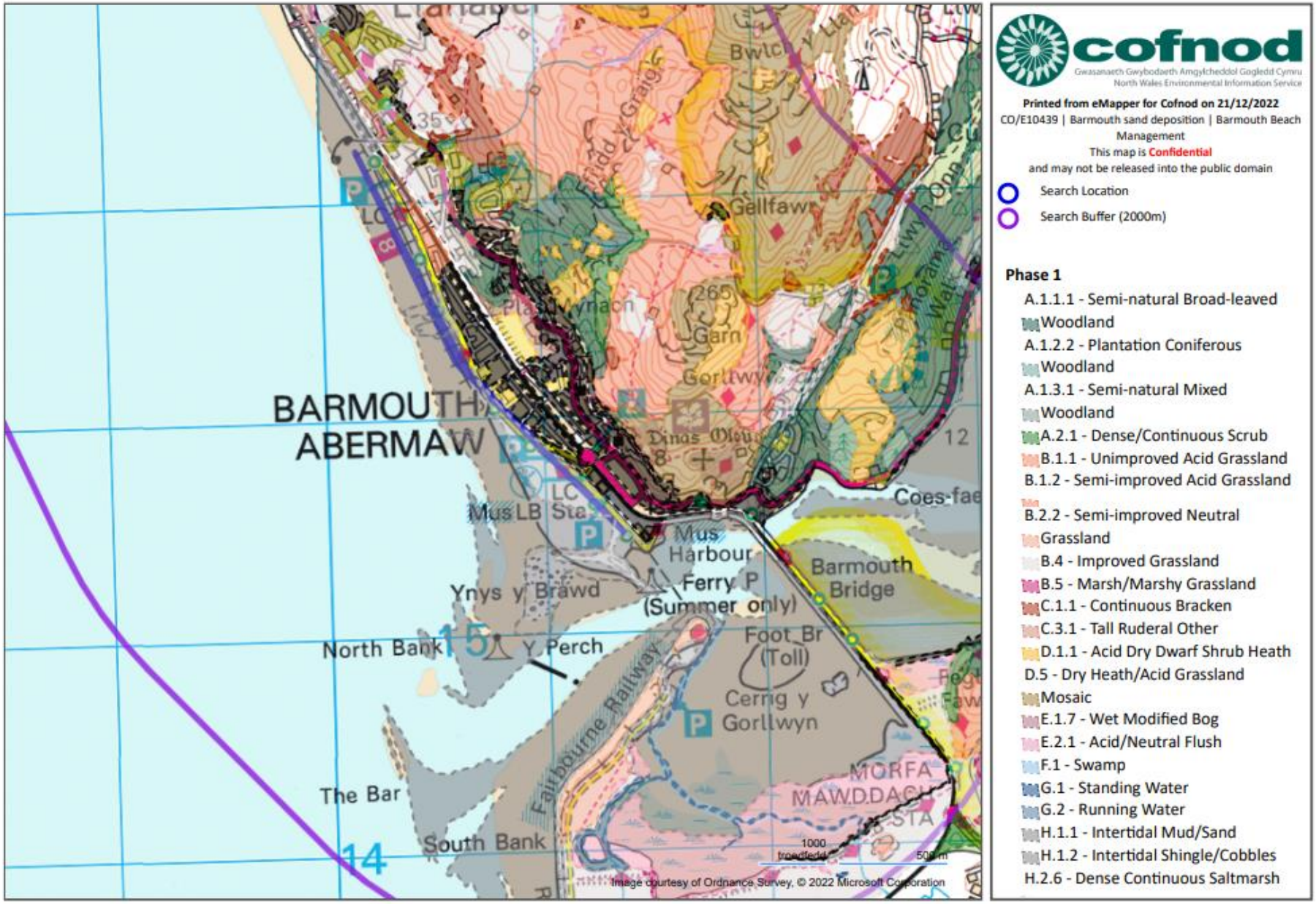


Figure 17. Locations where new chestnut sand fencing is proposed (blue lines), post and wire fencing (to discourage visitor trampling), and where sand swept from the promenade could be placed between the two sand dune areas. Base aerial photography flown 19/04/2020

Appendix C – Phase 1 Habitat plan (Cofnod)



cofnod
Gwasanaeth Gwybodaeth Amgylcheddol Gogledd Cymru
North Wales Environmental Information Service

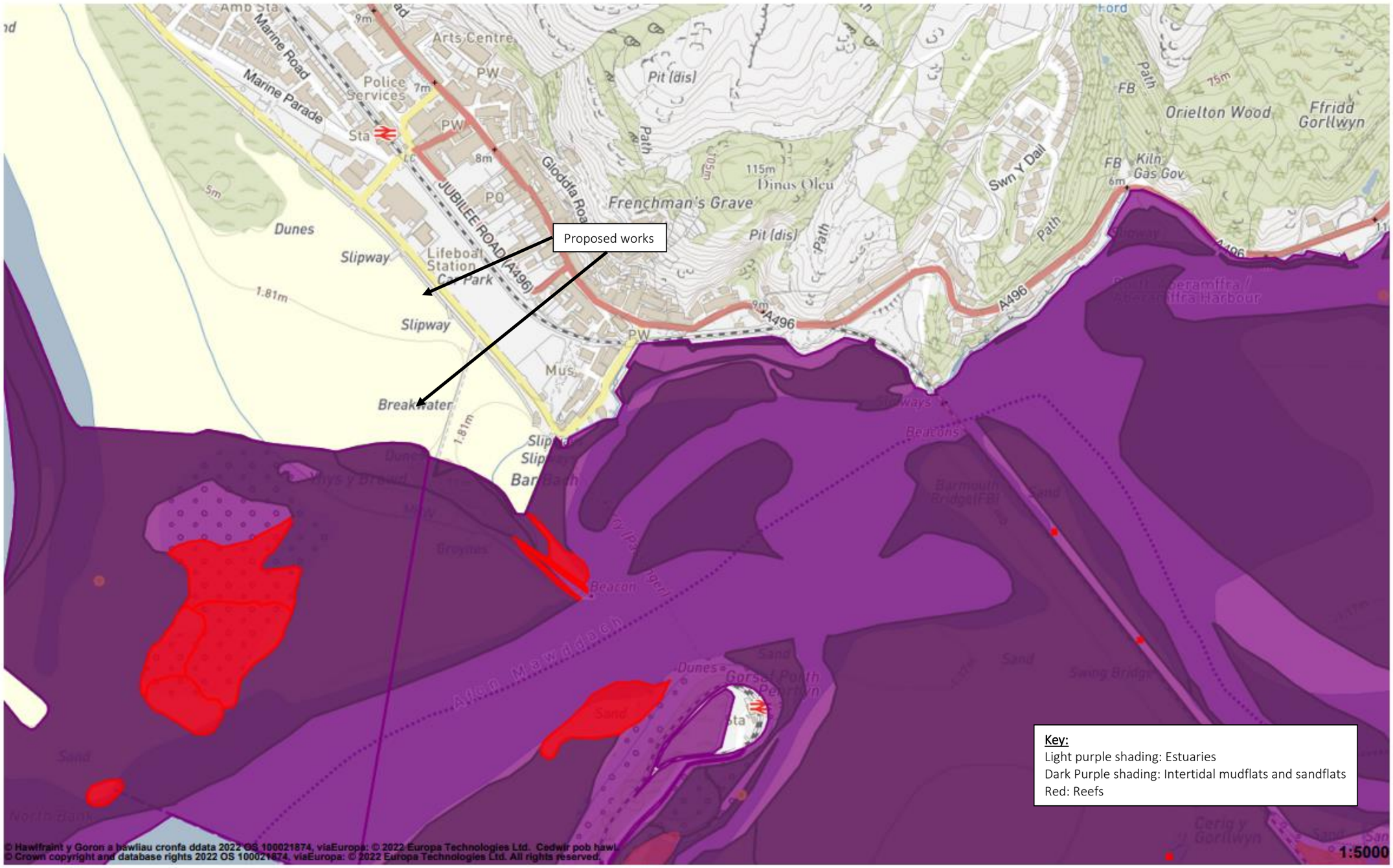
Printed from eMapper for Cofnod on 21/12/2022
CO/E10439 | Barmouth sand deposition | Barmouth Beach Management
This map is **Confidential**
and may not be released into the public domain

Search Location
Search Buffer (2000m)

Phase 1

- A.1.1.1 - Semi-natural Broad-leaved Woodland
- A.1.2.2 - Plantation Coniferous Woodland
- A.1.3.1 - Semi-natural Mixed Woodland
- A.2.1 - Dense/Continuous Scrub
- B.1.1 - Unimproved Acid Grassland
- B.1.2 - Semi-improved Acid Grassland
- B.2.2 - Semi-improved Neutral Grassland
- B.4 - Improved Grassland
- B.5 - Marsh/Marshy Grassland
- C.1.1 - Continuous Bracken
- C.3.1 - Tall Ruderal Other
- D.1.1 - Acid Dry Dwarf Shrub Heath
- D.5 - Dry Heath/Acid Grassland Mosaic
- E.1.7 - Wet Modified Bog
- E.2.1 - Acid/Neutral Flush
- F.1 - Swamp
- G.1 - Standing Water
- G.2 - Running Water
- H.1.1 - Intertidal Mud/Sand
- H.1.2 - Intertidal Shingle/Cobbles
- H.2.6 - Dense Continuous Saltmarsh

Marine SAC features



03/10/2022

Marine SAC habitat features of Pen Llyn a'r Sarnau SAC. (Source: Data Map Wales).

Appendix D: Aerial plan

Appendix E: Site Photographs

1. Proposed area for deposit of sand at north end of prom.

2. NE corner of the beach shartly after annual sand clearance (KPAL, 2022)

3. View NE across the depression between the two existing dune areas, where sand is proposed to be deposited. (KPAL, 2022).

Appendix F – Celtest Laboratory Test Report

Cyngor Gwynedd Council (YGC)

Date: 31 January 2023

Swyddfar Cyngor,
Stryd Y Jel
Cearnarfon
Gwyned
LL55 1SH

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Chemical Analysis of a sample as per client's request.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S107557
Client Ref. No:	Barmouth Promenade S1, Barmouth Promenade S2, and Barmouth Beach S1.
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	22/12/2022
Date of Start of Test.:	16/01/2023
Sampling Location:	Barmouth Promenade S1, Barmouth Promenade S2, and Barmouth Beach S1.
Name of Source:	Barmouth, Gwynedd
Method of Sampling:	Unknown
Sampled By:	Client (Test results apply to sample as received)
Tested By:	Subcontracted Laboratory
Material Description:	Sand
Target Specification:	N/A

Results:

See attached

Comments:	Report checked and approved by: Chantelle Kopec-Williams Job Coordinator

Background:

Sand from Barmouth beach had been deposited on the adjacent promenade as a result of wind-action. The purpose of this investigation was to identify if the promenade sand could be returned to the beach safely. The investigation was designed to identify any significant differences in pertinent contamination-related chemical parameters of the sand deposited on the promenade as compared to the original beach sand.

This report refers to the findings and interpretations detailed in individual reports of each sample analysed; these reports have been made available separately.

Interpretation:

SAMPLES REF : S/N S107557 ref 'Barmouth Promenade S1', 'Barmouth Promenade S2' and 'Barmouth Beach S1'

HHRA:
With respect to the assessment of potential risk of harm to human health, the end usages of the land considered were Residential, Allotment, Commercial/Industrial, and the Public Open Spaces grassed area adjacent to residential housing, and the Park Type Public Open Space Scenario.
A Tier 1 Human Health Risk Assessment of the results of analysis of chemical contaminant parameters of all three samples indicates that all analysed parameters comply with the recommended level for all land usages of considered.
Recommended levels include published CLEA Soil Guidance Values (SGVs). Where CLEA SGVs have not been published, in-house Generic Assessment Criteria (GAC) have been calculated and utilised.

PHYTOTOXICITY ASSESSMENT :
A Phytotoxic Risk Assessment of the results of analysis of salient parameters of all three samples indicates that all metals are present at concentrations lower than the most stringent recommended levels for all topsoil classifications. The pH is slightly alkaline and not suitable for acid-loving plants.

BUILT ENVIRONMENT ASSESSMENT:
A Built Environment Risk Assessment of the results of analysis of salient parameters of all three samples indicates that all are present at concentrations lower than guidance limits.

Detailed comments:

With respect to risk of harm to human health, all analysed metals are present at insignificant levels.
With respect to risk of harm to plants, all significant parameters are present at an insignificant level; the pH is alkaline and not suitable for acid-loving plants.
All analysed Inorganics are present at insignificant levels (relevant to the end usage and receptor).
All Petroleum Hydrocarbons are at levels below analytical detection.
All PAHs are at levels below analytical detection.
All Phenol species are at levels below analytical detection.

Assessment:

SAMPLES REF : S/N S107557 ref 'Barmouth Promenade S1', 'Barmouth Promenade S2' and 'Barmouth Beach S1'

With respect to human health, the results of contaminant parameter analysis of all three samples demonstrate that no parameter exceeds existing guidelines for all land uses currently considered in the UK. The Generic Quantitative Risk Assessment has identified no analysed parameter to exceed generic soil guidance and/or screening values for the land uses currently considered in the UK. Therefore, regarding risk of harm to human targets, no parameter is considered to be a Chemical of Concern (COC).

With respect to phytotoxicity, the results of analysis of salient parameters of all three samples indicate that all metals are present at levels lower than the most stringent recommended levels for all topsoil classifications (Table 1). The pH is not suitable for acid-loving plants.

With respect to the built environment, no analysed parameter of any of the three samples is present at a level likely to cause harm.

Summarised details of assessment:

HUMAN HEALTH RISK

- No analysed traditional chemical contaminant parameter exceeds Generic Guideline Values for the Residential, Allotment, Commercial/Industrial or Public Space scenarios.

PHYTOTOXICITY

- No metal is present at a level likely to pose a risk of harm to plants.
- The pH is alkaline and not suitable for acid-loving plants.

BUILT ENVIRONMENT

- No analysed parameter exceeds published guidance limits.

Summary: SUMMARY OF CONTAMINATION ASSESSMENT

The summary of assessment of analytical data of the soil-sand S/N S107557 ref 'Barmouth Promenade S1', 'Barmouth Promenade S2' and 'Barmouth Beach S1' with regards to contamination status is tabulated in Table 5 below.

Table 5 : Summary of Contamination Assessment of S/N S107557 ref 'Barmouth Promenade S1', 'Barmouth Promenade S2' and 'Barmouth Beach S1'

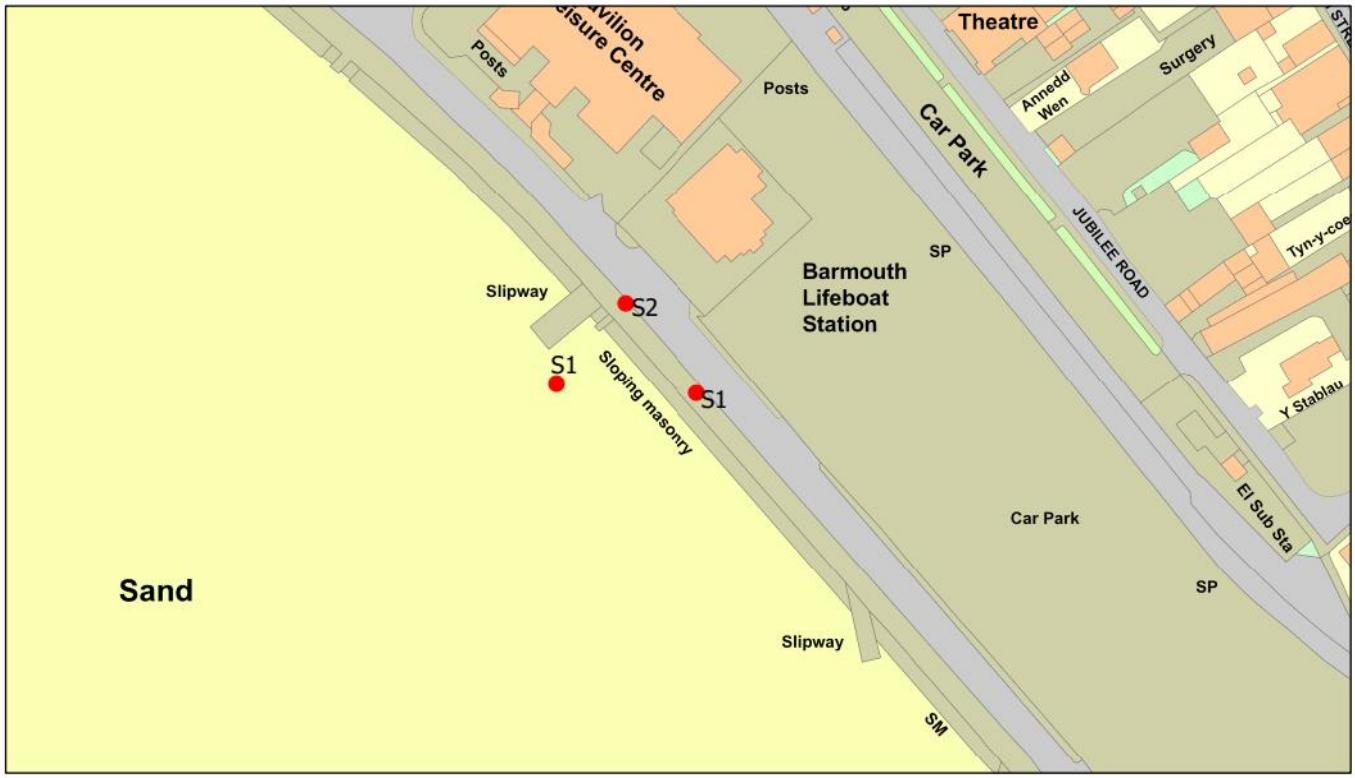
Sample Reference	Contamination Status
Ref S107557 ref 'Barmouth Promenade S1' 'Barmouth Promenade S2' 'Barmouth Beach S1'	NO RISK OF HARM TO HUMAN HEALTH Notes 1, 2, 3 NO POTENTIAL RISK OF PHYTOTOXICITY Notes 1, 4, NO RISK OF HARM TO THE BUILT ENVIRONMENT Note 1.

Note 1 : With respect to the contamination parameters assessed.
Note 2 : With respect to the Residential and Allotment land usages.
Note 3 : With respect to the Commercial, Industrial and/or Public Open Space land usages.
Note 4 : Not acid-loving flora.

Conclusions: With regards to the parameters analysed of soil-sand samples referenced S107557 ref 'Barmouth Promenade S1', 'Barmouth Promenade S2' and 'Barmouth Beach S1', it may be concluded that:

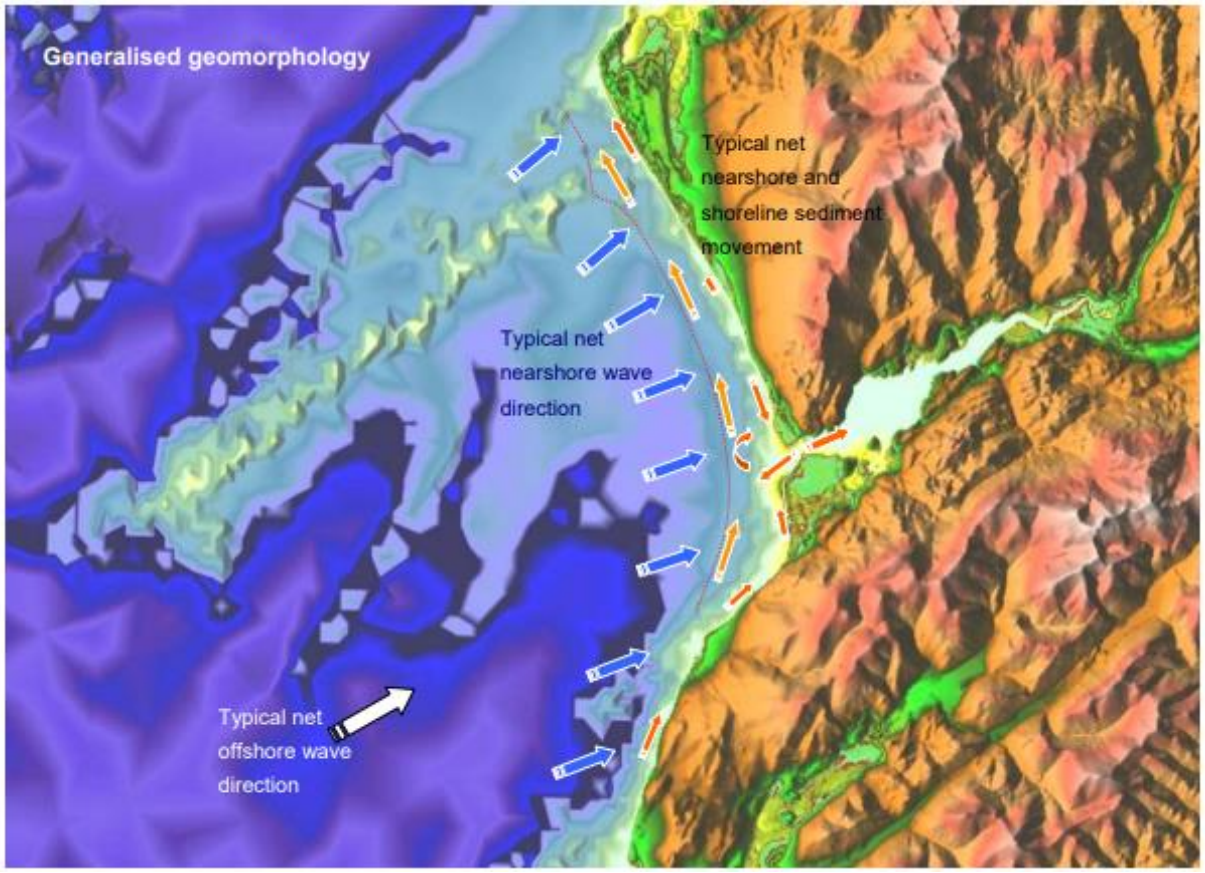
Contamination assessment	HHRA Residential/Allotment	Not Contaminated *
	HHRA Commercial/Industrial	Not Contaminated *
	HHRA Public Open Spaces	Not Contaminated *
	Plants **	Not Contaminated *
	Built Environment	Not Contaminated *

- No analysed contaminant parameter content poses a significant risk of significant harm to human health with regards to the Residential, Allotment, Commercial, Industrial and Public Open Space land usages considered.
- No soil-sand metal poses a significant risk of significant harm to plants. The soil pH is not suitable for acid-loving plants.
- No soil-sand sample poses a significant risk of significant harm to the Built Environment.
- A comparison of the individual soil chemical heavy metal, inorganic, petroleum hydrocarbon, polycyclic aromatic hydrocarbon, and phenol characteristics of each individual sample indicates no significant difference in composition; notably, all organic compounds were present at levels lower than analytical detection.
- With regards to the analysed chemical composition of all three samples, no potential risk of harm would result from returning the promenade wind-deposited sand to the beach.

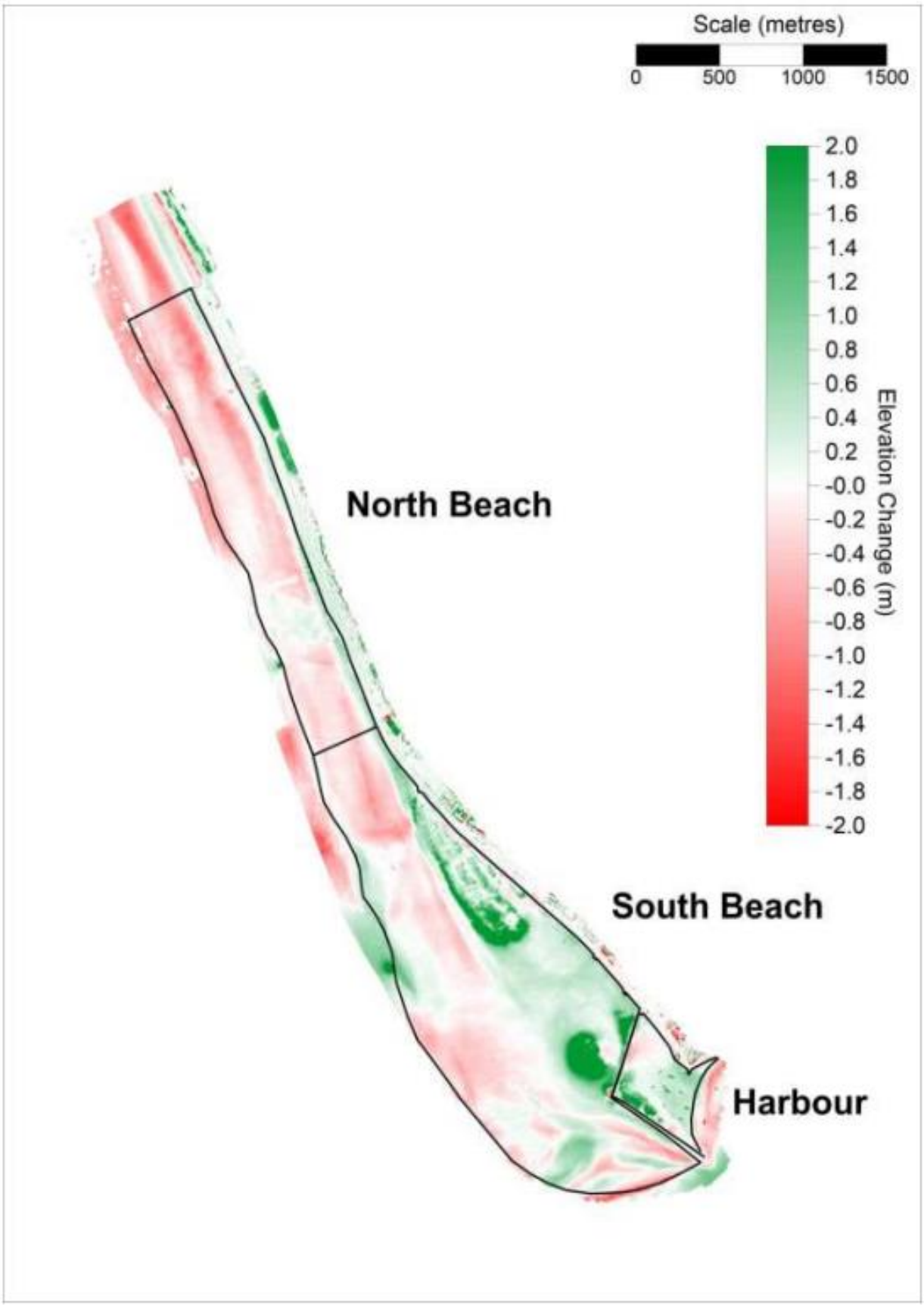


Plan showing location of sand sampling locations in relation to lab report above.

Appendix G – Coastal Processes and beach profile.

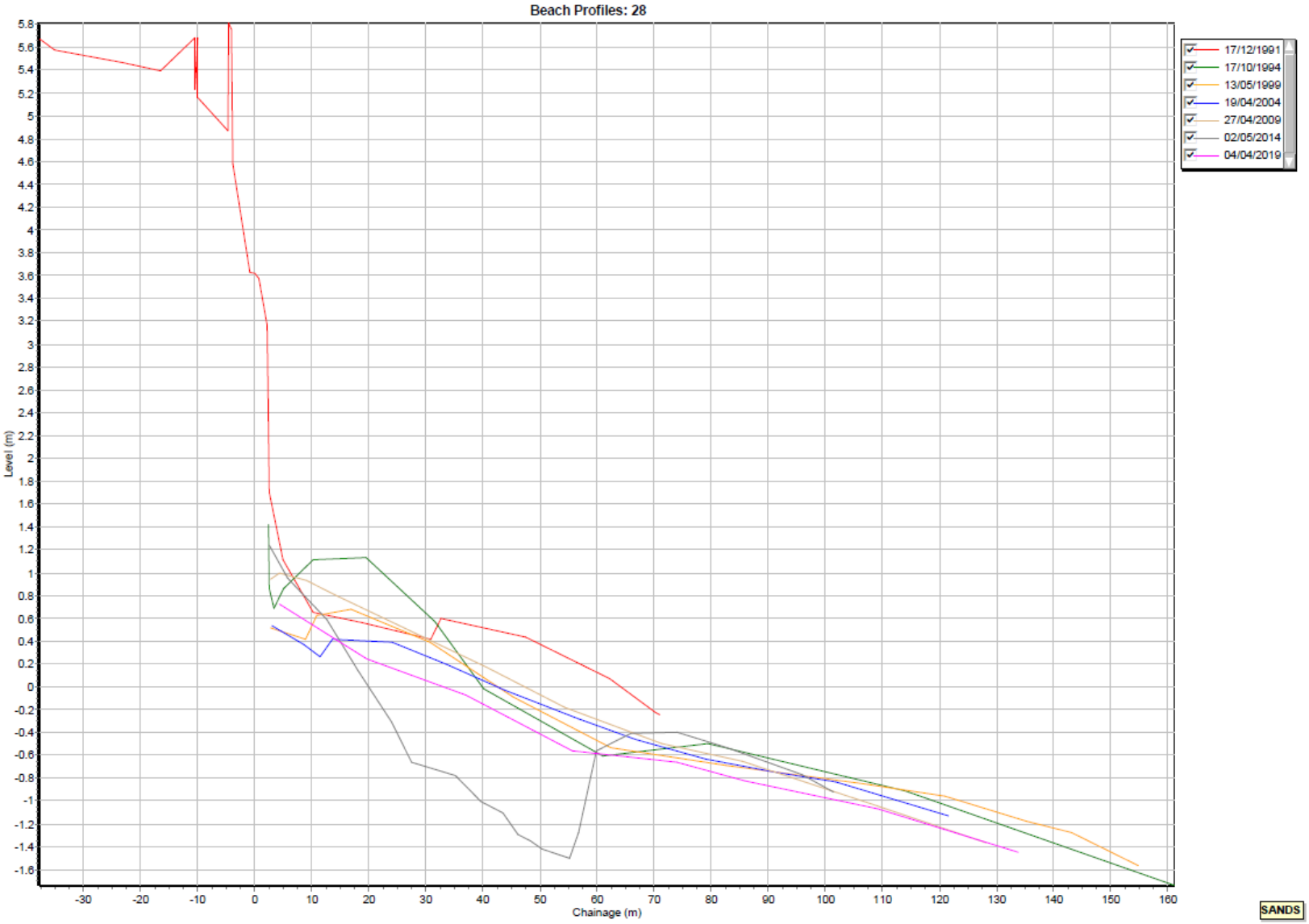


Generalised bathymetry and topography of the Barmouth area, showing indicative offshore and nearshore wave and sediment transport directions after (Royal Haskoning, 2011a,b)



Change in elevation between 14/02/2003 and 16/06/2016, calculated from the difference between digital elevation models generated from 2003 LiDAR and 2016 UAV surveys. Source: KPAL, 2016)

Location of Beach Profile 28 at north prom deposit site.



Beach profile 28 at North Prom deposit site. (Source: Gwynedd Council)