



North Promenade, Barmouth

Environmental
Impact Assessment
Report to Inform
Scoping Opinion



Document Control Sheet

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1.0 Introduction

YGC, on behalf of Gwynedd Council, are developing a project to improve the flood defences at the North Promenade region in Barmouth, Gwynedd. The work will primarily involve betterment of existing defences. This option includes increasing the height of the secondary (noted in drawings as alternative primary wall) and tertiary walls, refurbishing existing sheet piles, additional rock toe armour, and build out of shingle beach profile.

As the development meets the thresholds of Schedule 2 of the *Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017* and Annex II of *The Marine Works (Environmental Impact Assessment) Regulations 2007* a screening opinion from the planning authority and marine regulating body has been obtained and both have concluded likely significant effect. Therefore, an Environmental Impact Assessment (EIA) is required in relation to both regulations.

- LPA application reference: C23/0717/00/SC
- Regulating body (NRW) reference: SC2304

In view of the Screening Opinions concluding the requirement of an EIA, this Scoping Report has been produced to jointly seek the formal Scoping Opinion of Cyngor Gwynedd as the Local Planning Authority and Natural Resources Wales as a regulating body as to the scope and level of detail of the information to be provided in the environmental statement. This report has been written in the format that would be required to inform a full Environmental Statement (ES), however for the purposes of a Scoping Opinion Report, the level of detail that is required for a full ES is not included.

In line with the requirements for scoping set out in the EIA regulations, this report seeks to provide the following information:

- Proposed Environment Statement Part 1 - Introductory
 - Description of the existing site;
 - Description of the proposed development;
 - Reasonable alternatives and preferred option
- Proposed Environmental Statement Part 2 - Technical
 - Likely Significant Effect on receptor topics
- Scoping in and scoping out of technical topics that form an ES.

This scoping report should be read in conjunction with an Initial Environmental Appraisal report (Appendix A) which has been prepared to outline the proposed ES Part 2 – Technical information.

2.0 Proposed Environment Statement Part 1 – Introductory

The Development

2.1 Existing site

The existing defences at North Prom, Barmouth are of poor condition. Should beach drawdown continue, then structural failure is increasingly a concern. Part of the promenade failed due to unsafe voiding beneath the promenade slab, requiring emergency stabilising repairs in 2020 and 2021. The repair works were emergency measures to extend the life of the existing structures until the preferred option is implemented. Beach levels decrease and defences deteriorate in condition toward the north of the study area. Studies conclude that overall foreshore bed levels along North Promenade are lowering and this lowering is expected to continue.

2.2 Proposed Scheme

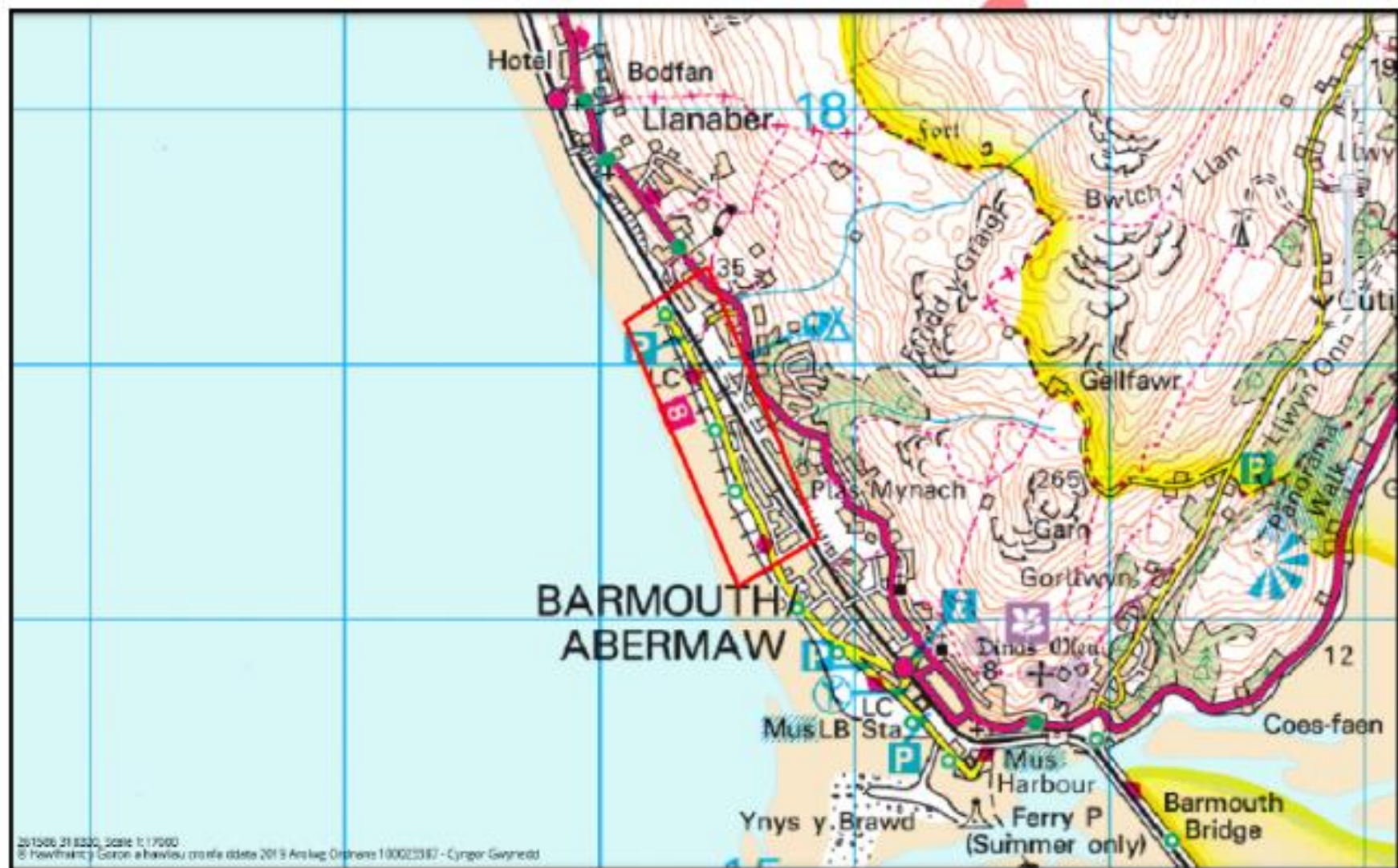
In order to improve the standard of defence in the area, the main works will primarily consist of:

- The secondary, or alternative primary wall to be re-built structurally and increased by 600mm over a length of 1.2km.
- Tertiary flood wall to be re-built structurally and increased by 450mm over a length of 1.1km.
- Between both these walls lies the highway.
- 300m of rock toe armour to be provided to protect the primary sea wall and revetment, at the north end of the scheme. Remainder of the primary defences to be protected by 560m of shingle beach nourishment.
- 515m of existing sheet piles, starting from northern end of the scheme to be refurbished.

The total length of the scheme is estimated to be in the region of 1.2km in length.

See Appendix F – Preferred Option Drawings

Figure 1: Location of development



2.3 Reasonable Alternatives

2.3.1 The different options for the proposed scheme at Barmouth North Promenade have been assessed through the Outline Business Case (OBC). The list of options that made it to the short list are as follows:

Option		Description
1	Baseline	Business As Usual Gwynedd Council reactive maintenance is not able to address the significant defects with the existing defences. Walkaway residual life is estimated at ~10 years ¹⁰ . Erosion at defence toe, loss of pile section and voids from loss of fines risks revetment failure and defence breach inundating the wider floodcell (Heol-Y-Llan housing estate and central Barmouth).
2	Betterment of existing defences	Works to extend the life-span and improve the standard of protection of the existing defences: • Extend the life of the existing sheet piles with refurbishment works. • Raise or replace the primary seawall (depending on structural condition and hydraulic performance) and flood wall. • Add protection to the structure toe in the form of a rock-toe or shingle beach profile (where stability allows). • Improve demountable barriers and drainage improvements
3	Beach Management and Associated Structures (i.e., groynes/breakwaters)	Combination of rock breakwaters offshore and/or shore-linked groynes to hold the placement of beach material and dissipate wave energy offshore. Coarser shingle beach re-charge material would be introduced to promote and encourage a sustainable beach level. Works to extend the life of the existing sheet piles required.
4	New line of defence set back at the railway (i.e., Managed Realignment)	New line of defence to protect the railway line, allowing the area directly behind the seawall to be subject to erosion. Options include: • Option 4a: Defence line set back along full length of promenade (as per 2011 SMP2) • Option 4b: Defence line set back along northern end of promenade only (protecting residential properties). Beach management (similar to Option 3) protecting properties to south.

2.4 Selection of Preferred Option

The selection of preferred option and a summary of the reasoning behind why the alternatives were not designated the preferred options, as per the OBC, are as follows:

- A 'Walkaway' or 'Business As Usual' approach was discounted as it does not safeguard the local community at Barmouth in the long-term, and poses a significant risk to life without further intervention.
- **Option 3:** Beach Management is costly. Significant quantities of beach material are required to build out the beach profile with ongoing long-term maintenance. The height of the crest is significant and may present consenting/construction issues.
- **Option 4:** Managed Realignment has limited gain due to the limited land gained seaward as a result of the realignment, at the expense of a significant number of properties and assets. There are significant risks to remove the existing defences and replace the defences inland. The situation of the Cambrian Railway and adjacent SMP2 Policy Areas ('Hold the Line') requires that a new defence alignment is constructed inland; whilst the existing defences cannot be abandoned without significant investment to be safely decommissioned. Habitat creation and wider benefits appear constrained by limited land-gain. Significant expenditure will be required to re-route the promenade and Wales Coast Path to maintain amenity. To realign the full length of study frontage (Option 4a) requires the removal of

some ~57 existing properties. To realign the northern half of the study frontage (Option 4b) reduces the impact to one commercial property. The northern frontage comprises undeveloped made-ground - further surveys and design are needed to scope decommissioning works. The southern developed frontage would require works to safeguard the existing properties, and beach management to 'Hold the Line' is proposed.

- The promenade is at significant risk of failure (i.e. considered <10 year life-span remaining), with early on-set of flooding. As such, there is a need to undertake significant works now, which are considered beyond a 'Business As Usual' scenario. Gwynedd Council (2019) confirmed they have now closed the promenade at the north-most end due to public safety fears.

2.5 Preferred Approach

Option 2: Betterment of the existing defences provides the most economically favourable option and is anticipated to achieve a 1in50 2069 SOP. It would safeguard the community and the recreational value of the promenade in the medium term.

Beyond 2069, managing coastal risk is increasingly challenging. The most economically favourable option is to transition to Option 4b - a form of managed realignment (to the northern extents only), with beach management activities to the south. This pathway approach:

- Allows the community to continue to gain tourism, social & well-being benefits from the promenade for a significant duration of the scheme.
- Safeguards residential properties (including a number of social housing properties).
- Provides flexibility for the uncertainty of climate change. Option 2 can be monitored and the life-span of the promenade extended as much as possible. If sea-level rise and climate change occurs beyond expectations, this pathway retains flexibility for the community/scheme to be adapted as appropriate.
- Provides an extended time-frame for funding mechanisms to be implemented which support managed realignment schemes. Therefore, there is a positive economic, environmental, social and financial case which justifies undertaking work along the frontage in the medium term (Epoch 1 and 2), transitioning to a form of managed realignment in the long-term (Epoch 3).

3.0 Proposed Environmental Statement Part 2 – Technical

3.1 Likely Significant Effects on receptor topics

An Initial Environmental Appraisal (IEA) report has been produced to identify and highlight which of the topics included within an Environmental Statement (ES) are likely to be of significance and relevant to the proposal. The assessment helps identify environmental considerations at the start of a project in order to flag potential further work, assessments and consents required.

The IEA should be read in conjunction with this report and is available as supporting Appendix A.

This scoping report is structured in the same format as the Environmental Statement, however less detailed discussions are presented within this scoping report.

Two regulations are relevant to the scheme. In line with the requirements of both the *Marine Works (Environmental Impact Assessment) Regulations 2017* and *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017* this report is presented using the following headings. Under each heading are supporting sub-headings, again, in line with both regulations:

- Population and human health
- Biodiversity, including protected species and habitats
- Land, soil, water, air and climate
- Material assets, cultural heritage and landscape
- In-combination effects

In addition to identifying a likely significant effect of the proposed scheme on each of the headings and sub-headings, they have also been scoped in or scoped out for further consideration in the Environmental Statement.

Population and Human Health

3.1.1 Air Quality

Construction generated dust, other aerial emissions and vehicular movements to deliver materials to site all have the potential to cause a nuisance during the construction phase. Although temporary, it should be noted that the construction phase is expected to be approximately one year. Mitigation measures should be implemented to reduce any adverse effects, and these will be discussed in further detail within the Environmental Statement.

Due to the magnitude, scale and duration of the works, air quality is **scoped into** the EIA.

3.1.2 Community Considerations

The proposed scheme will involve work along the promenade and beachfront area over a distance of approximately 1.2km.

Construction work will be concentrated on the sea wall and beachfront area. There is likely to be some disruption to vehicle users and pedestrians along the promenade, marine parade highway and the adjacent highway network during construction phase. Sections of the beach will also need to be cordoned off during construction. Materials will be imported to site via the road network, therefore there will be an increase in construction related traffic that will impact on the town.

Beach recharge is one aspect of the works. Particle size needs to be carefully considered against amenity value and walking along the beach.

The area is a popular tourist and visitor destination therefore works should be planned to minimise disruption during peak tourist season and school holidays.

As a result, community considerations is **scoped into** the EIA.

3.1.3 Noise and Vibration

It is likely that the proposed work would result in an increase in noise and vibration levels above existing due to the presence of plant machinery, however, due to the nature of the proposed work it is considered that these increases would be temporary to the construction period – however the construction period is likely to be over a year.

There are residential properties in close proximity to some works, contract requirements should be in place to manage noise and vibration disturbance when working in close proximity to residential properties.

Due to the magnitude, scale and duration of the proposed works, a full noise and vibration assessment will be carried out for the scheme to identify thresholds and potential mitigation measures.

Noise and vibration is **scoped into** the EIA.

Biodiversity, including protected species and habitats

3.1.4 Species

A Cofnod (Local Environment Records Centre) search was carried out for a 1km radius of the study area.

There were no Cofnod records of otter within 1km of the study area. However, otters are a feature of the Pen Llyn a'r Sarnau SAC which is directly west of the proposed works and could be present within the area.

There are no Cofnod records of bats within the study area itself, but several records within 1km. Culverts can provide suitable habitat for bats, an ecological survey would need to be conducted to determine if the culverts are suitable for bats.

Areas of tussock ground, such as that next to the café, could provide suitable habitat for reptiles. Species such as adder, common lizard, common toad, grass snake and slow worm have all been recorded within 1km of the study area.

Undisturbed, shingle beach habitat can provide suitable habitat for ground nesting birds. However, due to the built-up nature of the area and amount of disturbance taking place, undisturbed areas suitable for nesting is likely to be very limited.

3.1.5 Habitats

The study area comprises mainly of coastal intertidal habitat and built-up areas, interspersed with small pockets of grassland. To the west of the sea wall, the habitat is intertidal and includes boulders and shingle. The sea wall, promenade and highway areas are considered to provide little, if any ecological value. The land in between the tertiary wall and the railway line is mostly built up with some sections of grassland and scrub which is considered of low ecological value.

Two watercourses run through the study area. These are culverted in large sections within this area. The watercourse furthest north within the study area does have some un-culverted parts, to the north of the café, therefore does provide some river and river corridor habitat. Rivers are a Welsh Priority Habitat and River Corridors have a Gwynedd Council Biodiversity Habitat Action Plan.

Shingle beaches tend to contain strandline habitat which is a Gwynedd Local Biodiversity Action Plan habitat. However, due to coastal squeeze associated with such sea defence areas, such habitats are unlikely to establish along this part of the beach. Strandline habitat could be present to the north and south of the study area.

Work is mostly concentrated on the beachfront and likely to affect the intertidal shingle beach habitat. Some work will take place further inland on the tertiary wall, where some grassland could be affected. The introduction of new sediment onto the beach could also have an indirect impact on SAC habitat.

3.1.6 Protected Sites

Pen Llyn â'r Sarnau SAC. Located on the mean low water mark immediately west of the study area. Mudflats and Sandflats are a feature of the site, with the whole of the North Prom frontage being directly adjacent to the Sandflat feature. Other features of the SAC nearby (within 2km) include estuaries, reefs and Atlantic salt meadow. Otter is also a species feature of this SAC.

Meirionydd Oakwoods and Bat Sites SAC. Located approx. 208m east of study area. Lesser Horseshoe bat is a species feature of this SAC and is considered highly mobile.

In addition to Pen Llyn a'r Sarnau SAC, the study area is within 25km of the following site which has otter as a qualifying feature: Afon Eden – Cors Goch Trawsfynydd, located approximately

11.6km east of study area. Other than Meirionydd Oakwoods and Bat Sites SAC, the proposals are not within 30km of any other sites that have lesser horseshoe bats as a qualifying feature.

The impacts associated with this option would be mainly concentrated on the seaward side of the prom structure. While the landward side of the prom structure would see some construction work, the creation of a rock revetment would involve the direct loss of beach habitat directly adjacent to the Pen Llyn ar Sarnau SAC.

Watercourses provide a potential pollution pathway between the proposed work area and the SAC. Culverts in the area behind the sea wall may offer potential bat roosting habitat. A full assessment of any direct or indirect impacts on SAC features would be required as part of a Habitat Regulations Assessment (HRA) for the option.

The impact of the introduction of new sediment into the area needs to be understood. The sediment type, grain size and origin would be key considerations. As the preferred option could have adverse effects on the features of the Pen Llyn a'r Sarnau SAC, Meirionydd Oakwoods and Bat Sites SAC, and Afon Eden SAC, a Test of Likely Significant Effects in line with Habitat Regulations Assessment will be carried out.

For the above reasons, biodiversity and protected sites are **scoped in**.

Land, soil, water, air and climate

3.1.7 Geology and Soils

Barmouth Hillside SSSI is designated for its nationally important geological features but is not likely to be affected by the proposed scheme (200m east of the works at closest point). The works proposed are to improve an existing structure therefore additional land take is not required, however the beach nourishment scheduled as part of the wider scheme will change the existing profile by reinstating to a suitable level to provide a standard of protection to the sea defence wall.

Due to the location and nature of the work, the potential impacts to geology and solis are considered to be minimal. Therefore, this topic is **scoped out** for further consideration in the Environmental Assessment.

3.1.8 Marine and coastal physical process

The Shoreline Management Plan (SMP2) relevant to the site of proposed works at the North Promenade region of Barmouth is Management Area 21, Policy Unit 11.15 – Barmouth North. The first epoch states a Hold The Line policy with a transition into Managed Realignment by epochs 2 and 3.

The following assessments and modelling have been carried out at OBC level to inform the proposed scheme:

- Coastal processes study (carried out by specialist consultants, ABPmer) (Appendix C);
- Sensitivity testing, including the wave, overtopping and hydraulic modelling (Appendix D);

- Shoreline modelling (Appendix E).

Coastal processes study summary

The study concluded that prior to entering the nearshore, waves are filtered from more north westerly and southerly direction sectors by the series of offshore ridges and headlands to the north and south of Barmouth. These features, together with the prevailing wave conditions offshore, limit the wave energy approaching the frontage to a relatively narrow direction sector from the SW. Upon entering the nearshore, dissipation and refraction occur over the shore platform.

Given the alignment of the nearshore bed contours and the incident wave directions, further wave refraction occurs as the waves are transformed further inshore to the toe of the beach, thus the waves refract and become slightly more westerly. This is depicted in Figure 41, where offshore the waves from the southwest interact with the nearshore bathymetry, inducing northerly transport offshore. It is expected that this transport is maintained as the ebb tide delta from the Mawddach Estuary, results in shallow bathymetry further offshore to the south of Barmouth. However, as the waves continue to be transformed further inshore, they become more westerly, becoming more shore normal and can then induce more southerly dominated transport.

The overall foreshore bed levels along North Promenade are lowering, and this lowering is expected to continue. The lack of credible groynes and coarser material in the upper foreshore along North Promenade is likely to have accelerated the rate at which the foreshore has lowered with additional wave energy being reflected off the sea wall.

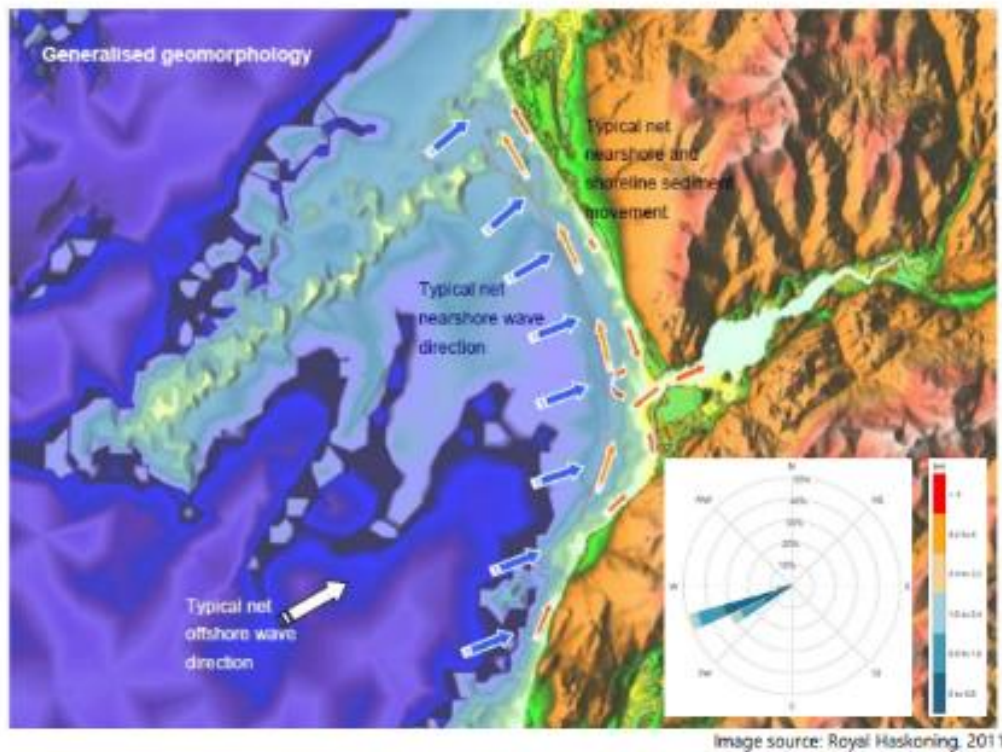


Figure 41. Generalised coastal processes adapted from the SMP2 and including ABPmer wave rose from -7 mODN water depth

The proposal involves upgrading an existing coastal structure, plus a significant amount of beach recharge. Whilst the approach is in line with SMP policy, further work is needed to understand any potential impacts of the work on marine and coastal physical process. Therefore, this topic is **scoped IN** to the EIA.

3.1.9 Seascape and Landscape

Landscape

The study area lies within two Landscapes of Outstanding Historic Interest (LOHI), Mawddach and Ardudwy. Consultation with Gwynedd Archaeological Planning Service (GAPS) will be required regarding potential impacts on the LOHI, and whether an Assessment of the Significance of Impacts of Development on Historic Landscape (ASIDOHL) and any archaeological assessment will be required.

Seascape

The site of proposed works is located within the Cardigan Bay North and Estuaries Marine Character Area (15). The key characteristics of the MCA most applicable to the site of proposed works are shallower water (up to 20m) compared to the southern territory, robust infauna (invertebrates that burrow into the seafloor substrate), important demersal fish spawning and scallop fishing grounds, cetaceans (including bottlenose dolphins) regularly sighted, wave climate increases significantly in the central and northern part of the MCA, open sea affords expansive views, strong maritime backdrop and setting.

The proposed scheme will be partially carried out from the foreshore, in particular the beach recharge, rock revetment construction and secondary wall construction. Of the above MCA features for the site, impact on the views and strong backdrop and setting cannot be ruled out. The work will increase the height of the sea wall and will limit views out to sea for vehicle travellers. In addition, there will be changes to the beach due to reprofiling.

Whilst the above is considered to be a landscape impact, it is also unavoidable to improve the standard of protection afforded by the structure. The height increase will not affect view out to sea for walkers and is considered to be a suitable compromise between improving the standard of protection and landscape impact. This will be considered further through the planning approval process.

For the above reasons, seascape and landscape is **scoped into** the EIA for further assessment.

3.1.10 Flooding and Water Quality

Large parts of the study area are within flood zones 2 and 3. The main aim of the proposed scheme is to alleviate coastal flood effects.

The beach recharge aspect, due to the import of materials to reinstate beach levels etc, will need to be assessed against different factors such as impact on water clarity, nutrient levels, pH levels etc. Similarly, the impacts of the construction of a new defence structure will also need to be assessed.

Therefore, to address these factors a Flood Consequence Assessment and Water Framework Directive assessment will be produced and will feed into the EIA. Flooding and water quality is **scoped into** the EIA.

3.1.11 Climate Change

The proposal involves significant civil engineering works to a large coastal defence structure. The selection of materials, construction methods and timings will need to be understood and assessed to ensure that the climate change impacts of the project is minimised, in line with Gwynedd Council and Welsh Governments Climate change strategies.

For the reasons above Climate Change is **scoped in** to the EIA.

Material assets, cultural heritage and landscape

3.1.12 Cultural heritage

Three grade II listed buildings are located east of the survey area however no negative impact is envisaged due to the nature of the works in relation to the distance from the listed buildings. No other notable cultural heritage features have been identified from a desktop survey within the screening distance of the proposal.

However, due to the age and nature of the existing structure and no record of any historical assessments on the structure and immediate area, cultural heritage will be subject to further assessment.

For this reason, cultural heritage is **scoped in** for further consideration in the Environmental Assessment.

In combination effects

3.1.11 Other cumulative effects

Flood alleviation works are currently in the planning permission stage (December 2023) for the Viaduct Gardens region of Barmouth, which is located at the eastern end of the town.

The works proposed for this area briefly includes betterment of the primary sea wall and installation of a new surface outfall pipe into the harbour, installation of a new road drainage system, construction of a secondary wall and installation of Property Level Protection (PLP) along the quay.

The scheme at Viaduct Gardens has been subject to an HRA assessment that has been carried through to Test 3 of Securing Compensatory Measures. It has been concluded that the loss of mudflat and sandflat habitat as a result of the works at Viaduct will be compensated through Welsh Government's National Habitats Creation Programme (NHCP).

As part of the EIA, we will assess any wider or further proposed developments which could have impact in combination with this proposed scheme.

For the above reasons, other cumulative effects are to be **scoped into** the EIA.

3.1.13 Environmental Statement Conclusion

The conclusion would be presented alongside a non-technical summary.

4.0 Summary of the proposed EIA Scope

Topic	Scoped IN / OUT
Existing Site	IN
Proposed Scheme	IN
Reasonable Alternatives	IN
Air Quality	IN
Community Considerations	IN
Noise and Vibration	IN
Biodiversity and Protected Sites	IN
Geology and Soils	OUT
Marine and Coastal Physical Process	IN
Seascape and Landscape	IN
Flooding and Water Quality	IN
Climate Change	IN
Cultural Heritage	IN
Other cumulative effects	IN

The following appendices are all available as separate documents:

- **Appendix A: Initial Environmental Appraisal**
- **Appendix B: Environmental Impact Assessment Screening Opinion Report**
- **Appendix C: Coastal Processes Study**
- **Appendix D: Wave modelling, extremes analysis and overtopping.**
- **Appendix E: Shoreline modelling**
- **Appendix F: Preferred Option Drawings**