Ardal Cadwraeth Arbennig Bae Cemlyn / Cemlyn Bay Special Area of Conservation

Advice provided by Natural Resources Wales under Regulation 37(3) of the Conservation of Habitats and Species Regulations 2017.

June 2025

Vegetated shingle ridge at Cemlyn. © NRW.

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Crynodeb Gweithredol

Mae'r ddogfen hon yn cynnwys cyngor Cyfoeth Naturiol Cymru ar gyfer ardal cadwraeth arbennig (ACA) Bae Cemlyn a gyhoeddwyd o dan Reoliad 37(3) o Reoliadau Cadwraeth 2017. Sef amcanion cadwraeth a chyngor ar weithrediadau.

Mae Adran 1 yn cyflwyno'r safle, pwrpas y cyngor a strwythur yr amcanion cadwraeth. Mae Adran 2 yn cynnwys esboniad o'r rolau a'r cyfrifoldebau, ac mae Adran 3 yn amlinellu amcanion cadwraeth pob nodwedd a gwybodaeth ategol. Mae cyngor ar weithrediadau mewn perthynas â'r safle hwn i'w gael yn Adran 4. Mae rhagor o wybodaeth am yr ACA wedi'i chynnwys yn Atodiad 1.

Isod mae rhestr o nodweddion dynodedig yr ACA hon a dolen uniongyrchol i'r amcanion cadwraeth, ond mae'n bwysig darllen pob adran yn llawn.

Tabl 1. Crynodeb o nodweddion yr ACA a'r ddolen i'r amcanion cadwraeth.

Enw'r ACA	Nodweddion Dynodedig	Cysylltiad â'r amcanion cadwraeth
Bae Cemlyn	• Morlynnoedd neu Lagynau • Llystyfiant lluosflwydd ar draethellau creigiog	Amcanion cadwraeth

Executive Summary

This document contains NRW's advice for Cemlyn Bay special area of conservation (SAC) issued under Regulation 37(3) of the Conservation Regulations 2017. Namely conservation objectives and advice on operations.

Section 1 introduces the site, the purpose of the advice and the structure of the conservation objectives. Section 2 includes an explanation of the roles and responsibilities, and Section 3 outlines each features conservation objectives and supporting information. Advice on operations in relation to this site is found in Section 4. Further information on the SAC is captured in Appendix 1.

Table 1 lists the designated features of this site and provides a direct link to the conservation objectives, but it is important that all sections are read in full.

Table 1. Summary of SAC features and link to Conservation Objectives.

SAC Name	Designated Features	Link to Conservation Objectives
Cemlyn Bay SAC	• Coastal lagoon • Perennial vegetation of stony banks	Conservation objectives

1. Introduction

The ardal cadwraeth arbennig Bae Cemlyn / Cemlyn Bay Special Area of Conservation (SAC) is situated on the north-west coast of Ynys Môn / Anglesey. The site covers a coastal lagoon separated from the sea by a shingle ridge and extends to cover the Trwyn Cemlyn headland on the north-western edge of Cemlyn Bay. The JNCC habitats description states coastal lagoons are a European priority feature and Cemlyn lagoon is one of the best examples of a saline coastal lagoon in Wales. Bamber et al. (2001) describe Cemlyn lagoon as being of "high conservation importance, with a diverse lagoonal community, including four specialist species".

The site was designated in 2004 for two habitats listed on Annex I of the Habitats Directive (92/43/EEC) and forms part of the UK's National Site Network. It is one of the best areas for,

- Coastal lagoons.

And supports a significant presence of,

- Perennial vegetation of stony banks.

The lagoon is a partially artificial feature, augmenting what appears to have been a small lagoon separated from the sea by a shingle bank. In the 1930s a sluice system was installed. Seawater exchange occurs mainly through the sluice and by percolation through the shingle bank, although in extreme storms coinciding with spring tides waves break over the top of the shingle bank. There is freshwater input from three streams and at least two springs. The lagoon hosts a range of species, several of which are adapted to the challenging conditions of fluctuating salinity and temperature found in lagoons such as the lagoon cockle and the lagoonal spire snail. The shingle ridge at Cemlyn supports a significant presence of perennial vegetation formed of *Crambe maritima* and other perennial species. This habitat extends in patches on the Trwyn Cemlyn headland. The stability of the ridge at Cemlyn has allowed coastal grassland and coastal scrub to develop on the landward side.

The Special Protection Area (SPA) Anglesey Terns overlaps the Cemlyn Bay SAC. The conservation objectives for this protected site can be found on the NRW website. Details of where the sites are located, and their boundaries can be seen on the JNCC MPA mapper.

1.1. SAC feature map

The feature locations in maps are indicative and represent the best available evidence at the time of publication. No single habitat feature occupies the entire SAC and features overlap in some locations (See Figure 1). The extent of most habitat features is not known precisely because accurate mapping is very difficult, expensive and resource intensive. This is further complicated due to the dynamic and mobile nature of some habitats. Work is ongoing to improve our knowledge of where designated habitat features occur in our SACs and maps are updated periodically. When new areas of Annex I habitat are discovered within the boundary of a SAC they automatically become part of the SAC feature where it is already a designated feature of the site.

A map of each feature within the SAC is shown before its conservation objectives. All maps in this document are for indicative purposes only. Detailed maps for this feature in Wales can be found on Data Map Wales.

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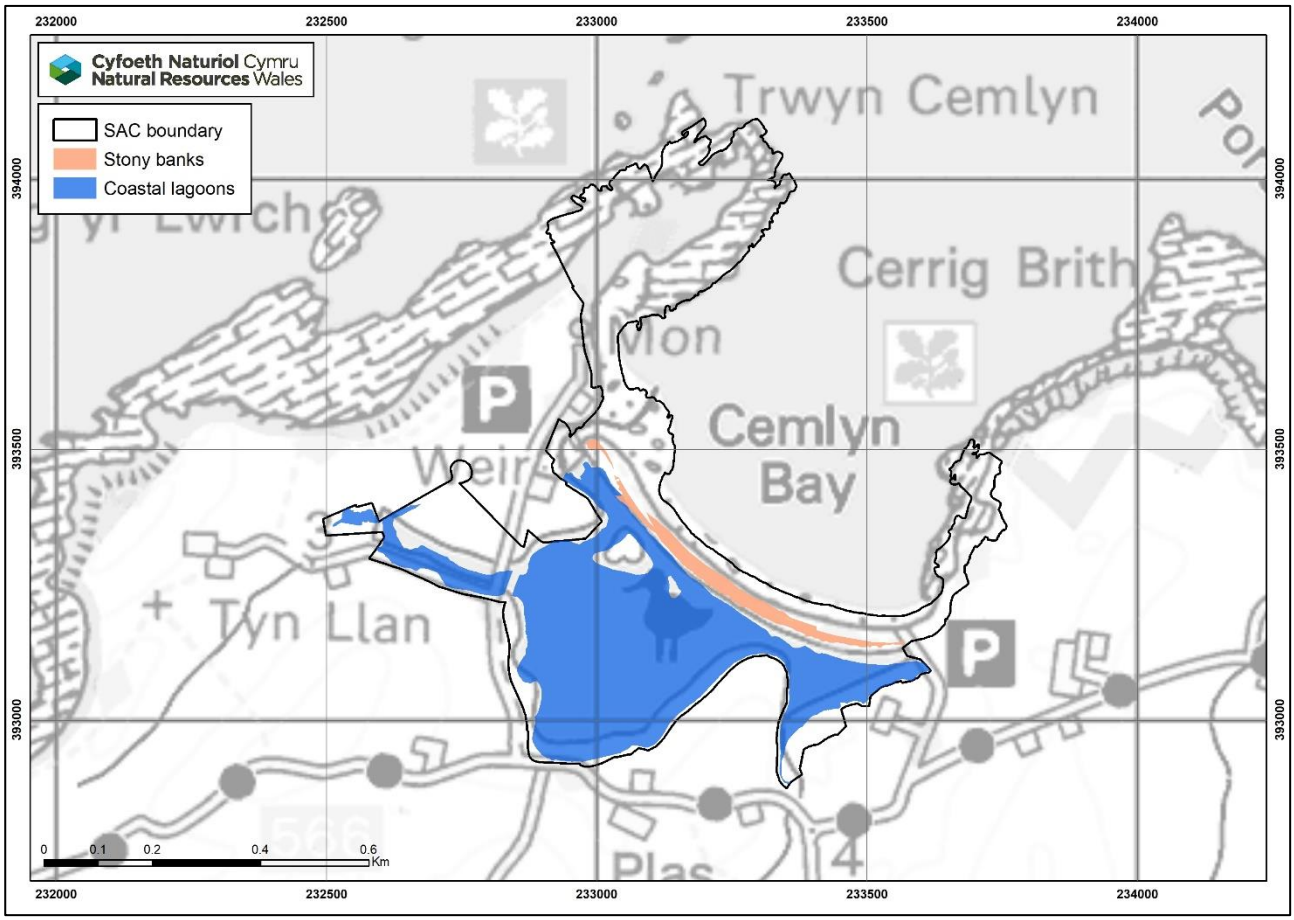
Figure 1. Map showing the site boundary and designated features of Cemlyn Bay SAC.



1.2. The purpose of conservation advice

Conservation advice provides a framework for assessing developments and activities with the potential to affect the features for which a European marine site (EMS) is designated. An EMS is a SAC or SPA which consists of marine areas. Conservation advice presents site specific information, in addition to highlighting activities that are potentially capable of having an impact on the site and its designated species (known as a feature).

This SAC is an EMS subject to protection under the Conservation of Habitats and Species Regulations 2017, as amended (referred to in this document as the 'Habitats Regulations'). Under the Habitats Regulations, relevant and competent authorities with functions in relation to an EMS must exercise those functions to comply with the requirements of the 1992 European Commission (EC) Habitats and Species Directive and the 2009 EC Wild Birds Directive. The key requirements of these Directives include the conservation of the features (habitat types or species) for which SACs or SPAs are

designated. This requires taking appropriate steps to avoid deterioration or disturbance of SAC or SPA features and carrying out appropriate assessment of any plan or project likely to have a significant effect on a SAC or SPA.

This document contains the conservation advice for the Cemlyn Bay SAC. It is prepared by Natural Resources Wales (NRW) and given under our duty in Regulation 37(3) of the Habitats Regulations (see Section 2.1).

This advice is based on the best available evidence and information at the time of writing. In some cases, evidence can be limited. It will be kept under review by NRW and updated as and when appropriate.

1.3. Conservation objective structure

The conservation objectives for the designated features in this SAC are underpinned by conservation objective attributes. These attributes describe the ecological characteristics (e.g. population), and the ecological requirements that allow the conservation objectives for each feature to be met.

Conservation objective attributes have a target which is either quantified or qualified depending on the available evidence. The target identifies, as far as possible, the desired state to be achieved for the attribute. In many cases, the attribute targets show if the current objective is to either 'maintain' or 'restore' the attribute and are based on the latest condition assessment for the feature. Some aspects of feature condition may be assessed as unknown. In these cases, a maintain target will be set as necessary. For attributes that have been assigned 'unknown' in the condition assessment, further information on feature condition and/or activities impacting the feature will be required to inform further advice. Each attribute target will need to be assessed on a case-by-case basis using the most current information available and all are subject to natural change.

The conservation objective attributes that underpin the conservation objectives are used to measure if the objective is being met. This in turn can be used to see if site integrity is being maintained. Failure to meet any attribute means that the conservation objective is not being met and thus site integrity is not being maintained. Below is an example of a conservation objective and associated conservation objective attributes and targets.

Example Objective 1: The overall distribution and extent of the mudflats and sandflats feature within the SAC and each of its main component habitats are stable or increasing, subject to natural change.

Example Objective attribute	**Example Site specific target**
Feature extent and distribution	Maintain/restore the extent and distribution of mudflats and sandflats
Component habitat extent and distribution	Maintain/restore the extent and distribution of mudflat and sandflat component habitats.

The conservation objectives for the features of CemlynBay SAC are set out in Section 3. As noted in Section 1.2, NRW may refine these in the future as further information becomes available and increases our understanding of the feature.

The feature's conservation objective section provides:

1. A clear statement of each conservation objective for the feature.

2. A table summarising the attributes, and the targets for those attributes.

3. Supporting information that underpins the selection of the attributes and targets.

2. Roles and responsibilities

2.1. NRWs role

Under Regulation 5 of the Habitats Regulations, NRW is a Nature Conservation Body and, in relation to Wales, is the Appropriate Nature Conservation Body (ANCB).

In its role as the ANCB, NRW has a duty under Regulation 37(3) of the Habitats Regulations to advise relevant authorities in respect of a EMS as to:

(a) the conservation objectives for that site

(b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which that site has been designated (see Section 1.2).

Advice on operations which may cause deterioration, together with the conservation objectives, is designed to assist relevant authorities and other decision-makers in complying with their statutory duties under the Habitats Regulations. The advice on operations which may cause deterioration given in this document is without prejudice to other advice given. This includes the conservation objectives themselves, and other advice which may be given by NRW from time to time in relation to any specific operations.

“Operations” is taken to cover all types of anthropogenic activity, irrespective of whether they are under any form of regulation or management. Thus, the advice contains reference to operations which may not be the responsibility of any of the relevant authorities.

NRW will provide additional advice for the site to relevant authorities and competent authorities to allow them to fulfil their duties under the Habitats Regulations. For example, by providing advice to a competent authority assessing the implications of plans or projects on the features of the EMS. Each plan or project will be judged on its own merits, and this will determine the nature of any additional advice required.

2.2. The role of competent and relevant authorities

The expressions used in this advice of “relevant authority” and “competent authority” are as defined in Regulation 3 of the Habitats Regulations. Relevant authorities are specified in Regulation 6 of the Habitats Regulations. Competent Authorities are specified in Regulation 7 of the Habitats Regulations.

Under Part 6 of the Habitats Regulations, all competent authorities must undertake a formal assessment of the implications that any new plans or projects may have on the designated features of a protected site. The implications must be assessed in the context of other plans and projects affecting the same site. Activities outside the site may also affect the features of the site, therefore, plans and projects located outside of a designated site may still need to be assessed.

In respect of the assessment provisions in Part 6 (assessment of plans or projects) of the Habitats Regulations, NRW is also the ANCB in relation to Wales.

The assessment provisions comprise several distinct stages which are collectively described as a Habitats Regulations Assessment (HRA), for which guidance is available. Before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and is not directly connected with or necessary to the management of that site, the competent authority must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.

In light of the conclusions of the HRA and subject to derogation under Regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the EMS. In considering whether a plan or project will adversely affect the integrity of the site, the competent authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which it proposes that the consent, permission or other authorisation should be given.

Carrying out the HRA process is the responsibility of the decision maker as the competent authority. However, it is the responsibility of the applicant to provide the competent authority with the information that they require for this purpose.

The competent authority has a duty to consult the ANCB for the purposes of the assessment. Under Regulation 63(3) of the Habitats Regulations the competent authority must have regard to any representations made by the ANCB when reaching its decision.

Under Regulation 38(1) of the Habitats Regulations it states that, "*the relevant authorities, or any of them, may establish for a European marine site a management scheme under which their functions (including any power to make byelaws) are to be exercised so as to secure compliance with the requirements of the Directives in relation to that site".*

In other words, a group of relevant authorities, or any individual relevant authority, may create a management plan for an EMS. Management plans should be used to help relevant authorities carry out their duties to secure compliance with the Habitats Regulations. Only one management scheme may be made for each EMS. A management scheme may be amended. An authority which has established a management scheme must as soon as practicable thereafter send a copy of it to the ANCB. Any management plans created on this site should be guided by the advice in this package.

Within their areas of jurisdiction relevant authorities must have regard to both direct and indirect effects of an activity on the designated features of the site. This may include consideration of issues outside the boundary of the site. Nothing within a Regulation 37(3) package will require relevant authorities to undertake any actions to maintain or improve the condition of designated features if it is shown that the changes result wholly from natural causes.

NRW will continue to review any new evidence or information about this site and will provide further advice as appropriate. This does not stop relevant authorities from taking any appropriate conservation measures to prevent deterioration to the designated features. Such actions should be undertaken when required.

2.3. The purpose of conservation objectives

The purpose of the conservation objectives for an EMS is to help meet the obligations of the Habitats Regulations in relation to that site. They do this by supporting:

- **Communication**. The conservation objectives help convey to stakeholders what is needed to maintain or restore a feature in/to favourable condition.
- **Site planning and management**. The conservation objectives guide the development of management measures for sites. Achievement of conservation objectives may require management action to be taken inside or outside the site boundary.
- **Assessment of plans and projects**. The Habitats Regulations require the assessment of plans and projects in view of a site's conservation objectives. Subject to certain exceptions, plans or projects may not proceed unless it is established that they will not adversely affect the integrity of a site. Conservation objectives can help develop suitable compensatory measures.
- **Monitoring and reporting**. Conservation objectives provide the basis for defining the evidence that will be used for assessing the condition of a feature.

This document includes both a statement of the conservation objectives and explanatory text on their intent and interpretation specific to the site (supporting information).

2.4. The purpose of advice on operations

NRW must provide advice to relevant authorities about operations that may cause,

- deterioration of designated natural habitats
- deterioration of the habitats of designated species
- the disturbance of designated species

This is statutory advice required by Regulation 37(3)(b) of the Habitats Regulations when considering operations which may cause impacts to designated features. These are operations which could take place within or outside the boundary of the [insert SAC/SPA].

NRW can provide specific advice on existing activities and management, advising on the extent to which activities are consistent with the conservation objectives. This advice, together with the list of activities in Section 4 and the latest condition assessments, should direct required management measures within a site.

2.5. When to use this advice

This advice should be used together with case-specific advice issued by NRW when developing, proposing or assessing an activity, plan or project that may affect the features of the site. Any proposal or operation that has the potential to affect a site must not prevent the achievement of the feature's conservation objectives. Any such prevention would amount to an adverse effect on the integrity of the site.

The advice given here is without prejudice to any advice which may be provided by NRW in relation to the consideration of individual plans or projects in the carrying out of the assessment provisions as defined in Part 6 of the Habitat Regulations.

2.6. Feature condition

NRW has a dedicated condition assessment process to assess feature condition. Each feature designated in Welsh EMS have their own set of performance indicators. These indicators have targets which are assessed with the most up to date evidence available. When all required indicator targets are met a feature is in favourable condition.

The condition assessment of a feature helps to determine if its conservation objectives are being achieved. Results determine if maintain or restore conservation objectives are needed. Appropriate management must be in place to enable conservation objectives to continue being met and for feature condition to be maintained or restored as required. The conservation objectives cannot be achieved if a feature is in unfavourable condition.

Feature condition is recorded in condition assessment documents. These are available on the NRW website. NRW will update this advice package when new condition assessment information is available.

2.6.1. Favourable conservation status and National Site Network

If features are in favourable condition, it is likely they are making an appropriate contribution to Favourable Conservation Status (FCS) of the feature at the UK level. A feature cannot make an appropriate contribution to FCS without meeting its conservation objectives. More information on FCS can be found in the joint statement from the UK Statutory Nature Conservation Bodies.

Regulation 16A of the Habitats Regulations creates the National Site Network on land and at sea, including both the inshore and offshore marine areas in the UK, and sets out the powers and duties of the appropriate authority (Welsh Government).

Information on how features in a site are meeting their conservation objectives will feed into the assessment of the National Site Network management objectives. The management objectives for the National Site Network are to maintain or restore designated SAC and SPA features to favourable conservation status across their natural range. More information on the UK National Site Network and its management objectives can be found on the gov.uk website..

2.7. Climate change and coastal squeeze

Climate change is likely to cause changes across a site and across the network of sites in Wales. There are likely to be differences in impacts across features with some features being more impacted by certain climate change pressures than others. There may also be perceived conflicts between features where potential management measures may impact one feature to the detriment of another e.g. the protection of a coastal lagoon may affect adjacent mudflats and sandflats. These challenges are difficult to address through conservation advice and a lot more thinking needs to be done on this issue. In the meantime they will need to be considered on a site-by-site basis, as and when they arise.

Specific detailed work has been carried out on the impacts of sea-level rise on our MPA network (Oaten et al., 2024). This work regards the extent to which sea-level rise may cause coastal squeeze and natural squeeze, an issue which affects intertidal habitats.

Coastal Squeeze is “The loss of natural habitats or deterioration of their quality arising from anthropogenic structures, or actions, preventing the landward transgression of those habitats that would otherwise naturally occur in response to sea level rise in conjunction with other coastal processes. Coastal Squeeze affects habitat on the seaward side of existing structures.”

Natural squeeze is defined as the loss of habitat against any natural frontage that restricts the rollback of intertidal habitats. Two types of natural frontage are considered within the assessment of natural squeeze:

- Natural Ridge – e.g., a shingle / dune ridge or a natural bank that has an area of low-lying land behind that could be inundated by the tide if the ridge is breached; and
- High ground – naturally high ground that limits any inundation of the tide into the hinterland.

Seven broad intertidal habitat groups were identified as being subjected to coastal squeeze. The following are of relevance for our marine Annex I habitats in our Welsh MPA network,

- Saltmarsh
- Mudflats and sandflats
- Intertidal reef
- Vegetated shingle.

The affected habitats for this SAC are vegetated shingle. Coastal lagoons were considered using a different methodology. Further information on the specific feature impacts is provided in Section 5. The different timeframes, climate change scenarios and management scenarios can be found in the full assessment of coastal squeeze report.

3. Conservation objectives for Cemlyn Bay SAC

The conservation objectives for each designated feature are outlined in the sections below. Each objective is accompanied by objective attributes and targets (see Section 1.3) and supporting information specific to each objective. General site information can be found in Appendix 1. General feature descriptions and ecological characteristics can be found on the JNCC habitats list.

The following terms are used in the conservation objectives.

Anthropogenic: In this document anthropogenic specifically relates to environmental changes caused or influenced by people, either directly or indirectly. NRW consider anthropogenic influences to include climate change.

Component habitat: Habitats that constitute the named features. E.g. Muddy gravels in mudflat and sandflats (use full feature title).

Maintain: Where existing evidence from the most recent condition assessment suggests the feature to be in favourable condition, the conservation objective is for the feature to remain in favourable condition.

Natural change: This is defined as species or habitat changes which are not a result of anthropogenic influences. NRW consider anthropogenic influences to include climate change.

Natural variability: This is defined as species or habitat variability, which are not a result of anthropogenic influences. NRW consider anthropogenic influences to include climate change.

Restore: Where existing evidence from the most recent condition assessment suggests the feature, or part of the feature, to be in unfavourable condition the conservation objective is to return the feature to favourable condition. As the feature is being returned to favourable condition, further decline in the aspects of condition that are causing it to be unfavourable should be prevented. The ability to achieve favourable condition should not be inhibited.

Structure and function: Structure encompasses both the physical structure of a habitat feature (e.g. geology and morphology), together with the biological structure, including habitat forming species (both plant and animal) and species composition. Function encompasses the ecological processes influencing the habitat feature at different temporal and spatial scales.

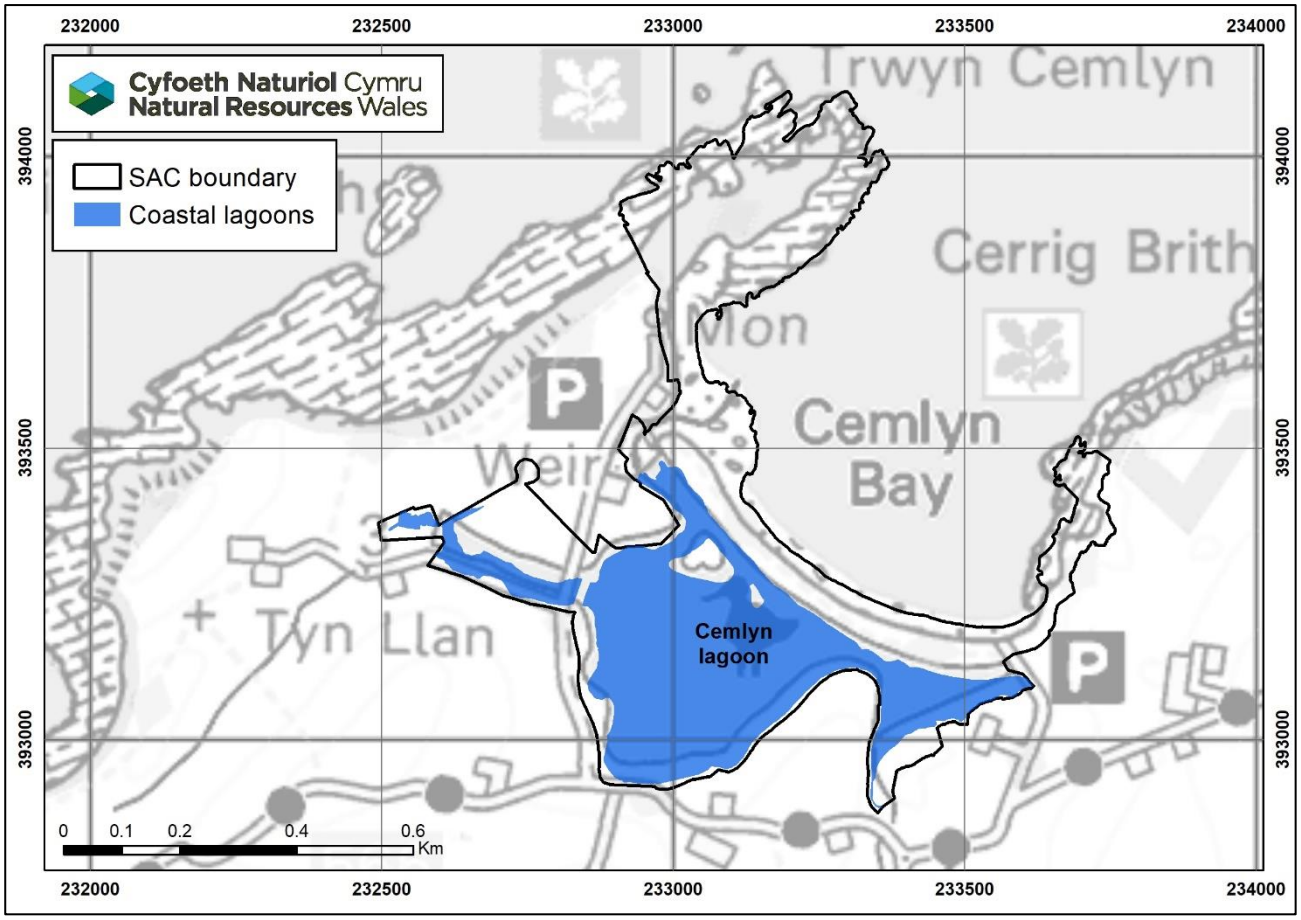
Unknown: Where there is not enough suitable evidence to conduct a condition assessment the feature is assigned an unknown condition**.**

3.1. Feature 1: Coastal lagoons

The coastal lagoons feature within Cemlyn Bay SAC is currently in **unfavourable** condition (high confidence). NRW published the latest condition assessment in June 2025. NRW will review these conservation objectives when new condition assessment information is available.

Figure 2 is a map of the location of the coastal lagoons feature within Cemlyn Bay SAC. The map is for indicative purposes only. Detailed maps for this feature in Wales can be found on Data Map Wales.

Figure 2. Map of the coastal lagoons feature within Cemlyn Bay SAC.



Below are the conservation objectives and their attributes, targets and supporting information.

Objective 1: The overall extent of the coastal lagoons feature within the SAC is stable or increasing, subject to natural change.

Objective attribute	Site specific target
1a. Feature extent	Maintain the extent of the coastal lagoon, subject to natural change.

Supporting information

1a. Extent and distribution

The extent of the coastal lagoon is primarily determined by the morphology of the surrounding area and the artificial impoundment structures. Seasonality and weather play a part in extent and should be considered. The extent of water in winter is likely to represent the true extent of the lagoon basin. The lagoon's extent influences the sensitivity of the habitat, and combined with its shape, the biological communities present. An increased variation in shape (or islands) results in sites with more diverse communities (JNCC, 2004a).

Lagoons are thought to be quite tolerant to change as they are ephemeral in nature and change in their status is inevitable with time. For some physical aspects of lagoons, namely hard geology constraints, we would not expect significant change in its extent via natural processes. However, where there are mobile sediments there may be physical changes in extent and distribution over time through natural processes, for example roll-back of shingle.

The lagoon at Cemlyn is a modified natural feature. A sluice system was built in the 1930s across a narrow channel at the western end. Seawater exchange occurs mainly through the sluice and by percolation through the shingle bank. Overtopping can occur when large storms coincide with spring tides.

While there has been some loss to the extent of Cemlyn lagoon, it is not considered to be a significant loss to extent and falls within the bounds of natural variation. The coastal lagoon extent attribute is being met, allowing a maintain target to be set for objective 1a. See the latest condition assessment for more information (Cuthbertson et al., 2025)

Objective 2: The hydro-morphological and chemical structure necessary for the function of the coastal lagoon features is stable or improving, subject to natural change.

Objective attribute	Site specific target(s)
2a. Water depth	Maintain the water depth within the lagoon needed to support the structure and function of the lagoon feature.
2b. Isolating barrier	Maintain the presence and integrity of the lagoons isolating barrier.
2c. Water and sediment quality	Contaminants are at levels not detrimental to the structure and function of the coastal lagoons feature. Nutrients are at levels not detrimental to the structure and function of the coastal lagoons feature. Physicochemical characteristics are at levels not detrimental to the structure and function of the coastal lagoons feature.
2d. Sediment type	Sediment size and distribution necessary for the structure and function of the coastal lagoons feature is maintained.

Supporting information

2a. Water depth

Water depth in a lagoon needs to be shallow enough to allow photosynthesis to take place but also deep enough to submerge plants and provide optimal habitat for lagoon animals (JNCC, 2004a). Depth strongly influences environmental parameters such as temperature and salinity which in turn contribute to determining the species and communities that reside within the lagoon.

Lagoons are prone to becoming shallower over time due to the natural process of sedimentation. Anthropogenic activities such as infilling, land claim, increased runoff or adjacent developments impacting sediment transport processes have the potential to impact the sedimentation rate of a lagoon and subsequently the depth.

Water depth in Cemlyn lagoon is managed via sluice gates, with stop logs to reduce the peak flow of seawater into the lagoon in the summer months to protect the nesting tern colony. In 1976 the lagoon at Cemlyn had depth ranging from 0.48 m to 1.76 m. The depth of the lagoon does not exceed 2 m with an average depth less than a meter. This shallow depth is critical to the beaked tasselweed *Ruppia maritima* which requires light, while also needing to be rooted in the muddy substratum of the lagoon bed. Water depth since 2010 appears to be stable.

The coastal lagoon water depth attribute is being met, allowing a maintain target to be set for objective 2a. See the latest condition assessment for more information (Cuthbertson et al., 2025).

2b. Isolating barrier

The presence, nature and integrity of an isolating barrier is fundamental to the structure and function of a lagoon. The lagoon at Cemlyn is a modified natural feature. A sluice system was built in the 1930s across a narrow channel at the western end. Seawater exchange occurs mainly through the sluice and by percolation through a shingle ridge, although in extreme storms coinciding with spring tides waves break over the top of the shingle bank.

While storm waves do impact the ridge when they overtop, it still has good integrity and is currently functioning as a barrier. However, there are concerns over its long-term security. It is likely that as climate change brings about sea level rise and increased storminess, overtopping events will occur more frequently. The vulnerability of the barrier will increase with time. The shingle barrier has already suffered reductions in height from overtopping but is currently resilient due to the ability of shingle barriers to retreat. However, the limited resource of shingle and cobbles within Cemlyn Bay will reduce the resilience of the barrier, especially as overtopping events increase in frequency. This will eventually result in a catastrophic breach of the barrier. The area of low-lying coast cliff retaining the sea from the field above Tyn Llan is eroding and is thought to be a potential breach area in the future.

As the barrier is still intact the isolating barrier attribute is being met and allowing a maintain target to be set for objective 2b. See the latest condition assessment for more information (Cuthbertson et al., 2025).

2c. Water and sediment quality

Lagoons tend to have low flushing rates which may mean they are slow to clear any contaminants or slow to recover from any impacts (JNCC, 2004a). This makes lagoonal sediments vulnerable to accumulating contaminants. Various contaminants are known to affect the species that live in or on the surface of sediments. These can impact species sensitive to particular contaminants (e.g. heavy metals), degrading the community structure and bioaccumulating within organisms, entering the marine food chain (e.g. poly-chlorinated biphenyls) (OSPAR Commission, 2012). The degree of sensitivity will be influenced by the type of communities and species present and by the type of lagoon.

High concentrations of nutrients in the water column can cause phytoplankton and opportunistic macroalgae blooms. These blooms can lead to reduced dissolved oxygen availability especially in warmer months and can smother benthic habitats. This can have lethal and sub-lethal impacts on sensitive fish, epifauna and infauna communities (Best et al., 2007). Coastal lagoons act as sinks for nutrients, which are introduced through seawater, freshwater and run-off from surrounding areas, and can be increased through a variety of land uses (JNCC, 2004a).

Sediment organic enrichment may be of less concern given that lagoonal sediments are naturally high in organic material (Johnston and Gilliland, 2000). Lagoonal sediments commonly have an organic content of 10-15 % by weight, compared with 3-8 % in coastal muddy sands (Bamber et al., 2010). This organic loading encourages the seasonal growth of annual algae and phytoplankton. Some lagoons may be adapted to low oxygen

conditions (Bamber et al., 2010). However, elevated organic inputs might be of concern in some cases because of low flushing rates in particular lagoons or parts of lagoons.

Salinity and temperature in lagoons are primarily linked to season, water depth, tidal exchange and the degree of freshwater input into the lagoon. Any changes to these, e.g. through artificial diversion or blocking of drainage ditches and streams, could alter the balance of seawater and freshwater inputs and result in either a lower or high salinity system. Salinity plays a primary role in controlling the biological communities present (Joyce et al., 2005).

Significant water quality issues have been identified for Cemlyn Lagoon. For more Information on water quality see the latest condition assessment (Cuthbertson et al., 2025).

2d. Sediment type

Sediment type is important in determining the biological communities present within a lagoon. The sedimentary bed of the lagoon is usually a combination of original sediment present prior to the isolating barrier formation and input of fine silts and clays subsequently deposited (Bamber et al., 2010). Commonly the substrate will become progressively, but slowly, finer with time. The most common sedimentary substratum within UK lagoons is muddy-sand (Bamber et al., 2010).

Cemlyn lagoon has been displaying this trend toward finer sediments at a concerning speed. For more Information see the latest condition assessment (Cuthbertson et al., 2025).

Objective 3: The abundance, distribution and diversity of species within communities and habitats necessary for the structure and function of the coastal lagoons feature are stable or improving, subject to natural variability.

Objective attribute	**Site specific target**
3a. Habitats and communities	Restore the abundance, distribution and diversity of species within habitats and communities of the coastal lagoons feature.
3b. lagoonal specialist species	Restore the abundance, distribution and extent of listed lagoonal specialist species and habitats.
3c. Invasive and non-native species	Introduction or spread of new non-native species to the SAC by anthropogenic activities should not have a detrimental impact on the structure and function of the coastal lagoons feature.

Supporting information

3a. Habitats and communities

Lagoon communities are generally considered to be made up of opportunistic and specialist species from freshwater, marine and brackish sources (Barnes, 1988, 1994). Saline lagoons often support filamentous green and brown algae, charophytes and several aquatic vascular plants, including *Potamogeton* spp. and *Ruppia* spp. They have an abundance of molluscs and crustaceans (Barnes, 1994), despite an often-limited invertebrate diversity (Bamber et al., 2001).

In the latest condition assessment the communities in Cemlyn Lagoon showed changes in species composition that are indicative of anthropogenic impacts. Species richness and abundance have also declined. These changes are driven by steep declines in the lagoonal specialist snail, *Ecrobia ventrosa*, and a significant increase in opportunistic species. Therefore the habitats and communities attribute is not being met and a restore target has been set for objective 3a. See the latest condition assessment for more information (Cuthbertson et al., 2025).

3b. Lagoonal specialist species

Many species characterising lagoons are rare and of conservation importance. Some species seem to be mostly restricted to saline lagoons and hence known as lagoonal specialists (see Bamber et al., 2001). It has been argued that specialist lagoonal species are better able to tolerate the large environmental variations (e.g. in salinity, hydrology) than freshwater, estuarine and marine species (Bamber et al., 1992).

The lagoonal specialist species in Cemlyn lagoon are:

- bryozoan *Conopeum seurati*;
- lagoonal cockle *Cerastoderma glaucum*;
- lagoonal spire snail *Ecrobia ventrosa*;
- lagoonal isopod *Idotea chelipes*;
- tasselweed *Ruppia maritima*;
- spiral tasselweed *Ruppia cirrhosa*;
- and brackish water-crowfoot *Ranunculus baudotii.*

There have been steep declines in the lagoonal specialist species, *Ecrobia ventrosa* since 2016 and *Cerastoderma glaucum* has not been recorded since 2007. Therefore the lagoonal specialist species attribute is not being met and a restore target has been set for objective 3b. See the latest condition assessment for more information (Cuthbertson et al., 2025). The assessment also contains information on further lagoonal species.

3c. Invasive and non-native species

Non-native species may become invasive non-native species (INNS) and displace native species by predating them or out-competing them for food, space or both. This can lead to the loss of indigenous species from certain areas or changes to community structure (JNCC, 2004b; Levin et al., 2002), as well as changes to biotope and habitat type. The

introduction or spread of NNS within the SAC can occur through various regulated and unregulated pathways. Further information on introduction pathways can be found on the GB non-native species secretariat website.

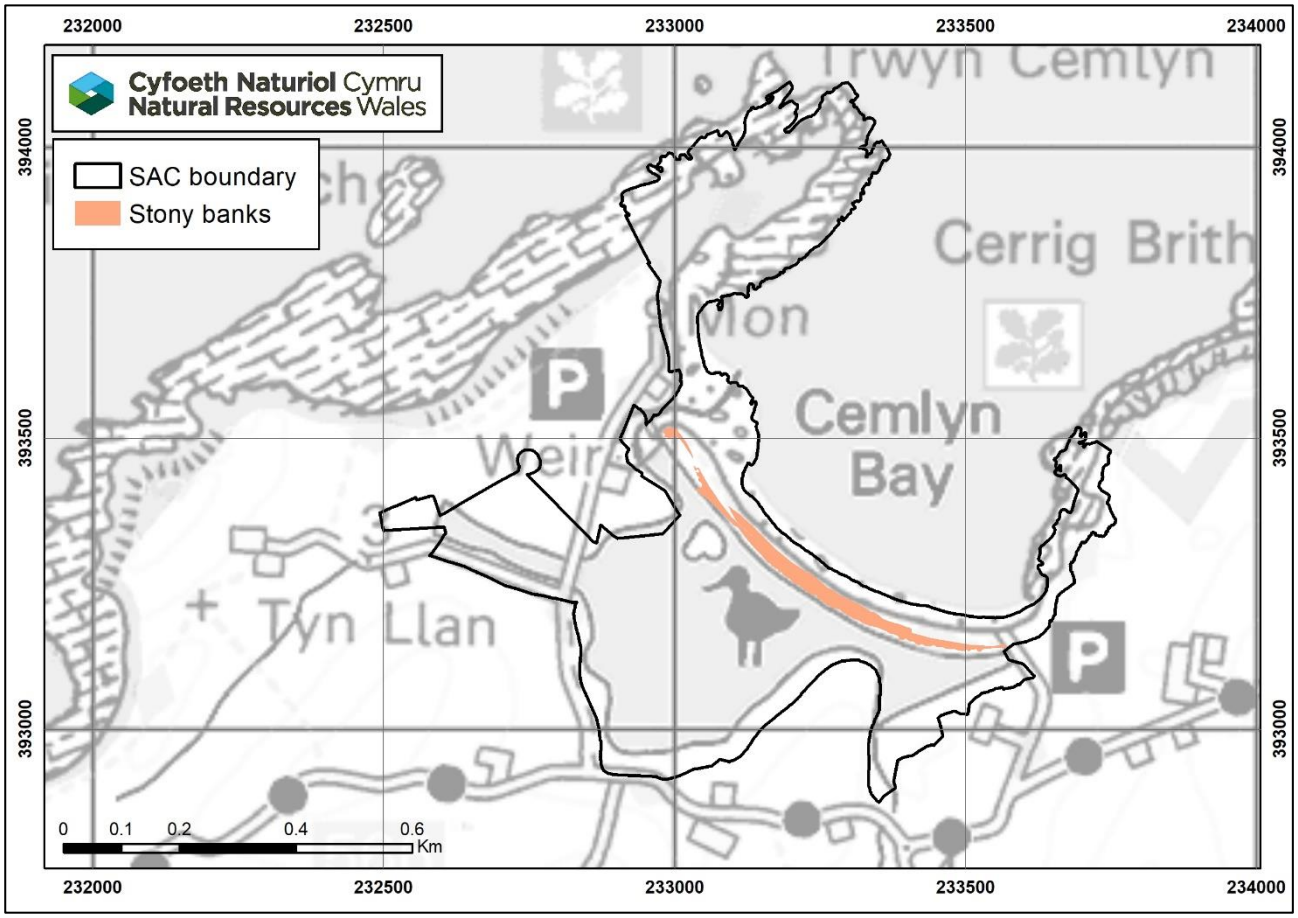
Some non-native species have been recorded in Cemlyn Lagoon the past. However, they have only been found sporadically, numbers were extremely low and are therefore thought to have no impact on the lagoon. See the latest condition assessment for more information (Cuthbertson et al., 2025).

3.2. Feature 2: Perennial vegetation of stony banks

The perennial vegetation of stony banks (stony banks) feature within Cemlyn Bay SAC is currently in **favourable** condition (medium confidence). NRW published the latest condition assessment in June 2025. NRW will review these conservation objectives when new condition assessment information is available.

Figure 3 is a map of the location of the stony banks feature within Cemlyn Bay SAC. The map is for indicative purposes only. Detailed maps for this feature in Wales can be found on Data Map Wales.

Figure 3. Map of the stony banks feature within the Cemlyn Bay SAC.



Below are the attributes and targets for each conservation objective alongside supporting information.

Objective 1: The overall extent of the stony banks habitat within the SAC is stable or increasing, subject to natural change.

Objective attribute	Site specific targets
1a. Feature extent	Maintain the extent of stony banks habitat within the SAC, subject to natural change. Maintain the extent of the open shingle vegetation and the extent of the *Festuca* grassland on the ridge, subject to natural change.

Supporting information

1a. Feature extent

The extent of this Annex I habitat feature covers the sum extent of all the component vegetation communities present and may include transitions and mosaics with other closely associated habitat features. The stony banks feature in the SAC can be found on the shingle ridge between Cemlyn Bay and Cemlyn lagoon, and in patches on Trwyn Cemlyn to the North.

The latest condition assessment of the feature found the extent to be stable, with no encroachment of *Festuca* grassland onto the ridge. Therefore, the stony banks feature extent attribute is being met for both aspects, allowing maintain targets to be set for objective 1a. See the latest condition assessment for more information (Cuthbertson et al., 2025).

Objective 2: The physical, biological and chemical structure necessary for the function of the stony banks feature is stable or improving.

Objective attribute	Site specific target(s)
2a. Physical structure: functionality and sediment supply	Maintain no anthropogenic constraints to shingle mobility.
2b. Habitat quality	Maintain habitat quality necessary for the structure and function of the stony banks habitat. This should include, • Open areas of shingle unimpeded by grass. • No signs of anthropogenic damage to the shingle ridge or associated vegetation, particularly *Crambe maritima* (i.e. crushed or snapped leaves). • Ensure atmospheric nitrogen is at levels not detrimental to the structure and function of the feature.

Supporting information

2a. Physical structure: functionality and sediment supply

The ability to respond to natural coastal processes is an important characteristic of this habitat. This ability can result in changes to extent and distribution of the substrate and can allow pioneer species to colonise (JNCC, 2004c). There should be no constraints to shingle mobility in the active foreshore zone. It is important that the site maintains connectivity with the wider coastal sediment system. Longshore drift should not be impeded and will move sediment throughout the coastal cell.

Vegetation establishment reflects the stability of the shingle structure and is primarily controlled by the proportion and size of fine material between the shingle at rooting depth. This fine material traps organic humic matter (which is the main source of nutrients for shingle species), an absence of a fine matrix results in a marked reduction in vegetation (Randall, 2004). Any activity that would reduce the fine material present in the habitat would lead to a loss of condition through a reduction in the amount of vegetation present. Coastal defences, such as groynes, reduce longshore transport of sediments and may allow beach sediment to be moved offshore and permanently lost to the coastal system (May and Hansom, 2003). Activities outside a site can have an impact on feature condition if sediment inputs are reduced.

As of the latest condition assessment there are no constraints to the mobility of the shingle ridge. The functionality and sediment supply attribute is being met, allowing a maintain target to be set for objective 2a. See the latest condition assessment for more information (Cuthbertson et al., 2025).

2b. Habitat quality

The feature is characterised by specialised plants that have adapted to survive in harsh coastal conditions where a lack of fresh water and nutrients are compounded by salt laden and drying strong winds and wave exposure (Randall, 2004).

It is important for this habitat feature that the shingle ridge does not become over stabilised. This would allow weedy plants to colonise and outcompete the vegetation communities that characterise the feature. The shingle ridge at Cemlyn Bay is stable enough to support a significant population of long-lived perennial *Crambe maritima* plants (as well as *Glaucium flavum* and *Rumex crispus*). Winter storms can disturb the shingle and damage the *C. maritima* in the short term. However, this disturbance provides a dynamic state to the ridge which prevents the establishment of more stable vegetation, that is typically dominated by grasses and weedy species. The shingle ridge where the *C. maritima* is dominant, should be unimpeded by grass and should have no more than 5% cover of grasses. The latest condition assessment stated that grass cover in this zone was less than 5% cover.

While shingle mobility is inherent to the habitat, the vegetation communities on the relatively stable ridge at Cemlyn Bay are sensitive to prolonged disturbance. It is therefore vital to avoid anthropogenic damage, either via physical activity such as trampling of plants, vehicle access or removal/movement of shingle, or via anthropogenic activities that may increase wave exposure. The ridge does not appear to be impacted by anthropogenic disturbance. A National Vegetation Classification (NVC) survey in 2022 highlight the *Crambe* community as being one of the biggest populations in Wales (Heathcote et al., in draft).

Addition of atmospheric nitrogen into a system has been identified as driver of vegetation change and species loss by allowing more competitive, nutrient demanding species to outcompete those more adapted to nutrient sparse conditions (Pakeman et al., 2016). There is very little known about the effects of nitrogen on shingle vegetation communities. It is assumed that, because shingle is usually acidic, it may respond to nitrogen in a similar way to acidic dune habitats (which are sensitive to nitrogen inputs). In these habitats, increasing nitrogen levels leads to an overall species diversity decreased with an increase in grass and sedge species cover. According to the Air Pollution Information System, moisture is strongly limiting in shingle habitats and resultantly may moderate nitrogen responses in early successional shingle habitats (APIS website). The critical load / level for nitrogen (N) deposition has been set for this habitat at 8-10 kg N ha-1 year-1.

The increased abundance and distribution of tall grass species and a decrease in prostrate herbaceous plant species would indicate the critical load was being exceeded. The presence of the following species, *Senecio jacobaea* and *Crisium vulgare* (JNCC, 2004c) would indicate an increased nitrogen load in the shingle vegetation community. Further evidence of exceedance would come from increased N leaching, soil acidification and loss of typical lichen species. At the time of the last condition assessment, the critical load was not in exceedance.

The habitat quality attribute is being met, allowing a maintain target to be set for objective 2b. See the latest condition assessment for more information (Cuthbertson et al., 2025).

Objective 3: The abundance, distribution and diversity of communities necessary for the structure and function of the stony banks feature are stable or improving, subject to natural variability.

Objective attribute	Site specific target
3a. Communities	Maintain the abundance, distribution and diversity of communities within the stony banks feature.
3b. Stony bank significant species	Maintain the abundance, distribution and diversity of stony bank significant species.
3c. Negative indicators	Species not typically associated with the stony banks feature are not having a detrimental impact on structure and function of the feature.

Supporting information

3a. Communities

The NVC pioneer shingle communities that are of primary importance at the site are,

- SD1a *Rumex crispus-Glaucium flavum* shingle community, typical sub-community
- MC6 *Atriplex prostrata-Beta vulgaris* ssp. *maritima* sea-bird cliff community

Other NVC maritime grassland and saltmarsh communities are important to the perennial vegetation of stony banks feature. These communities are listed in Appendix 1.

Recruitment of the *C. maritima* population via seed is extremely important, especially after storm events where mature plants may have been damaged as it is known that plants can take up to 5 years to flower (Low, 2007) and set viable seed. Furthermore, storm events creating dynamic conditions can be advantageous to the regeneration of the population via the seed source through disturbance to the shingle and seed matrix. In spring 2014 large numbers of *C. maritima* plants were observed germinating after a severe storm event (Low, 2007).

The current presence and abundance of the vegetation communities within the stony banks feature at Cemlyn Bay SAC are what would be expected of a healthy habitat that is able to maintain itself. The communities attribute is being met, allowing a maintain target to be set for objective 3a. See the latest condition assessment for more information (Cuthbertson et al., 2025).

3b. Stony bank significant species

Significant species for this feature in Cemlyn Bay SAC are,

Atriplex spp., *Beta vulgaris*, *Crambe maritima*, *Glaucium flavum*; *Rumex crispus*.

All the listed significant species were recorded at the site in the 2022 NVC survey (Heathcote et al., in draft). The significant species attribute is being met, allowing a maintain target to be set for objective 3b. See the latest condition assessment for more information (Cuthbertson et al., 2025).

3c. Negative indicators

High or increasing frequency or cover of species not typically associated with communities that define the feature (i.e. undesirable weed species, species uncharacteristic of typical shingle communities or invasive non-native species) should not be present. The following species should not be present,

Non-native invasive species;

- Japanese knot weed *Reynoutria japonica*
- Montbretia *Crocosmia* × *crocosmiiflora*
- Tree lupin *Lupinus arboreus*
- Red valerian *Centranthus ruber*
- Tamarisk *Tamarix gallicia*

Invasive species indicative of changes in nutrient status;

- Ragwort *Senecio jacobaea*
- Spear thistle *Cirsium vulgare*

Species not characteristic of typical communities;

- Bracken *Pteridium aquilinum*

The 2022 NVC survey found no negative indicator species within the communities on the shingle ridge (Heathcote et al., in draft).

4. Advice on operations

NRW must provide advice to relevant authorities about operations that may cause

- deterioration of designated natural habitats
- deterioration of the habitats of designated species
- the disturbance of designated species

This is statutory advice required by regulation 37(3b) of the Habitats Regulations.

This advice is to help relevant authorities direct and prioritise their management of activities that are of greatest threat to the features of the site. The advice given here is without prejudice to any advice provided in relation to the consideration of plans or projects within the meaning of Part 6 of the Habitat Regulations.

Activities operating at distance from the site may cause pressures that travel into the site. These external pressures may affect features within the SAC.

4.1. Operations which may cause deterioration or disturbance to the features of the site

Table 2 lists activities that have the potential to deteriorate or disturb the designated features of Cemlyn Bay SAC and if they are known to occur within the SAC.

This list of operations is not exhaustive. If an operation or activity is not listed in Table 2 it does not mean it may not have the potential to deteriorate the features of the site. Activities occurring outside of the site may still have the potential to impact the features within the SAC. The occurrence information was correct at time of publication, but activities may have ceased or started since. Advice on individual operations should be sought on a case-by-case basis.

Additional information can be found on the Natural England's designated sites website and Marine Scotland's Feature Activity Sensitivity Tool (FEAST). It is important to note that NRW has not agreed sensitivity thresholds with either Natural England or Nature Scot and the information should be used as a general guide. Specific advice on operations should be sought from NRW on a case-by-case basis.

Table 2. Advice on operations for Cemlyn Bay SAC.

Operation/Activity	Occurrence in SAC
Dredging: Capital, maintenance and disposal	Possible maintenance dredging up river could impact the lagoon.
Land claim (gain of land from the sea or coastal wetlands e.g. for agricultural purposes, industrial use and harbour expansions)	Potential to occur in relation to management of the tern colony.
Coast protection: Hard defences (including sea walls, groynes breakwaters, railways and foreshore deposit of rock, rubble etc.)	Present in and adjacent to the SAC. See relevant shoreline management plan.
Coast protection: Soft defences (i.e. beach replenishment)	Present in and adjacent to the SAC. See relevant shoreline management plan.
Coast protection: Barrages (including storm surge, tidal and amenity)	Not currently present in the SAC.
Artificial reef	Not currently present in the SAC.
Hard-engineered freshwater watercourses	Not currently present in the SAC.
Power station	Potential to occur close to the SAC, with possible impacts.
Pipelines	None known at present.
Power / communication cables	None known at present.
Effluent disposal: disposal of sewage, chemical, thermal and sludge dumping	NRW and DCWW datasets available on locations and inputs.
Miscellaneous wastes and debris	Risk of litter is high due to large numbers of recreational visitors to the site.

Operation/Activity	Occurrence in SAC
Run-off: Agricultural, urban and industrial run-off	Agricultural run-off is widespread, particularly around coast of Anglesey, where agricultural use is higher than on the mainland. Also run off from industrial food manufacturing.
Fishing: All methods of hand gathering (including cockles, mussels, mussel seed, razor clams, bivalves, winkles, crustaceans, shellfish, algae and plants for human consumption and chemical extraction and biomass (excluding access issues)	Visitors have been seen foraging on the shingle ridge for edible plants like sea beat (*Beta vulgaris*).
Fishing: Bait collection commercial and recreational (including digging, pump, boulder turning etc)	Potential to occur in the SAC.
Livestock grazing: Grazing of vegetation	Cattle are in the area and have over grazed the lagoon banks in the past. Management is currently in place to prevent this.
Water abstraction	Not occurring in the SAC.
Aggregate extraction (including mineral & biogenic sands & gravels)	Reports of private collection of shingle and cobbles without permission.
Renewable energy generation: All forms of renewable energy (including tidal barrage and impoundments, tidal and wave energy, offshore wind both fixed and floating)	Not present in the SAC.
Oil spill response: All activities of responding to oil spills at sea and on shore (including chemical, physical and access)	Reactive in case of emergencies.
Recreation: Boating (e.g. power craft, sailing, canoeing, surfing, kite surfing, paddle boarding, etc)	Paddle boarding and kayaking occasionally takes place.
Recreation: Tourism activities and impacts (e.g. dog walking, coasteering, beach goers, etc)	The lagoon is popular with walkers and people visiting the beach. Potential to impact the shingle ridge.
Recreation: Coastal access	The Wales Coast Path crosses the shingle ridge. Historical reports of motorbikes riding on the ridge.

Operation/Activity	Occurrence in SAC
Recreation: Marine wildlife watching / eco-tourism	Popular place for birdwatching.
Science and outreach: Education	Potential to occur in the SAC, with risk of trampling to the shingle ridge from large groups.
Science and outreach: Animal welfare operations and sanctuaries	Potential to occur in the SAC in relation to the nesting terns.
Science and outreach: Science research	Potential to occur in the SAC.

5. Coastal Squeeze

Extensive work has been carried out (Oaten et al., 2024) regarding the extent to which sea-level rise may cause coastal squeeze and natural squeeze, an issue which affects intertidal habitats.

Coastal lagoons

According to Oaten *et al* (2024), Cemlyn lagoon is not subject to coastal squeeze because it is located landward of a natural shingle ridge. However, the lagoon is vulnerable to pressure from climate change and sea-level rise because the natural ridge fronting the lagoon has a Shoreline Management Plan policy of ‘no active intervention’. This means that there is no intention to manage the ridge and it may therefore migrate landwards, and may experience more overtopping or breaching which would change the conditions within the lagoon.

Vegetated shingle

The vegetated shingle ridge which forms the perennial vegetation of stony banks feature at Cemlyn lagoon is not expected to be subject to loss as a result of natural or coastal squeeze because there is space for this feature to roll back in response to climate change.

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Appendix 1: Additional Supporting information

National Vegetation Classification Communities

Other NVC maritime grassland and saltmarsh communities are important to the perennial vegetation of stony banks feature. These communities are listed below.

MC9b *Festuca rubra-Holcus lanatus* maritime grassland, *Dactylis glomerata* sub-community

SM16d *Festuca rubra* salt-marsh community, *Festuca rubra* sub-community

MC9c *Festuca rubra-Holcus lanatus* maritime grassland, *Achillea millefolium* sub-community

MC4a *Brassica oleracea* maritime cliff-ledge community, *Beta vulgaris* ssp. *maritima* sub-community

MC11 *Festuca rubra-Daucus carota* ssp. *gummifer* maritime grassland

MC8a *Festuca rubra-Armeria maritima* maritime grassland, typical sub-community

MG11 *Festuca rubra-Agrostis stolonifera-Potentilla anserina* grassland

W24 *Rubus fruticosus-Holcus lanatus* underscrub

SM14c *Halimione portulacoides* salt-marsh community, *Puccinellia maritima* sub-community

SM14a *Halimione portulacoides* salt-marsh community, *Halimione portulacoides* sub-community

MC4 *Brassica oleracea* maritime cliff-ledge community

W23 *Ulex europaeus-Rubus fruticosus* scrub

MG1b *Arrhenatherum elatius* grassland, *Urtica dioica* sub-community

SM13a *Puccinellia maritima* salt-marsh community, *Puccinellia maritima* sub-community

MC8 *Festuca rubra-Armeria maritima* maritime grassland

MG6a *Lolium perenne-Cynosurus cristatus* grassland, typical sub-community

SM8 Annual *Salicornia* salt-marsh community

Appendix 2: Additional conservation interest

SPAs partly or wholly within the SAC:

- Morwenoliaid Ynys Mon/ Anglesey Terns

Sites of Special Scientific Interest partly or wholly within the SAC:

- Cemlyn Bay