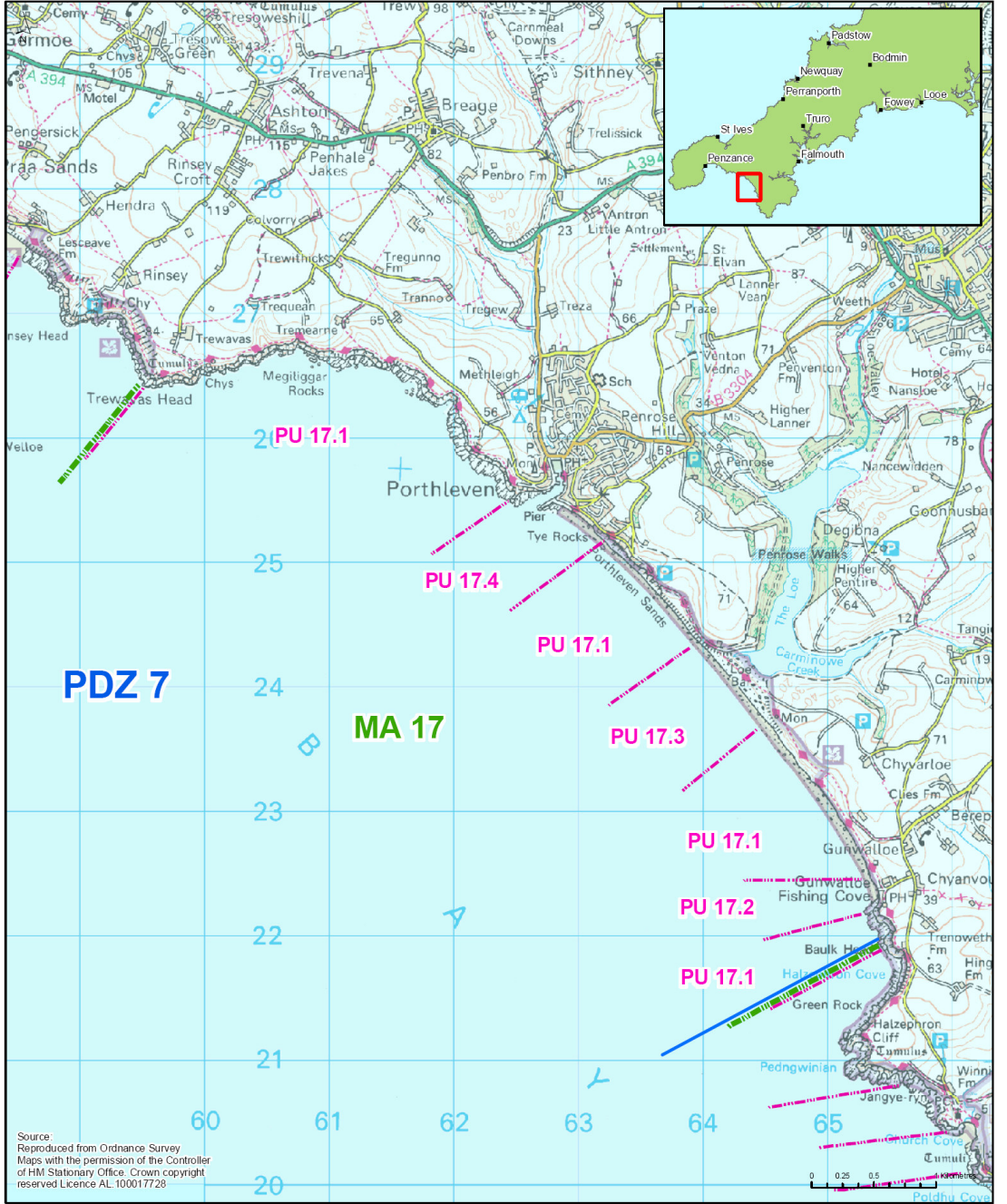


Location reference: **Baulk Head to Trewavas Head**
Management Area reference: **MA17**
Policy Development Zone: **PDZ7**

Policy Development Zone 7 - Mounts Bay East (Baulk Head to Marazion)
 Management Area 17 - Baulk Head to Trewavas Head

Key
 Policy Development Zone
 Policy Units
 Management Areas

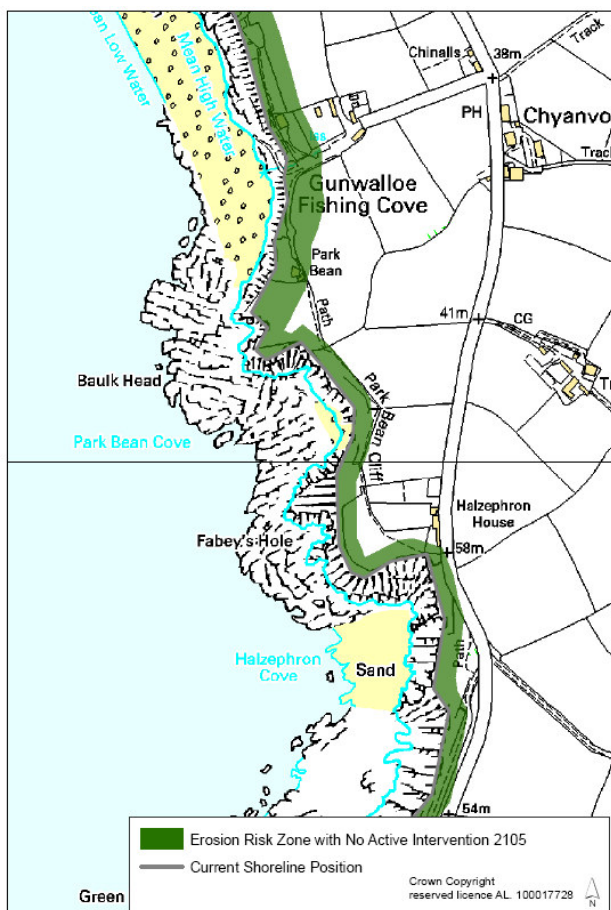


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| Cornwall & Isles of Scilly Shoreline Management Plan Review | | |
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DISCUSSION AND DETAILED POLICY DEVELOPMENT

Most of the land south of Porthleven is owned by the National Trust, and its use is restricted to agriculture and nature conservation. There is a small residential area at Gunwalloe. The natural, undefended cliffs through this management area are highly valued for their geology and maritime habitats. The intention of the preferred plan would be to continue to manage these areas on a non-interventional basis. It is envisaged that the non-interventional policy approach continues to include the funding of a strategic coastal monitoring programme, in order to inform future SMP reviews and local strategies and studies.

At **Gunwalloe Fishing Cove**, a number of private defences have been constructed in an attempt to prevent the erosion of the soft head cliff material which fronts this small settlement (around 6 properties). These defences provide only a piecemeal protection of the frontage and lend the cove a rather untidy appearance. There is ongoing erosion of the cliffs at Gunwalloe in common with Jangye-ryn to the south and the cliffs to the north.



The first SMP reported that unlicensed sand and gravel extraction has occurred at the beach at Gunwalloe, and that this has exacerbated problems with the beach and cliff between Porthleven and Gunwalloe. It is true that extraction has occurred however there does appear to be a formal agreement in place to allow this to happen, between the National Trust and a small family business. Any removal of material from the foreshore is likely to exacerbate the level of erosion occurring, unless the amount removed is small enough to be negligible in terms of the beach volume and seasonal variation (volumes of removed material are not known).

The assessment of flood and erosion risks indicates that erosion under the NAI scenario could be as much as 90m by 2105 (inset map, left), with this level of erosion two properties are fully at risk of loss. It

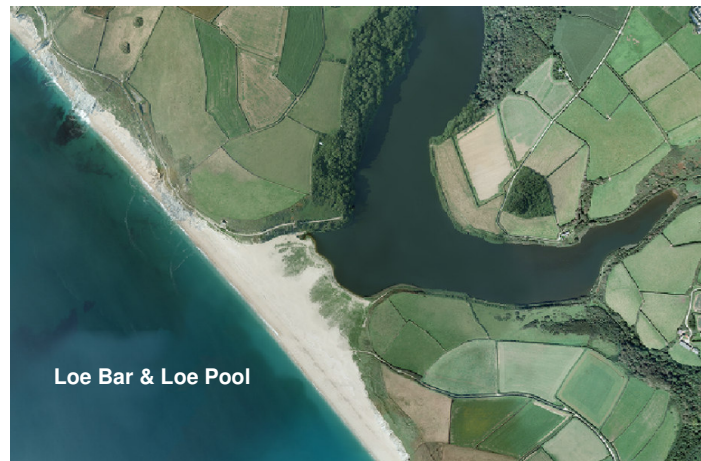
is generally unlikely that any economic justification for defence and a hold the line policy would be forthcoming based on this. The National Trust, who owns the slipway, would be unlikely to adopt any approach other than a non-interventional one, to achieve their goal of allowing natural processes to prevail. In addition, Cornwall Council have identified that the Gunwalloe Rd above Halzephron Cove, just to the south, is at risk and

the erosion mapping supports this conclusion. The Council have already negotiated in purchasing land away from the cliff edge in order to re-align the road to a more sustainable position. This indicates the preference to move away from holding the line as set by SMP1.

There are significant historical interests at Gunwalloe, in the form of listed, post mediaeval fishing cellars. These are of particular relevance to the historical origins of settlement at the cove. At least three such sites are present along the cliff line within the area which could be eroded by 2055.

The preferred plan at Gunwalloe would be no active intervention, based on the assumption that defence of the cliff line in its current position is neither sustainable nor likely to be economically justified. Given the historical interest, there may need to be some local management which allows enough time for the interest features to be studied and recorded before being lost to the erosion.

Some 2km along north-west from Gunwalloe, the beach forms the **Loe Bar** barrier across the mouth of Loe Pool (see inset photo, right). Human influence on the coastal processes has been particularly strong here, and has included sediment extraction and forced breaching of the barrier as well as coast protection. The SMP1 policy was to hold the line along the length of Loe Bar.



The feature itself is moving landward at around 1m/yr and raising its crest height in response to the coastal conditions. An Environment Agency Report (Geomorphology of Loe Bar, Posford Haskoning, 2003) states that over the next 50 years (i.e. to approximate end of epoch 2), the bar is expected to migrate landward by between 25m and 74m. The back face is stable in terms of its general integrity and is quite well vegetated (see inset photo below). The EA report also concluded that the maximum crest height in 1998 was around 10mOD at its south-eastern end. Profiles across the bar demonstrate that the seaward face is much steeper than the landward face. The SSSI status of Loe Pool as a freshwater habitat is obviously a primary concern and there are flood risks at the town of Helston linked to water levels in the Pool. Drainage culverts through the bar are managed by the Environment Agency.

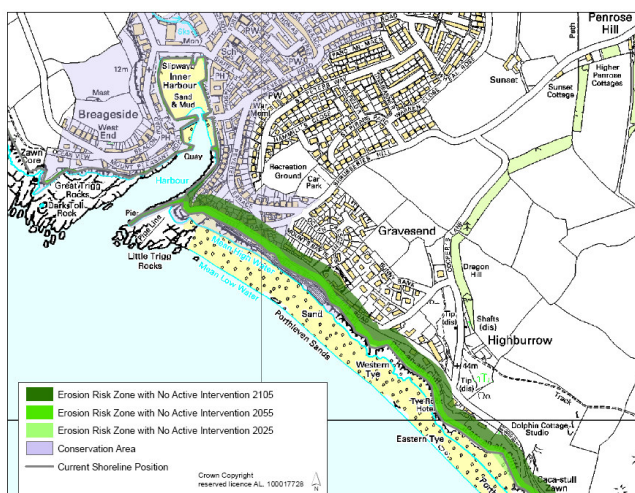


The position of the Bar crest is linked to both sea level, wave climate and the position of the headlands to either side of it. Therefore it would be expected that a

natural landward migration of the feature would occur in line with rising sea levels, increased storminess and the eroding cliffs managed under the NAI policy to either side. It is envisaged that under the MR policy, the crest height is managed by the Environment Agency for the purpose of controlling water levels within Loe Pool and helping to manage flood risks at Helston. Part of the MR approach should also be to address the impacts of potential saltwater inundation of the Loe Pool SSSI.

The current management of water levels in Loe Pool requires the presence of the culverts and access chambers. Whilst these continue to be in place and the bar crest continues to be managed it cannot be considered that natural processes are being entirely allowed to dictate the morphology of the bar, and therefore one of the high level SMP objectives is not fully met. A future management approach which allows a more natural evolution of the bar whilst still allowing management of the risks to Helston and the SSSI is important. The Environment Agency have a Water Level Management Plan in place for Loe Pool and a review of this can form part of an integrated Beach and Bar Management Plan to facilitate MR being implemented for this frontage.

1.5km to the north west of Loe Bar is the harbour town of **Porthleven**. It is the largest shoreline settlement within this management area. There are many heritage interests at Porthleven, including the harbour walls, inner jetties and main pier which are all Grade II listed, the sea front Bickford-Smith Institute and clock tower, pill boxes, mediaeval fish cellars, a submarine forest within the outer harbour and the many listed buildings that lie within the conservation area. Porthleven faces south-west into the prevailing weather and wave climate and consequently it is a very exposed, wave dominated location. There is no real risk from still water levels at Porthleven but wave overtopping and spray during storms can cause localised flooding and damage to properties, along with risk to life around the harbour, pier and sea front and cliff road area. There are well publicized pictures from storms in 1989 showing spray and overtopping from large storm waves breaking over the Bickford-Smith Institute and its 70ft clock tower. No account of this extreme wave overtopping flooding is taken account within the standardised economic assessment procedure, as assets are well above the extreme sea levels.



The assessment of erosion risks indicates up to a possible 50m of erosion occurring along the Cliff Road / Loe Bar Road frontage over 100 years in the absence of defences under the no active intervention scenario (see inset map, left). The section is quite heavily defended by vertical and sloped masonry and concrete walls for around 450m to the east, where it meets a hard slate outcrop.

Beyond this outcrop, the coast falls back into a more eroded frontage (see inset photo below), demonstrating how the Cliff Road and Loe Bar Road defences have held the coastline forward of where it would naturally be.

South-east of the currently defended section, further along Loe Bar Road and Parc-an-ais cliff frontage (see inset photo below), there are a number of properties possibly at risk beyond epoch 2, but the uncertainty of the erosion levels here dictates that it will be necessary to continue to analyse the regular Lidar and aerial photography surveys in order to ascertain how that risk is developing with time. Therefore the Parc-an-ais frontage would continue to be managed under a no active intervention policy, whilst the preferred plan for the defended frontage would be to hold the line for the three epochs, along with the harbour area. The roads and property at risk allow the positive benefit / cost ratio shown in the Economics



Summary Table below (see also Appendix H) to be economically supportive of the HTL policy, though at 1.16 this is only narrowly positive. It is possible that the current extent of defences to the east could be brought back closer to the town which may improve this ratio. The roads at risk provide access to properties but there are alternative routes available.

The reasonably wide intertidal area in front of the defences should assist in maintaining the relative sustainability of the frontage but monitoring of beach profiles will assist in reviewing the extent of coastal squeeze through epochs 1 and 2. Information gained during this period should inform on the necessity of reviewing the HTL policy for epoch 3.

At the north-western end of this management unit lays **Trewavas Head** where a particularly significant and iconic mining site with a number of engine houses, chimneys and shafts are located within a small area. – the entire Trewavas Head area, together with Rinsey Head further to the west, is part of the Cornwall and West Devon Mining Landscape World Heritage Site. A number of the features for which the site is scheduled are already effectively located on the coastal slope, seaward of the cliff line. The erosion risk assessment has indicated little significant retreat of the cliff line in this location and the site would therefore be considered at low risk however there is certainly some potential for some of those features on the coastal slope to be affected by erosion by 2105. The objectives relating to the World Heritage Site are to prevent damage to the features – but without unduly constraining natural processes. It is suggested that if cliff stabilization works were able to protect certain scheduled features from erosion on a discrete basis this would not be precluded by the overall NAI policy.

Under a NAI scenario there is likely to be some re-routing of the current **SW Coast Path** along the undefended cliff sections, but this should be relatively straightforward as realignment of the path is not constrained at any point by development.

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

PLAN:

| | |
|-----------------------------------|------------------------------------|
| Location reference: | Baulk Head to Trewavas Head |
| Management Area reference: | MA17 |
| Policy Development Zone: | PDZ7 |

| PREFERRED POLICY TO IMPLEMENT PLAN: | |
|--------------------------------------|--|
| From present day (0-20 years) | NAI along undefended cliff sections. NAI at Gunwalloe Fishing Cove. MR at Loe Bar to manage risk while allowing natural change. HTL at Porthleven. |
| Medium term (20-50 years) | NAI along undefended cliff sections. NAI at Gunwalloe Fishing Cove. MR at Loe Bar to manage risk while allowing natural change. HTL at Porthleven. |
| Long term (50 -100 years) | NAI along undefended cliff sections. NAI at Gunwalloe Fishing Cove. MR at Loe Bar to manage risk while allowing natural change. HTL at Porthleven. |

SUMMARY OF SPECIFIC POLICIES

| Policy Unit | | SMP1 Policy | SMP2 Policy Plan | | | Comment |
|--|------------------------|---------------|------------------|------|------|--|
| | | 50 yrs | 2025 | 2055 | 2105 | |
| 17.1 | Undefended cliffs | Do nothing | NAI | NAI | NAI | Do not preclude localised cliff stabilization to prevent damage to scheduled features as part of World Heritage site. |
| 17.2 | Gunwalloe Fishing Cove | Hold the line | NAI | NAI | NAI | Current position of shoreline unsustainable & no economic justification for defences. |
| 17.3 | Loe Bar & Pool | Hold the line | MR | MR | MR | The feature itself is moving landward at around 1m/yr and raising its crest height in response to the coastal conditions. It is proposed that under the MR policy, the crest height is managed for the purpose of controlling water levels within Loe Pool and helping to manage flood risks at Helston. Part of the MR approach should be to address the impacts of saltwater inundation of the SSSI. |
| 17.4 | Porthleven | Hold the line | HTL | HTL | HTL | Economic justification likely, sustainability into epoch 3 needs to be reviewed periodically. |
| Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment | | | | | | |

ENVIRONMENTAL ASSESSMENT

Strategic Environmental Assessment (SEA):

The long-term policy plan for this section of coastline is for NAI across the undefended sections of the coastline with HTL and MR used selectively at settlements to maintain current standards of defence. Various geological and biodiversity sites dependant upon natural processes will benefit from the policy of NAI including Wheal Penrose SSSI, Porthleven Cliffs East SSSI, Loe Pool SSSI, Porthleven Cliffs SSSI, Tremearne Par SSSI, Cudden Point to Prussia Cove SSSI and various RIGS. The HTL and MR policies will continue to provide protection to settlements over the next 100 years including the Porthleven Conservation Area and various Listed Buildings including Ring O'Bright Water and Strawtop. The same policies will potentially have an impact on the natural geological and biological environment. For example, the SMP policy of MR aims to undertake a realignment which will allow the barrier beach to respond to sea level rise and adjust its profile accordingly which would help maintain the natural defence provided by the barrier.

Habitat Regulations Assessment (HRA):
HTL is proposed at Porthleven and Praa Sands West, and MR proposed at Loe Bar and Pool. These policy locations are some distance (at least 1.8km) from all Sites and, therefore no direct or indirect effects are expected.

IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

| Economics Summary | | by 2025 | by 2055 | by 2105 | Total £k PV |
|-------------------|------------------------------------|---------|---------|--------------------------------------|-------------|
| Property | Potential NAI Damages (£k PV) | 266.6 | 2352.8 | 1259.4 | 3878.8 |
| | Preferred Plan Damages (£k PV) | 0.0 | 0.0 | 0.0 | 0.0 |
| | Benefits of preferred plan (£k PV) | 266.6 | 2352.8 | 1259.4 | 3878.8 |
| | Costs of Implementing plan £k PV | 1418 | 713 | 1222 | 3352 |
| | | | | Benefit/Cost ratio of preferred plan | 1.16 |

Notes

High cost of work at Porthleven to maintain defences