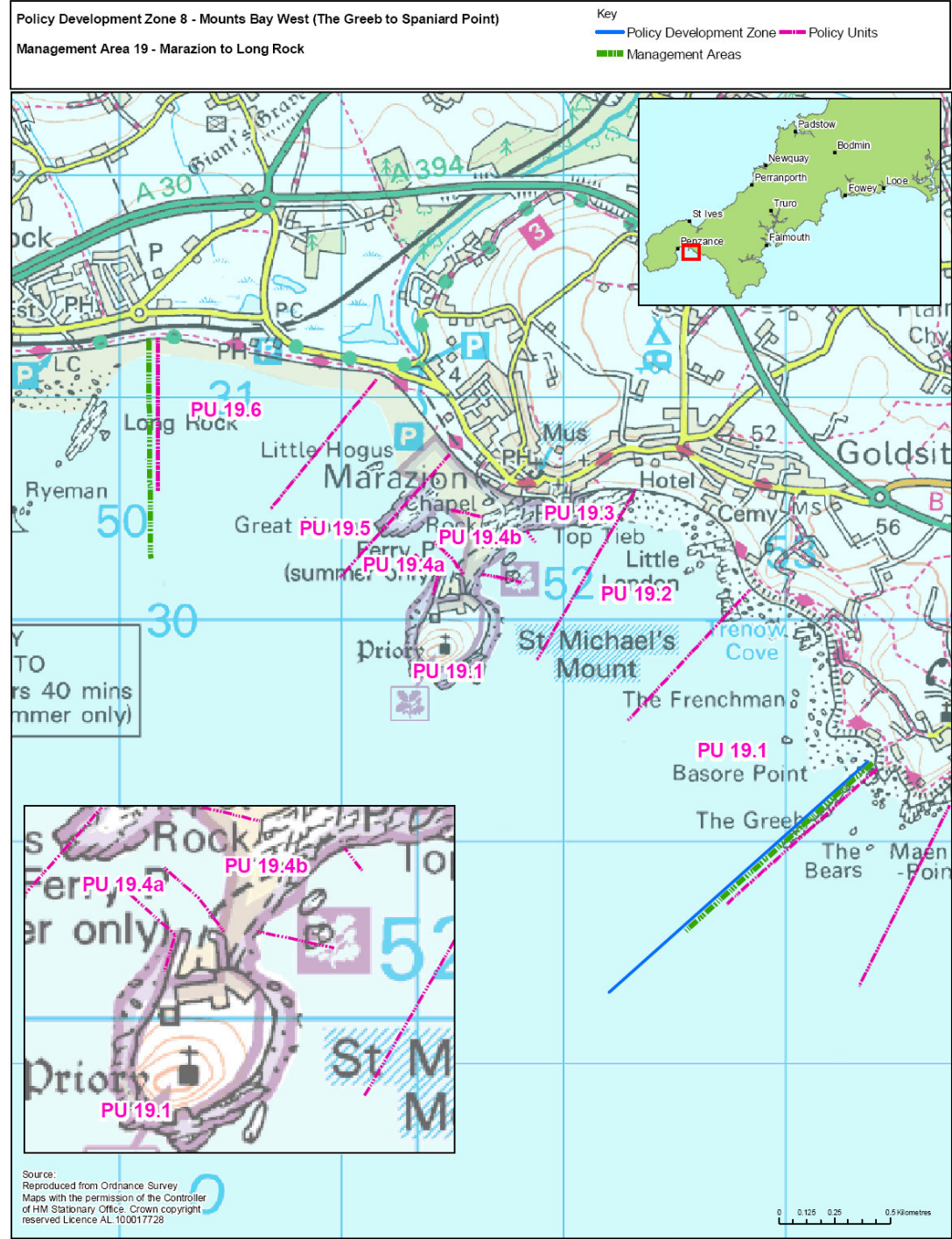


**Location reference:** Marazion to Longrock  
**Management Area reference:** MA19  
**Policy Development Zone:** PDZ8

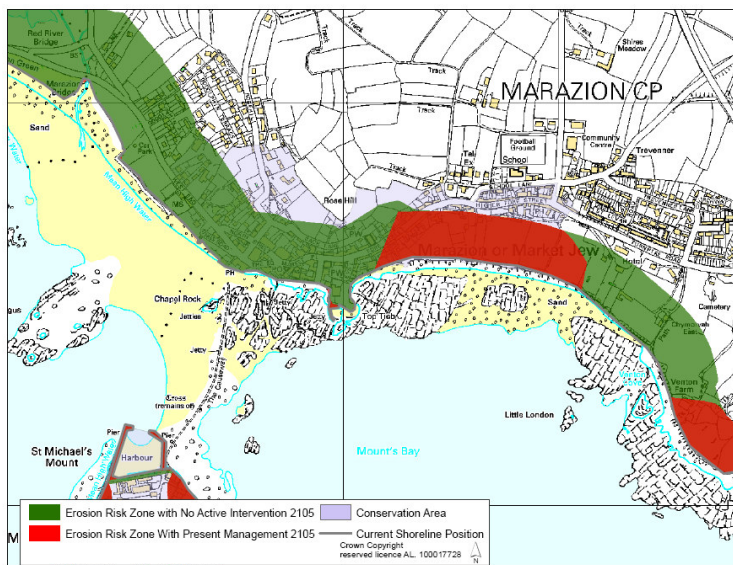


Cornwall & Isles of Scilly  
Shoreline Management Plan Review

## DISCUSSION AND DETAILED POLICY DEVELOPMENT

The Marazion area contains a number of conflicting objectives which may prove to be difficult to reconcile within the short term. The internationally important SPA (and nationally important SSSI) of **Marazion Marsh** provides one of these conflicts in that it is designated as the largest area of reed-marsh in Cornwall, supporting many important habitats yet pressure on the frontage dictates that this is one of the most threatened frontages and possibly the most appropriate area to look to absorb some of the impacts of sea level rise. Mapping of the future scenarios across the Marsh shows very significant potential change in shoreline position and flood risk by 2105 (see inset map, below).

To meet the high level objective of reduced reliance on defences will be very difficult for the **Marazion town** frontage whilst trying to meet local objectives to prevent damage to the conservation area, loss of heritage, loss of listed buildings and generally protect the cultural and economic assets of the town. The upper estimates of the possible erosion zone for Marazion by 2105 under a no active intervention approach provide an indication of how active this frontage and its response could be to sea level rise (see inset map, below, for comparison of the 2105 NAI scenario with the 2105 WPM scenario).

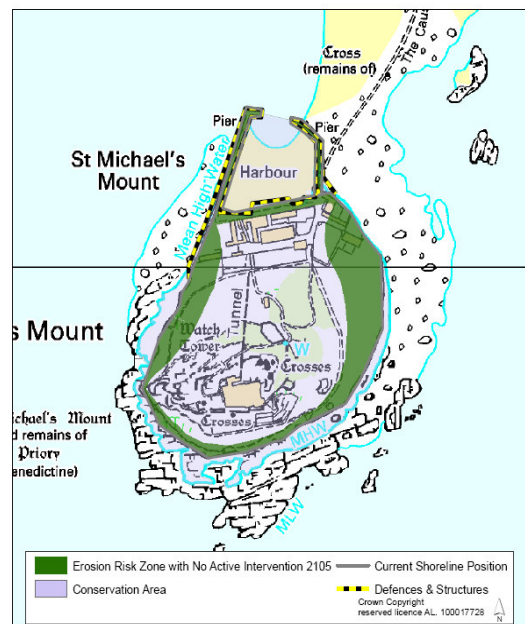


The coast protection authorities and heritage bodies have indicated that damage to the frontage on a scale indicated under the worst case scenario would not be acceptable. The SMP review accepts that local objectives fully drive policy toward holding the line. It must be acknowledged however that the current shoreline position, whilst it is technically feasible to protect in the short to

medium term, is not a sustainable position in the long term. If sea level rise occurs as per the current Defra guidance, the Marazion town frontage will become increasingly difficult to hold beyond 2055 and expense will increase accordingly. When the plan shape of PDZ8 is considered, it can be seen that the Marazion frontage is already held forward of the general underlying crescent shape of the Bay. Whilst some of this is attributable to the sheltering effects of St Michael's Mount and the rocky outcrop of Great Hogus, there is no doubt that the intertidal area is narrower and the shoreline and cliff line are more advanced because of the long term presence of defences. Indeed the Longrock and Eastern Green frontage to the west is also held forward from where it might be naturally, due to the presence of the railway line and its defences. If this section had been allowed to roll back naturally, the advanced nature of the Marazion frontage would be even more pronounced.

The preferred plan at Marazion would be to hold the line across the presently defended town frontage. There may be a requirement to look at how far to the east of Fore Street the defences need to extend to prevent outflanking and loss of properties in that area. East of the Fore Street area through to Venton Cove the preference would be for no active intervention. A policy of NAI would not preclude local management being undertaken but it is believed the current defences at Venton Cove are in place purely as defence to the SW Coast Path and beach access point. Given that the land use at the top of the cliff is cereal cropping and realignment of the path should be possible, it is not likely to be economically justified to hold the line with public funding.

Of course the most recognisable feature of the Marazion shoreline is **St Michael's Mount**. With the Mount being owned by the St Aubyn Estate and partly leased to, and managed by, the National Trust, the picture is complex. However the Trust manages access to the Mount, which includes the iconic causeway and also the harbour area which are at particular risk from the effects of sea level rise. The perimeter shoreline of the Mount away from the harbour area could also be subject to erosion during the period through to 2105 (see inset map, right). The entire Mount is a designated conservation area and the southern part as a geological SSSI. Pressures on St Michael's Mount will increase with sea level rise, the harbour and causeway both likely to be impacted by increased offshore transport of sediment and increasing water depths allowing greater wave energy closer to the Mount and its structures.



The causeway is unlikely to be used as an access route to the Mount much beyond the end of epoch 2, as the tidal window of exposure will have reduced to an extent which will make the risks too high for use. The Mount's harbour is therefore critical in ensuring a point of access and egress route for the Mount is maintained. Recent studies undertaken by the Trust identified the increased risks to the Western harbour arm, which is constructed only on sand and is in need of remedial works (see inset photo, below).

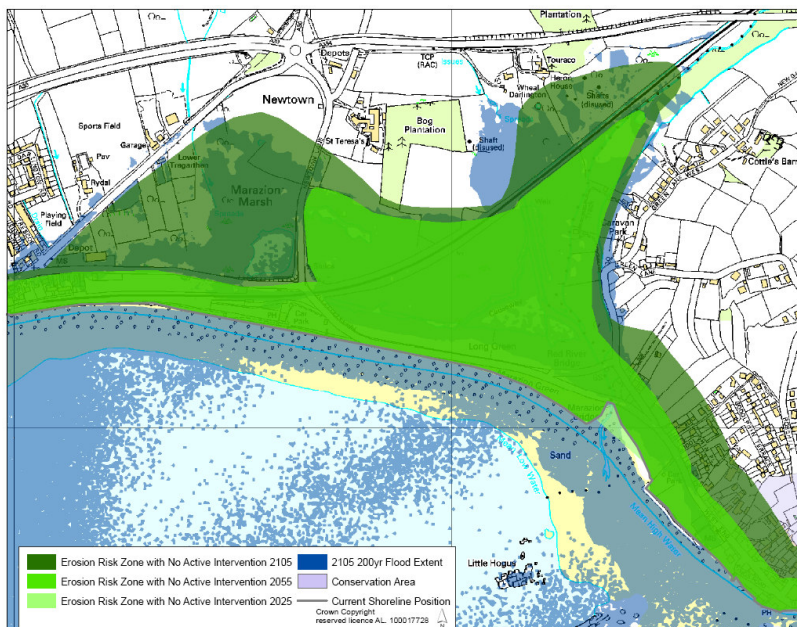




The Trust have made it clear through their Shifting Shores policy that they wish to allow natural coastal processes to dictate the evolution of their sites, but as the Mount is such a priority site, previous consultation with other local stakeholders has generally reached consensus that the harbour should be maintained. This effectively means from the SMP viewpoint, that a hold the line policy will be maintained for the Mount. This will principally apply to the harbour arms and quays. It is expected that following on

from the current works to stabilise the causeway, there will not be significant efforts to maintain it as a structure in the longer term. A hold the line policy for the harbour area will not only maintain an access point to the Mount but it will also protect a number of properties (some commercial, some residential) such as the cottages on the southern side of the harbour (inset photo, right).

The **Marazion Marsh** frontage as indicated is already seen as under pressure from coastal squeeze effects, with suspected steepening of the shoreline profile, increased pressure on the dunes and regular inundation of the marsh habitats beyond the defence line. It displays the narrowest intertidal area, which is mainly attributable to the absence of nearshore rocky outcrops providing any shelter from the wave climate and sediment accretion areas, as is the case to both the east and west. It also receives slightly more of the predominant westerly wave energy than



the frontage to the west. It is though, more sheltered from the infrequent south-easterly storms which can be so problematic at Penzance and Newlyn. The rocky outcrops are very influential on the shoreline position and particularly upon the width of intertidal beach area. This is noticeable at the Marazion, Longrock to Eastern Green, and Wherry Town frontages. The

shoreline outcrops around Penzance Harbour (at Albert Pier, Battery Rocks and Chimney Rocks) are also very influential on shoreline position. The principal defence to the Marazion Marsh frontage is a vertical masonry sea wall which runs west from the Marazion dunes to Longrock – see the inset photo below.



The route of the main London to Penzance rail link travels across the marsh. Currently seen as strategically and regionally important to terminate the rail link at Penzance, the extent of potential realignment at Marazion Marsh is constrained by the presence of the railway line. The line itself could delimit the configuration of a more sustainable position for the shoreline although in time this would increase pressure on defence of the line. Alternatively, there may be engineering solutions which allow the rail line to remain in position whilst allowing realignment, at least in terms of tidal incursion, to extend landward of it. Further detailed study would need to ascertain the technical feasibility, current stability of the embankments etc. The preferred plan would be to introduce a policy of managed realignment across the Marazion Marsh frontage and in the opinion of the SMP review, the presence of the rail link should not prevent the unsustainable position of the current shoreline being acknowledged and adjustment and realignment of the defensive line to be considered.

The internationally important Marazion Marsh SPA is protected with legal status and this SPA is reliant on the coastal defences. Although a realignment of defences could provide a more sustainable and resilient coastal frontage, such a change would affect the integrity of the SPA. The Habitat Regulations Assessment, which forms part of this SMP, indicates that a managed realignment policy through Marazion Marsh would adversely affect the integrity of the SPA. Under European law, this is not acceptable and therefore a policy of hold the line has to be adopted throughout the three epochs. It is recommended that a study be undertaken to assess the potential of migrating the SPA inland, away from the coastal zone in a way that a more sustainable MR policy could eventually be adopted.

In order to address these complex management issues a detailed Mounts Bay Flood and Coastal Risk Management Strategy will be required covering the bay from Marazion through to Newlyn. Furthermore, with the significant coastal change predicted, the Local Development Framework should identify Mounts Bay as a Coastal Change Management Area, and support this in the future by an Area Action Plan. In relation to Marazion Marsh both the FCRM Strategy and the Local Development Framework will need to consider in detail options to migrate the site inland and if this is proved feasible to then consider suitable Managed Realignment

options. For this reason, the coastal change management area needs to extend inland far enough to include potential relocation sites for the marsh.

The high level economic assessment for Management Area 19 provided a fairly robust benefit / cost value of 3.69 (refer to the Economics Summary Table below and Appendix H) which generally supports the hold the line approach proposed for the majority of the frontage. This is based upon a high proportion of properties potentially vulnerable to erosion and/or flooding in and around Marazion along with roads and shoreline infrastructure.

**SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION PLAN:**

<b>Location reference:</b>	<b>Marazion to Longrock</b>
<b>Management Area reference:</b>	<b>MA19</b>
<b>Policy Development Zone:</b>	<b>PDZ8</b>

PREFERRED POLICY TO IMPLEMENT PLAN:	
<b>From present day (0-20 years)</b>	NAI along undefended cliffs. NAI for Marazion east. HTL along Marazion town frontage. HTL (continued use/maintenance) for St Michael's Mount causeway. HTL at St Michael's Mount Harbour. HTL from Chapel Rock to Marazion Bridge. HTL along Marazion Marsh frontage.
<b>Medium term (20-50 years)</b>	NAI along undefended cliffs. NAI for Marazion east. HTL along Marazion town frontage. NAI (continued use) for St Michael's Mount causeway. HTL at St Michael's Mount Harbour. MR from Chapel Rock to Marazion Bridge. HTL along Marazion Marsh frontage.
<b>Long term (50 -100 years)</b>	NAI along undefended cliffs. NAI for Marazion east. HTL along Marazion town frontage. NAI (continued use) for St Michael's Mount causeway. HTL at St Michael's Mount Harbour. MR from Chapel Rock to Marazion Bridge. HTL along Marazion Marsh frontage.

**SUMMARY OF SPECIFIC POLICIES**

Policy Unit		SMP1 Policy	SMP2 Policy Plan			
		50 yrs	2025	2055	2105	Comment
19.1	Undefended Cliffs (including southern part of Mount)	Do nothing	NAI	NAI	NAI	Important sediment source to intertidal area. NAI meets AONB objectives.
19.2	Marazion east (Venton Cove)	Hold the line / do nothing	NAI	NAI	NAI	Need to provide transition from NAI of cliffs to the east into to HTL at Marazion Town frontage.
19.3	Marazion Town	Hold the line	HTL	HTL	HTL	Potential heritage losses & economic impact on local economy under other policies unacceptable. Defences at eastern end may require some extension to prevent outflanking.
19.4 (a)	St Michael's Mount - Causeway	Hold the line	HTL	NAI	NAI	Accept reducing tidal window of exposure for causeway and gradual reduction in use. HTL in first epoch to allow for current maintenance programme completion.
19.4 (b)	St Michael's Mount – Harbour	Hold the line	HTL	HTL	HTL	Maintenance of western harbour arm and protection of harbour area as remaining access route to and from Mount. Chapel Rock would need review by mid-epoch 2 as departure and landing stage link to the Mount's harbour.
19.5	Marazion west (Chapel Rock to Marazion Bridge)	Hold the line	HTL	HTL	HTL	A hold the line approach is required within this area to provide a transition area between Marazion town frontage and Marazion Marsh which maintains the defensive line.
19.6	Marazion Marsh	Hold the line	HTL	HTL	HTL	In order to adhere to legislation and maintain the integrity of this internationally important freshwater wetland site, a hold the line policy is preferred through all three epochs. A more detailed strategy is required to

					consider the options for this area in more detail at the earliest opportunity.
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 of NAI across the undefended sections of the coastline with HTL and MR (and to a lesser extent NAI) used selectively at settlements including Marazion Town, St Michael's Mount – Harbour, Marazion west and Marazion Marsh to maintain current standards of defence and protection of numerous Listed Buildings. Various geological and biodiversity sites dependant upon natural processes will benefit from the policy of NAI including St Michael's Mount SSSI, Venton Cove RIG site and Great & Little Hogus RIG site, however the same SMP policy may not prevent disturbance to St Michael's Mount parks and gardens or St Michaels Mount Causeway.

The Habitats Regulation Assessment has not been able to discount adverse impacts of Managed Realignment on Marazion Marsh due to constraints on the relocation of the site to a more resilient inland location. Hold the Line has therefore been adopted to ensure that the plan does not introduce impacts to the site. However, as the site will remain vulnerable in its present location, Managed Realignment options should nonetheless be considered as part of any future Strategy or Local Development Framework. Although, the same policies may reduce the extents of the Great & Little Hogus RIG site and the footprint of the Marazion Conservation Area.

### Habitat Regulations Assessment (HRA):

HTL for all Epochs is proposed at Marazion Town, St Michael's Mount (Harbour), Marazion West, Marazion Marsh, Chyandour, Penzance Harbour and Docks, Newlyn, Cliff Road, and Mousehole. HTL in the first Epoch followed by MR (or NAI) for the remaining Epochs is proposed at St Michael's Mount (Causeway), Longrock, Eastern Green, and Wherry Town. NAI is proposed for all undefended cliffs, Marazion east, and Sandy Cove. The majority of policy locations and HTL/MR policies amongst the units are a sufficient distance or physically unconnected to the *Natura 2000* Sites that no direct loss 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)	11.2	9804.8	2745.6	12561.7
	Preferred Plan Damages (£k PV)	0.0	0.0	0.0	0.0
	Benefits of preferred plan (£k PV)	11.2	9804.8	2745.6	12561.7
	Costs of Implementing plan £k PV	1727	859	821	3407



Benefit/Cost ratio of  
preferred plan

3.69

### Notes

Robust B/C ratio due to the removal of erosion risk to large numbers of properties

Rail, road and helicopter infrastructure and disruption not included, which would further increase the B/C ratio