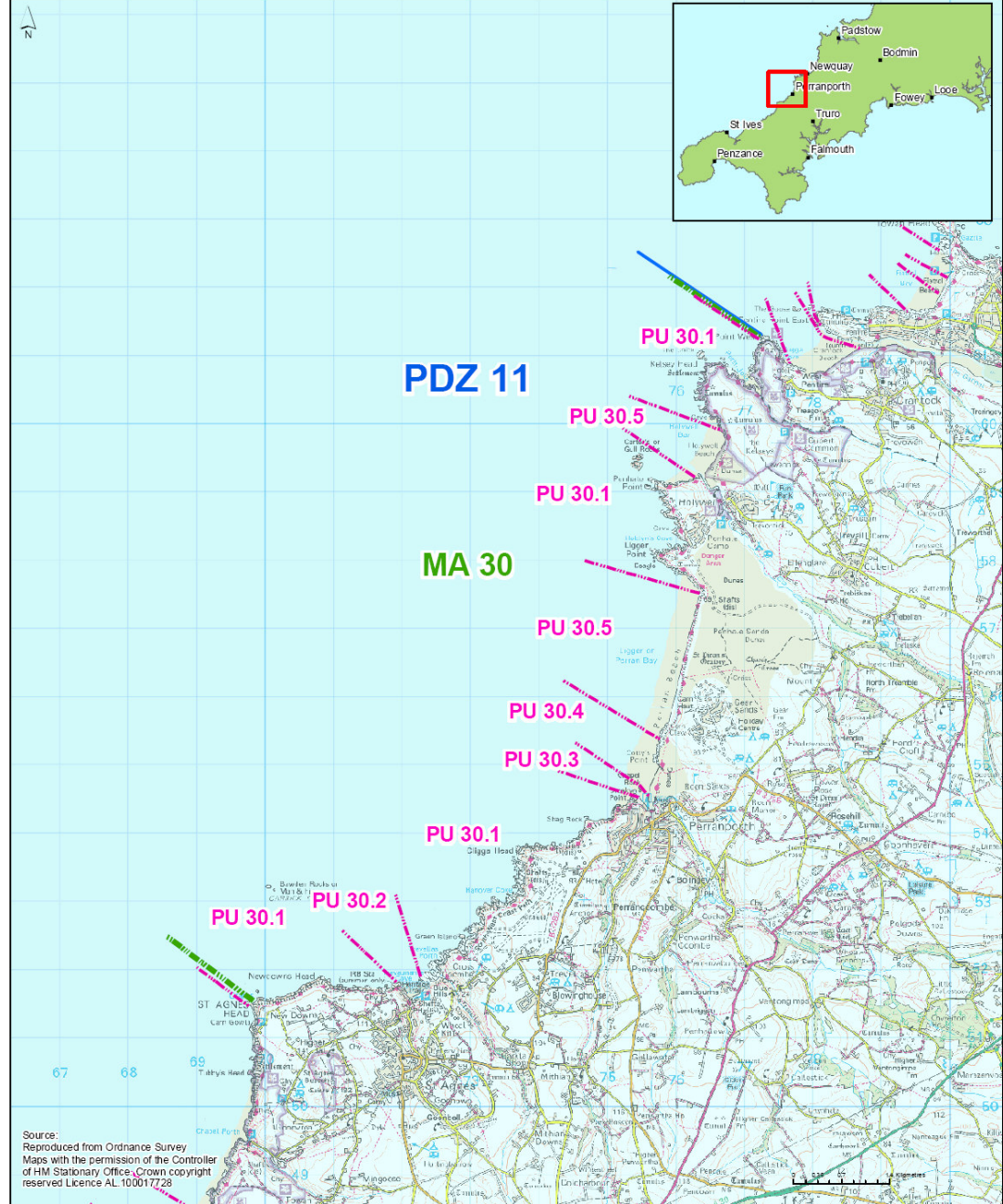


Location reference: St Agnes Head to Pentire Point West
Management Area reference: MA30
Policy Development Zone: PDZ11

Policy Development Zone 11 - North Cliffs
 Management Area 30 - St Agnes Head to Pentire Point West

Key
 Policy Development Zone
 Management Areas
 Policy Units



Cornwall & Isles of Scilly Shoreline Management Plan Review		

DISCUSSION AND DETAILED POLICY DEVELOPMENT

It is proposed that the **undefended cliff** sections extending from St Agnes Head to Pentire Point West will be best managed under an ongoing no active intervention approach. This represents no real departure from the intent of management set out in SMP1. Erosion rates are generally low, with the exception of occasional larger cliff falls which tend to occur very locally. An important consideration for this area is the St Agnes area mining World Heritage Site which runs as far north as Droskyn Point at Perranporth. A number of features for which the site is recognised are located at or close to the cliff edge along this part of the coastline. Although there is unlikely to be any justification for taking intervention for any of the features at risk, a full record of any part of the site which is lost due to erosion will be important. In addition to the World Heritage site, the wider St Agnes area is covered by both the Cornwall AONB designation and the St Agnes Heritage Coast designation. Again, no active intervention appears the most suitable approach in maintaining the overall character and nature of the area, as natural erosion of the cliffs contributes much to the landscape value of the area.

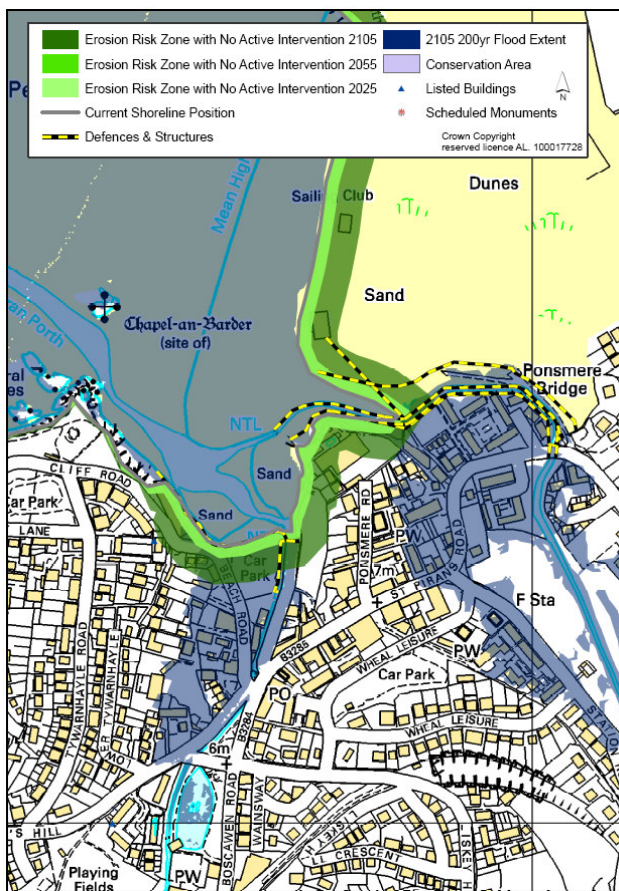
For the majority of **Trevaunance Cove**, a continuation of the no active intervention approach being applied to the open coast appears justified, as it displays similar rates of erosion. However there is development at risk at the rear of the beach and selective holding of the short sections of vertical seawall and splash wall (Council owned) would protect community assets behind. In the longer term all assets will be at increasing risk from rising sea levels and coastal squeeze due to natural constraint from hard geology and rapidly rising topography and adaptation will be necessary. The land use planning system should consider the development area at the back of the beach to be at a high risk of flooding from wave action.

Trevaunance Cove is one of several locations around the coast where there is clearly some pressure on the frontage due to rising sea levels and increasing storminess and where coastal squeeze affects will lead to gradual loss of intertidal area. This may in turn lead to long-term net loss of beach material and a lowering of the beach as more and more impacts are felt by the structures at the rear of the beach (see inset photo, right), leading to further scouring and sand loss.

There may also be long term risk to properties located close to the cliff edge immediately above the beach as there is some undercutting of the cliffs in that area. There is little scope for any realignment within the cove as the steeply rising topography prevents any roll-back. Only around 20% of the shoreline is actually defended, with the remainder of the shoreline in the cove constrained by the cliffs. At some stage in the future, dependent upon the magnitude of sea level rise which is experienced, the development closest to the beach may become at too much risk and then it may be



desirable to return the cove to as natural a state as possible. However there would seem to be little to be gained from trying to do this in the short term as the benefits to natural processes would be limited and there would be more detriment than benefit to the local community, through loss of community assets. However given the overriding importance of maintaining a healthy beach at Trevaunance Cove, it would be prudent to monitor beach levels closely. Anecdotal evidence suggests that historically beach levels were much higher than they are presently. It is recommended that the beach is monitored on a routine basis as part of the South West Regional Coastal Monitoring Programme – it currently does not form part of the programme.



As Droskyn Point is passed in a north-easterly direction, the hard resistant cliffs of the open coast give way to the lower, softer topography of Perranporth and Perran Beach. Beachfront development in **Perranporth** is at increasing flood and erosion risk from rising sea levels and increased storminess. Recent storms in March 2008 caused extensive overtopping and wave inundation, flooding a number of beachfront and town centre properties. The likely extent of flooding during a 1:200 year event in 2105 is indicated in the inset map, left. The main flood risk areas correspond closely to the routes and beach discharge points of the Perran Stream and Bolingey River which both run through Perranporth and discharge directly on to the beach. However it is important to note that the 2105 flood extent is based only on still water projections

using sea level rise estimates. At Perranporth the main mechanism of flooding is wave driven overtopping of defences and wave driven surge up the channels of the Bolingey River and Perran Stream. Therefore the likely flood extent during a 1:200 year event in 2105 is likely to be greatly in excess of that indicated in the mapping.

Holding the line long term may seem appropriate given the high amenity usage of the frontage, but such an approach will constrain the natural response of the beach and will encourage coastal squeeze. It also does not provide an answer to the flood risk which is overwhelmingly driven by wave height, period and direction, together with tide and local wind directions and velocities. Tide levels in isolation do not cause flooding – high tides merely make it more likely that a coincident stormy wave climate will be able to do so. Car parking, roads and stream channelization configuration enhances the flood risk during storms and overtopping and wave run-up events.

The preferred plan is to allow adaption of the frontage to occur in the medium to longer term through a policy of managed realignment, following an initial period of HTL during epoch 1. Although the SMP cannot dictate exactly where the current shoreline should be realigned to, the recommendation is based on MR providing a better basis with which to manage the significant future risks, and in preference to long-term HTL which is seen as inflexible, or NAI which is rejected as not suitable. The low, stream valley nature of the frontage also dictates its vulnerability to erosion; again managed realignment will provide the most flexible basis for managing this risk.

An important aspect of moving toward a more sustainable shoreline position at Perranporth will be to manage the present day development pressures which exist along the frontage, particularly adjacent to the main Beach Road car park. Land Use Planners must be guided to avoid further unsuitable development in this area as it will be



Perran Bay

increasingly at risk in the future and will need to be considered spatially as part of any realignment strategy beyond 2025. It is likely that Perranporth needs to be considered as a Coastal Change Management Area due to the likely impacts on community infrastructure in the longer term.

Dunes along rear of **Perran Beach** are likely to respond to sea level rise by naturally rolling back (see inset map, right). Contemporary sources of sediment, may, as seen elsewhere on the north coast, provide some offset to sea level rise if enough new sediment is available to accumulate on the beach and dunes. There is also an enormous amount of sediment locked up in the dune system itself and this would become released to the beach and nearshore zone as landward recession occurs. The preferred plan would be to manage the frontage under a policy of managed realignment, through all three epochs. The Cornwall Sand Dune and Beach Management Strategy (Halcrow, 2008) identifies that a number of



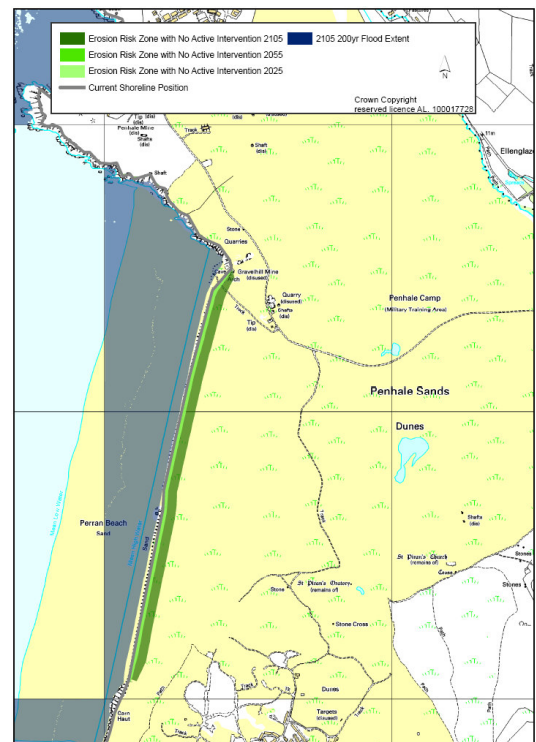
management measures, including scraping of dune slacks, controlled grazing, fencing and planting are already employed along this frontage.

Managed realignment will accommodate the natural variability of this area and would allow priority to be given to enhancement of the natural dune system as a UK priority BAP Habitat. Funding may be available to assist with those management measures already identified by the Cornwall Sand Dune and Beach Management Strategy. Demonstrating that Government outcome measures will be met through enhancement of UK BAP habitat would help secure such funding.

Managed realignment will also support local management (sand movement and maintaining protective berms) of the Surf Life Saving Club and Watering Hole restaurant/bar frontages to manage flood risk in the short term. This is unlikely to be technically feasible beyond epoch 1 and must not include attempts to establish any hard defences (hence there is no support for a hold the line policy along this frontage). If deemed appropriate to local objectives, the current beach development could be relocated, still within easy access of the beach but out of the risk zone during epoch 2 / 3. This must not however encroach upon or cause any disturbance to the Penhale Dunes SAC and SSSI which sits behind this frontage.

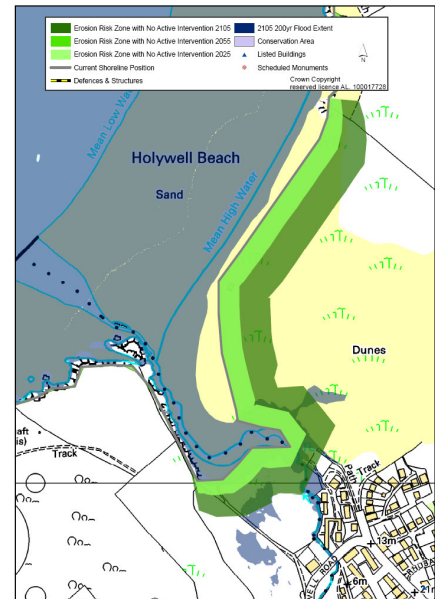
The preferred plan at **Penhale** is that this very large natural dune area should be managed under a policy of managed realignment through all three epochs. Managed realignment will accommodate the natural variability of this area and would allow priority to be given to enhancement of the natural dune system as a UK priority BAP Habitat. Funding may be available to assist with management of the frontage by demonstrating that Government outcome measures will be met through enhancement of BAP habitat.

A large part of the northern Penhale Dunes site is owned by the MOD and is used for training purposes, with restricted public access. The remainder of the dunes are managed by Cornwall Council and the Perran Sands Holiday Park. The Cornwall Sand Dune and Beach Management Strategy (Halcrow, 2008) identifies that a number of management measures, including scraping of dune slacks, controlled grazing, fencing and planting are already employed at Penhale Dunes outside of the MOD site. These efforts sit in line with the objectives and citations of the Penhale Dunes SAC and SSSI designations. As with Perran Beach to the south, the dunes are likely to respond to sea level rise by naturally rolling back but contemporary sources of sediment may provide some offset to sea level rise if enough new sediment is available to accumulate on the beach and dunes and again, there is a vast quantity of sediment locked up in the dunes which will be made available to the beach and nearshore zone as and when recession of the front dune line occurs.



There are a number of archaeological sites within the dunes that are of considerable cultural significance to Cornwall, including St Piran's Oratory and related finds. The majority of these should not be at risk, with perhaps two historic findspots on the foreshore and foredunes lost due to erosion.

Even if the significant recession expected at **Holywell Bay** reaches its possible maximum extent of 95m by 2105, no assets are anticipated to be at risk (inset map, left). The dune system directly to the north of the Holywell Bay Settlement is effectively a fragmented part of the much larger Penhale Dune system (although it is not covered by the SAC designation) and as such there are process links and it is preferred to manage this frontage under managed realignment as part of the Penhale policy unit. The very significant tourism and amenity value of the beach and dunes to the local economy should be protected by adopting a managed realignment approach, whereby the beach and dunes are allowed to respond naturally to climate change impacts. These will most effectively minimise the loss of intertidal area and beach width, even if some net loss of the overall dune area is experienced. If the dunes are allowed to roll back to the north and east of Holywell Bay then this loss of dune area will also be minimised.



The high level economic appraisal for Management Area 30 provides a robust benefit / cost ratio of 4.25 (refer to Economics Appraisal Summary Table below and Appendix H) indicates support for the preferred plan (for propose managed realignment in longer term) however the cost of maintaining structures under hold the line during epoch 1 at Perranporth needs further investigation due to the wave dominated nature of the frontage. The assessment also provides benefits only on the basis of still water flooding; again this doesn't reflect the true situation at Perranporth and would require further study.

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

Location reference:	St Agnes Head to Pentire Point West
Management Area reference:	MA30
Policy Development Zone:	PDZ11

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day (0-20 years)	NAI along undefended cliffs. NAI/HTL at Trevaunance Cove. HTL at Perranporth. MR along Perran Beach. MR along Penhale to Holywell frontage.
Medium term (20-50 years)	NAI along undefended cliffs. NAI/HTL at Trevaunance Cove. MR at Perranporth. NAI/MR along Perran Beach. NAI along Penhale to Holywell frontage.
Long term (50 -100 years)	NAI along undefended cliffs. NAI/MR at Trevaunance Cove. MR at Perranporth. MR along Perran Beach. MR along Penhale to Holywell frontage.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		SMP1 Policy 50 yrs	SMP2 Policy Plan			Rationale
			2025	2055	2105	
30.1	Undefended cliffs	Do Nothing	NAI	NAI	NAI	Will meet high level objectives and satisfy AONB and heritage coast criteria
30.2	Trevaunance Cove	Hold the line	NAI (with localised HTL)	NAI (with localised HTL)	NAI/MR	Coastal squeeze due to natural constraint from hard geology and rapidly rising topography. Adaptation of this frontage will be necessary in the medium to longer term.
30.3	Perranporth	Hold the line	HTL	MR	MR	Beachfront development at increasing flood and erosion risk from rising sea levels and increased storminess. Some adaption of the frontage to better manage future risk is required.
30.4	Perran Beach	Hold the line	MR	MR	MR	. A managed realignment approach is preferred to accommodate the natural variability of this area. This would allow priority to be given to enhancement of the natural dune system as a UK priority BAP Habitat
30.5	Penhale and Holywell Bay	Do Nothing	MR	MR	MR	A managed realignment approach is preferred to accommodate the natural variability of this area. This would allow priority to be given to enhancement of the natural dune system as a UK priority BAP Habitat
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment						

ENVIRONMENTAL ASSESSMENT

Strategic Environmental Assessment (SEA):

Between St Agnes Head to Pentire Point West the long-term policy is NAI across the undefended cliffs and a policy of MR which will provide continued protection to the settlements of Perranporth, Perran Beach and Penhale to Holywell frontage. The policy will also ensure no detrimental effects within the Trevaunance Cove, Cligga Head and Penhale Dunes SSSIs.

The policy of NAI will however potentially impact upon the integrity of the following key historic sites: St Piran's Oratory and associated early medieval cemetery (SM); Medieval Holly Well north east of Holywell Beach (SM); Prehistoric cliff castles on Kelsey Head and west of Porth Joke (SM); and Cliff castle on Penhale Point (SM). Monitoring should be undertaken.

Appropriate Assessment (AA):

HTL is proposed for selected areas Trevaunance Cove in Epochs 1 and 2 followed by MR, and HTL in Epoch 1 followed by MR is proposed at Portreath Beach and Perranporth, whilst HTL in Epoch 1 followed HTL/MR at Portreath, and MR is proposed in Epochs 2 and 3 for selected areas at Perran Beach. These policy locations are at least 3.5km from the nearest Natura 2000 Site with the exception of Perranporth, which is located 150m away from Penhale Dunes SAC Site boundary. No direct or indirect effects are expected given the distances combined with the localised nature of any hydrodynamic effects.

IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics Summary		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages (£k PV)	244.3	68.3	545.9	858.5
	Preferred Plan Damages (£k PV)	0.0	1.0	78.1	79.2
	Benefits of preferred plan (£k PV)	244.3	67.3	467.7	779.3
	Costs of Implementing plan £k PV	169	9	6	183
				Benefit/Cost ratio of preferred plan	4.25

Notes

Although robust B/C ratio, only costs have been allowed for MR as process largely likely to be simply managed. Impact of wave dominated flood events requires further investigation