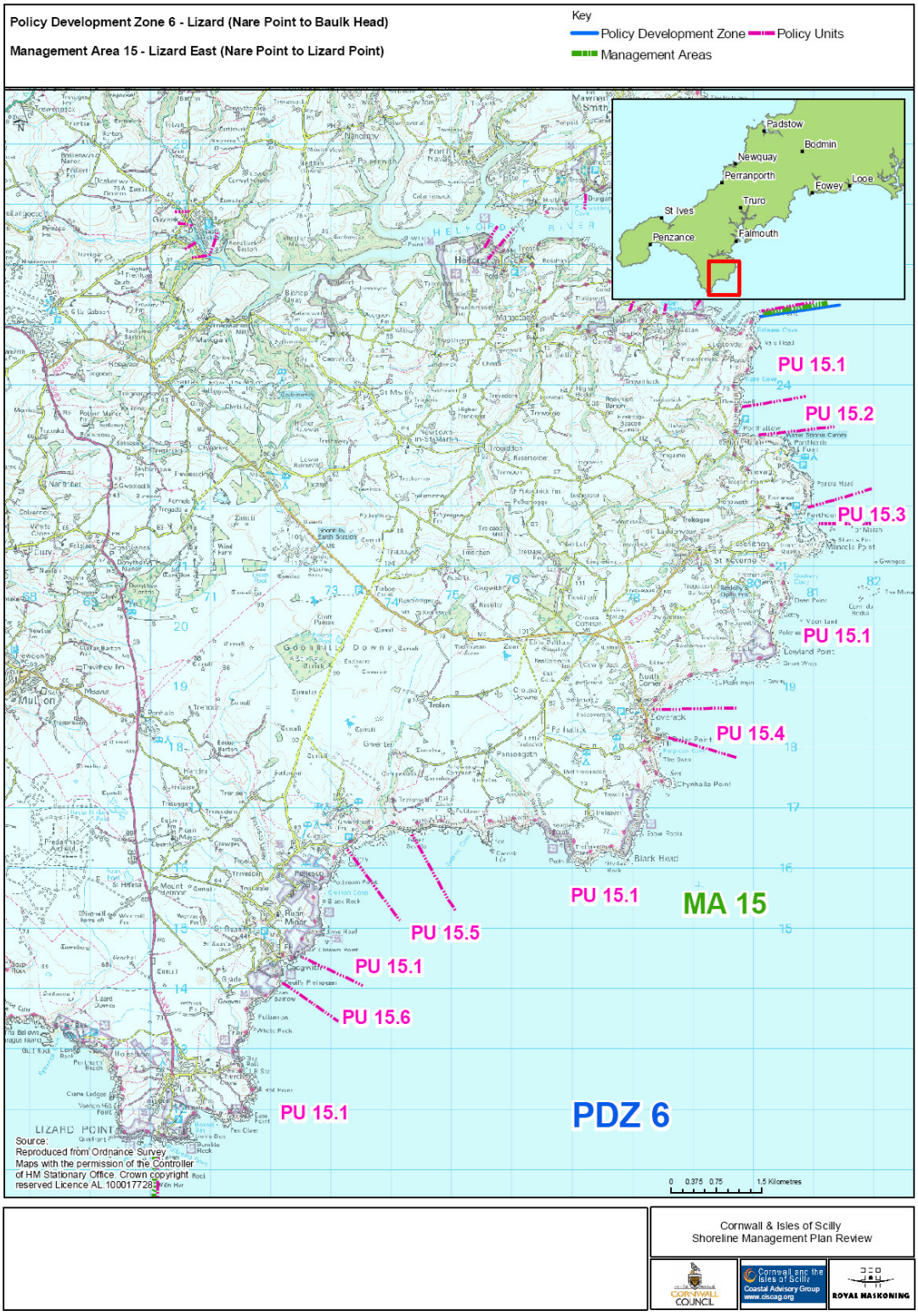
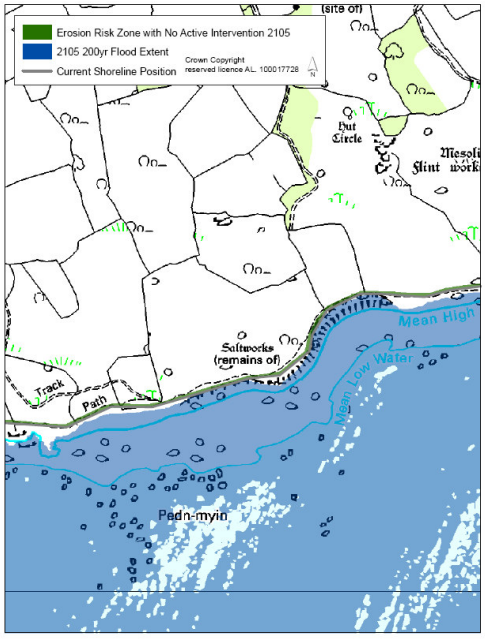
Location reference:	**Lizard West (Nare Point to Lizard Point)**
Management Area reference:	**MA15**
Policy Development Zone:	PDZ6

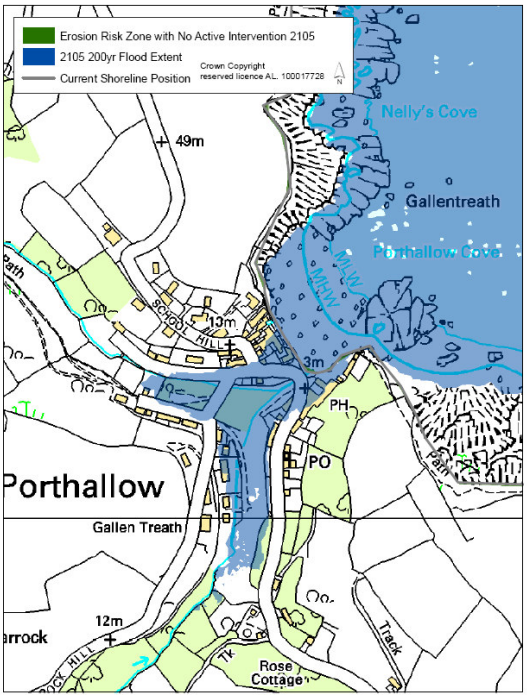


DISCUSSION AND DETAILED POLICY DEVELOPMENT



The dominant nature of this coastline is hard resistant cliffs with discrete coves and beaches. The present form of the celebrated coast of the Lizard has been shaped by the natural coastal processes and the management intention is to allow this to continue for all of the undefended coastline. No active intervention therefore is preferred on an ongoing basis for the whole of PU 15.1. With very minimal erosion expected along the length of the frontage in MA15, NAI satisfies the objectives associated with the Lizard SAC, the Lizard National Nature Reserve, the range of SSSIs and BAP Priority habitat present, as well as AONB and Heritage coast landscape designations. The policy should not present a risk to the SW Coast Path. At Trebarveth, just south-west of Lowland Point, there are important Roman Saltworks located at the shoreline (inset map, right). The maximum likely erosion by 2105 is indicated to be around 6 metres, but could be significantly less than this. The monitoring of cliff recession through use of aerial photography and Lidar would assist in reviewing this policy in the short term.

It has been identified that Dean Quarry, which lies on the coast 1.5km to the south-east of St Keverne, may have been earmarked for a renewal of quarrying activity. This could include re-commissioning of jetty and quay structures at the shoreline, just to the south-west of Dean Point. Although there is no intent to manage this section of frontage under any policy other than NAI at present, this possibility should be acknowledged environmental and physical impacts of potential operations would need to be assessed in more detail.



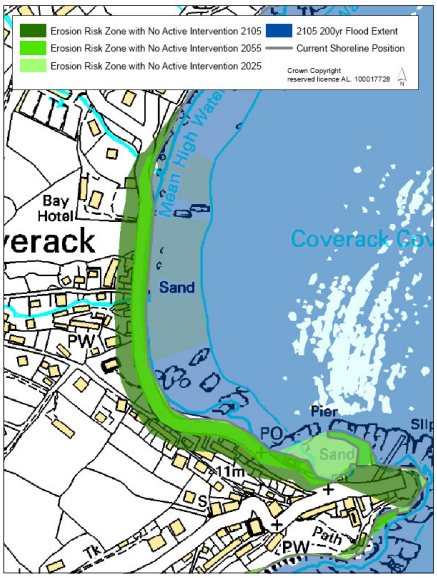
It is envisaged that the non-interventional policy approach continues to include the funding of a strategic coastal monitoring programme, in order to inform future SMP reviews and local strategies and studies.

Moving due south from the Helford, the first settlement reached at the coast is **Porthallow**. Although a very sheltered beach and frontage, Porthallow is significantly constrained by development

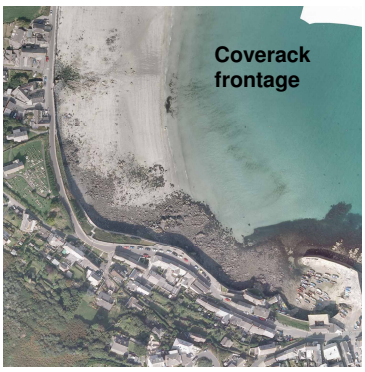
which means some loss of intertidal width is possible. Monitoring of the beach levels should help to inform future reviews of policy at this location. There is also a significant flood risk extent associated with the 0.5% tidal flooding event in 2105 (see inset map, above), with local roads extensively affected (although comparatively few properties should be affected). With negligible erosion of the shoreline predicted by 2105 under the NAI scenario and around 55m of upper beach beyond the mean high water mark, coastal squeeze pressures should be fairly low.

The existing defences at Porthallow (EA managed embankments) are not required as coast protection but they play a role in flood defence. However there is no continuous linear defence of this frontage, with large gaps in the existing structures, therefore with an effective flood warning system in place, Porthallow may realistically be managed under a MR policy during epochs 2 and 3, increasing the sustainability and resilience of the community to the increasing flood risks. This would not necessarily preclude local maintenance of rear-of-beach structures for health and safety reasons if it could be shown they did not unduly compromise the beach processes. It is suggested that a continued HTL policy be retained in place during epoch 1, followed by MR in epochs 2 and 3, however this should be supported by more detailed appraisal of the existing embankment structures.

Porthoustock is another sheltered east facing location. The limited residential development of this small settlement is not indicated to be at any significant risk from erosion or flooding. There are no designated defences at Porthoustock, although there is a jetty structure present on the southerly end of the beach (inset photo, above), constructed to serve the large quarry (and Dean Quarry, mentioned above, further to the south). Therefore the preferred plan at Porthoustock would be to continue with the non-interventional policy recommended in SMP1. This would not preclude the privately funded maintenance of the jetty.



The assessment of erosion risks has identified that potentially there could be substantial erosion risk and loss of assets at **Coverack** under a no active intervention policy (inset map, left). Immediate response to this risk might be to advocate a long term hold the line policy, but long term sustainability of the current shoreline position at Coverack is difficult to determine. The road (and the shoreline defences immediately seaward of it) effectively delimit (and constrain) the high water position (see inset photos, right and below).



This lack of width between MHW and structures dictates that the pressures on existing defences will only increase, a coastal squeeze situation, with what could be rapid denuding of the foreshore sediments and loss of the intertidal area. Although the sheltered east facing nature of the frontage means response to the westerly wave climate is limited, the less frequent storms from the east and south-east can be highly energetic with damaging short period storm waves typically associated with an easterly short-fetch event.

This includes impacts on the shoreline road by 2055 and an additional 20+ properties, several of which are listed, by 2105. The listed quay structure (see inset photo, left) is also at risk. These combined assets make up a significant part of the Coverack conservation area.

There is a high geological interest factor in this frontage; the Geological Conservation Review describes Coverack in terms of being nationally, if not internationally important for its geological exposures. The Coverack Cove to Dolor Point SSSI is cited for these geological interests. A key objective at Coverack therefore, is to identify opportunities for restoration of geological exposures, however this must be finely balanced with the other key objective of maintaining the village infrastructure and ensuring SMP policy does not result in disconnection within the settlement.

However an extremely important aspect of ascertaining the longer term sustainability of the Coverack frontage is understanding the position of the relict cliff line (in other words the hard geology) and where it sits in relation to the road and the existing sea walls (see inset photo, left). If the cliff line is sitting close behind the existing defence line, it may be more technically viable to continue with a hold the line approach into the longer term.

If on the other hand, it sits further back and the seawalls have many metres of soft head material behind them, the technical viability of long-term hold the line is much more difficult to justify. In this case, some form of managed realignment looks to be the more favourable option.

The natural resistance to erosion that the cliff line will offer will therefore be an integral

element of future management or potential adaptation of the frontage. As the actual relict cliff position is not known to this SMP review, it is not possible to identify the preferred policy with certainty beyond epoch 1. A principal recommendation will be to undertake a geotechnical study along the frontage within the next 0-5 years in order to inform SMP3 and any future strategy at Coverack.

The preferred plan for Coverack at present therefore would be to firmly continue with a hold the line policy during epoch 1, and then in theory continue to hold the line in epochs 2 and 3 – however this would be conditional upon the findings of the geotechnical investigations. Dependent on the outcomes of this study, the SMP3 review may judge that it is more appropriate to move to managed realignment in the medium to longer term but at present hold the line remains the default policy through all three epochs. The economic assessment provided a high level benefit / cost ratio of 1.60 for Management area 15, which supports the initial hold the line approach at Coverack.

It should be acknowledged that even if it is technically sustainable to hold the line based on the position of the hard geology, rising sea levels may still create a situation where coastal squeeze occurs. Therefore some erosion and loss of foreshore may be anticipated but this would then be occurring partly due to constraint by the natural geology and topography rather than attributed simply to the presence of man-made defences.

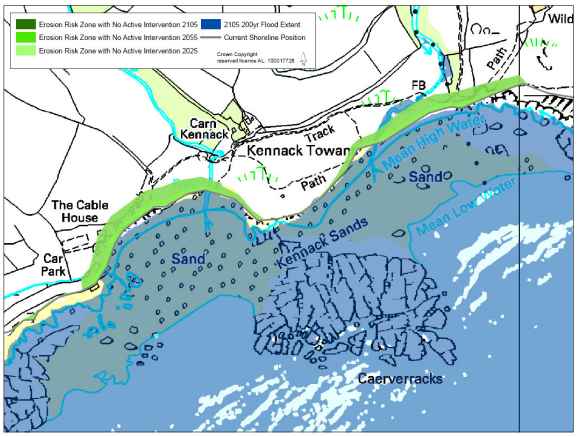
It should also be noted that there are already known problems with the defences at the northern end of the frontage (photo, right) and there is erosion occurring along the cliff line at Dolor Point, adjacent to the car park. Delaying a pro-active response until beyond 2025 may be very detrimental to the longer-term establishment of a sustainable and resilient shoreline position. Epoch 1 should be used to obtain the information required in order to make the correct long term planning decisions at Coverack

Coverack Cove (north end)

There are potential implications for the Coverack Cove to Dolor Point SSSI and the Kennack to Coverack SSSI based on a hold the line approach through out the three epochs. Depending on how implemented, potential managed realignment in epochs 2 and 3 could also have implications.

A geotechnical survey to establish the position of the cliff line will therefore be an important first step in considering the risks at Coverack for subsequent iterations of the SMP (see Chapter 6 – Action Plan).

Some 7km along the coast from Coverack is **Kennack Sands.** The frontage comprises two beaches which are split in the middle by Carn Kennack (a small hill) and a shore side rock feature called Caerverracks. The more easterly beach is designated as a local nature reserve, and the whole frontage is covered by both the Lizard SAC designation and the Kennack to Coverack SSSI designation.

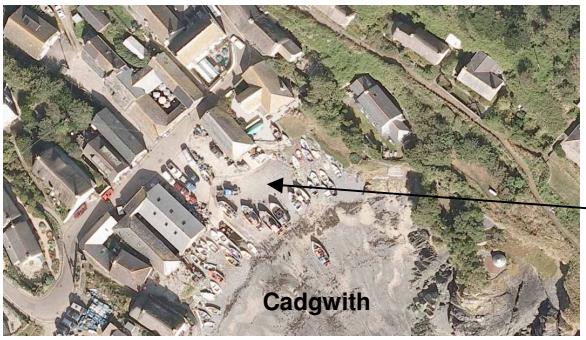


SMP1 identified a policy of long term retreat at the west beach, long term hold the existing line of defences fronting the development, short term monitoring along cliff top further east and possible long term relocation of access road. Although there is no settlement at Kennack, there are important historical and archaeological interests, mainly connected to the areas role during WWII. In 1914 the 100 ton French Normand of Nantes ran aground at Kennack and the remains of this and other protected wrecks can be seen from Kennack Sands on especially low tides.

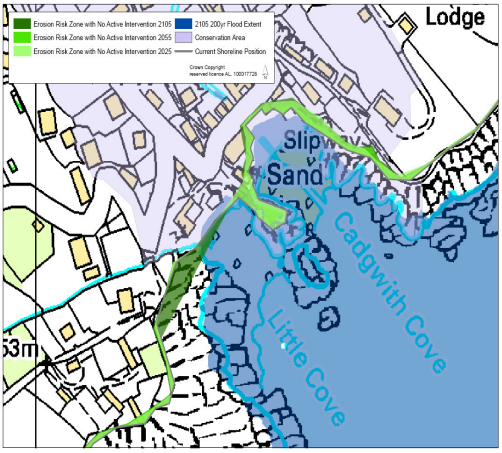
There are defences along the rear of the beaches –these started life as anti-tank walls during WWII but have been rebuilt in recent years and are fronted by rock armour. The Pill Boxes and Cable House are further aspects of the WWII heritage at Kennack. The assessment of erosion risks has identified a possible landward movement of the shoreline by up to 25-30m under a no active intervention scenario. Given the considerable historic interest, moving to a complete no active intervention policy may not be appropriate, but
neither is continued holding of the present defences seen as environmentally desirable or sustainable (and probably not economically sustainable). Therefore the preferred plan would be to manage Kennack under a continuous policy of managed realignment which would allow for selective maintenance and adjustment of the defensive line, with the aim of meeting local objectives for the historic interests, without unduly preventing natural processes and meeting the wider objectives relating to the SAC, SSSI, AONB and Heritage Coast.

Cadgwith is the last settlement with a coastal frontage before reaching Lizard Point. It is a historic settlement, with many listed buildings located within the wider conservation area which covers the whole settlement (inset map, right). The indicated risks at Cadgwith are limited to a small amount of landward retreat, perhaps up to 5m by 2105, of the shoreline under a no active intervention scenario. There are discrete lengths of coast protection structures above mean high water. There is historic evidence of some flood risk, but this is likely to be due to wave run-up effecting the shoreline properties which are clustered close to the mean high water mark (see inset photo below) rather

than still water levels, as the mapping indicates no risk, as does the EA flood mapping of flood zones 1 and 2.



The preferred plan at Cadgwith would



be to maintain the current defences at reasonable cost under a hold the line policy without aiming to improve the level of protection they afford in the longer term and accepting that some limited increase in flood risk due to wave run-up is likely to occur through the next 100 years. HTL is felt to be reasonable as the shoreline position appears sustainable in its current position but Land use planners should consider waterfront properties as at a high risk of flooding from wave action, and should seek to ensure appropriate flood resistance and resilience measures as part of any redevelopment. HTL also helps to meet local objectives to protect the core values of the area and the economic assessment provided a high level benefit / cost ratio of 1.60 for Management area 15, which supports the hold the line approach at Cadgwith.

There are however potential impacts from the preferred plan for the Kennack to Coverack SSSI and the adjacent Coverack Cove to Dolor Point SSSI from a continued HTL approach. It should be noted however that as alongshore coastal processes links and sediment accumulations are minimal along this part of the coast and any impacts would be very localised and unlikely to be measureable.

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION PLAN:

Location reference:	**Lizard East (Nare Point to Lizard Point)**
Management Area reference:	**MA15**
Policy Development Zone:	PDZ6

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day (0-20 years)	NAI along undefended cliffs, coves and beaches. HTL at Porthallow. NAI at Porthoustock. HTL at Coverack. MR at Kennack. HTL at Cadgwith.
Medium term (20-50 years)	NAI along undefended cliffs, coves and beaches. Move to MR at Porthallow. NAI at Porthoustock. Move to MR at Coverack. MR at Kennack. HTL at Cadgwith.
Long term (50 -100 years)	NAI along undefended cliffs, coves and beaches. Continue MR at Porthallow. NAI at Porthoustock. Continue MR at Coverack. MR at Kennack. HTL at Cadgwith.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		**SMP1 Policy**	**SMP2 Policy Plan**			
		50 yrs	**2025**	**2055**	**2105**	**Comment**
15.1	Undefended cliffs and coves	Do nothing	NAI	NAI	NAI	Satisfy high level and local objectives. Meet objectives of the Lizard SAC, Monitor historic site at Trebarveth.
15.2	Porthallow	Hold the line	HTL	**MR**	**MR**	Adjust defence in epochs 2 & 3 to accommodate increasing flood risk and improve resilience of community.
15.3	Porthoustock	Do nothing	NAI	NAI	NAI	No risks to assets. Current shoreline position able to adjust.
15.4	Coverack	Hold the line	HTL	**HTL/MR**	**HTL/MR**	Significant coastal squeeze pressures exist; shoreline may be vulnerable to erosion. Cost of maintaining defences into the future may be high. Geotechnical study is required to identify position of relict hard cliff line. This will help dictate whether HTL remains viable as the default policy option in the long term or whether a move to MR is required.
15.5	Kennack Sands	Do nothing	MR	MR	MR	Introduce MR to allow selective maintenance and adjustment of defences to meet local heritage objectives without unduly preventing natural processes.
15.6	Cadgwith	Hold the line	HTL	HTL	HTL	Current shoreline position appears sustainable under the WPM scenario. Limited maintenance costs to defence. Accept some increase in wave related flood risk.
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 Nare Point to Lizard Point is for NAI across the undefended sections of the coastline with HTL and MR used selectively at settlements to maintain current standards of defence. The NAI policy will allow natural processes to prevail benefiting the geological and biodiversity interests along the coastline including various RIGS, Fal & Helford SAC, The Lizard SAC, Coverack to Porthoustock SSSI, Lower Fal & Helford Intertidal SSSI, Meneage Coastal Section SSSI, lowland heathland and fen BAP priority habitats and the Cornwall AONB. The HTL and MR policies will continue to provide protection to settlements along with the policy of NAI in response to limited coastline erosion over the next 100 years. In addition the intervention policies will also provide protection of various key Listed Buildings. However, the policy of HTL and MR will potentially impact upon the environment reducing essential natural processes vital for the integrity of geological and biodiversity interests, while the policy of NAI will impact upon the following key heritage sites and Listed Buildings: Cliff castle - Chynalls Point (SM); Settlement sites 500yds (460m) SSE of Trebarveth (SM); Marconi Memorial (LB); Winnianton Farmhouse (LB); Harbour Cottage (LB); Winch House (LB); Harbour Walls (LB); Stile and Gate-Piers (LB); and Headstone at Approximately 10m East of Church (LB). Monitoring should be undertaken.
Habitat Regulations Assessment (HRA):
HTL for all Epochs is proposed at Cadgwith, whilst HTL in the first Epoch followed by MR is proposed at Porthallow and Coverack, and MR is proposed at Kennack and Jangye-ryn. These policy locations are an extensive distance (at least 3.5km) from all Sites with the exception of the Lizard SAC. HTL policy occurs either outside the Site boundary, with the exception of Cadgwith, however, this policy location does not support any primary qualifying habitat features nor are any direct or indirect effects on Site features expected. MR policy at Kennack and Jangye-Ryn has the potential to adversely effect heathland habitat (a Site feature), however, clarification of preventative and mitigation measures has resulted in a finding of no adverse effect on integrity of the Site's qualifying features. These preventative and mitigation measures must be included in the SMP plan.

IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics Summary		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages (£k PV)	84.6	748.7	337.1	1170.4
	Preferred Plan Damages (£k PV)	0.0	0.0	0.0	0.0
	Benefits of preferred plan (£k PV)	84.6	748.7	337.1	1170.4
	Costs of Implementing plan £k PV	608	84	40	732
			Benefit/Cost ratio of preferred plan		1.60

Notes

High initial costs in HTL for the many small coves, but this is offset by the reduced damages that are subsequently experienced