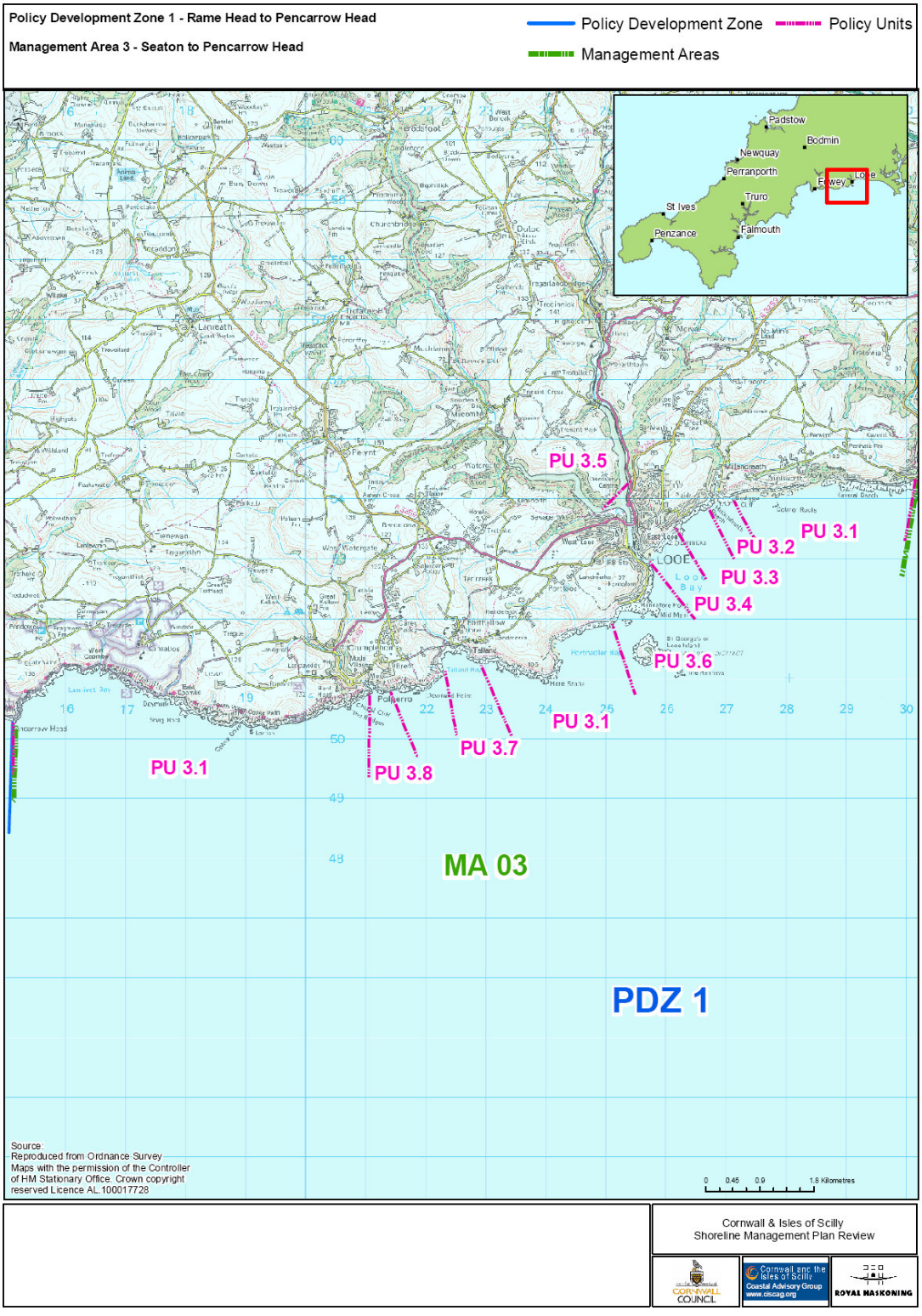
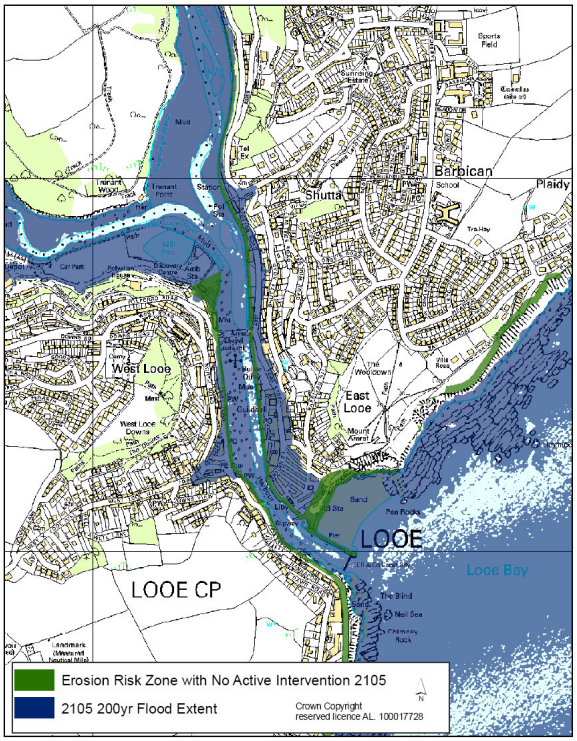
Location reference:	**Seaton to Pencarrow Head**
Management Area reference:	**MA03**
Policy Development Zone:	PDZ1



DISCUSSION AND DETAILED POLICY DEVELOPMENT

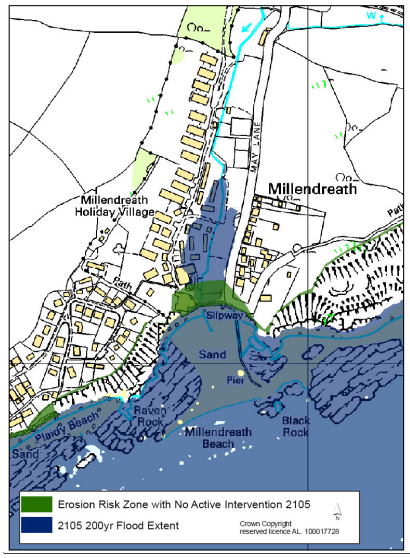
The majority of this management area is dominated by undefended resistant rock cliffs and rocky shore platforms. The intention of the preferred plan is to continue to manage these Heritage Coast and AONB designated areas by no active intervention (other than continued monitoring). Meeting the objectives relating to the naturally evolving coastline and its designations are key.



However the area also includes a number of linked coastal settlements located along the coastline at Millendreath, Plaidy, East and West Looe and Hannafore. To the west, Talland Bay and Polperro are located discretely in small coves.

The preferred plan for the settlements within this management area centres on managing the very significant flood risk at East and West Looe, along with the lesser flood and erosion risks which exist for Millendreath, Plaidy and Hannafore. Polperro and Talland.

To provide flood risk management which sustains the commercial viability of the fishing fleet and quays, the tourism interests of East and West Looe, the conservation area of East and West Looe and the many Listed Buildings and Scheduled Monuments, including listed quays and harbours at Polperro, lying within the flood risk area is important. To the west of Looe, the objectives relating to the AONB and Heritage Coast designations should be met by the continued approach of no active intervention. To the east of Millendreath, the undeveloped coastline should continue to be managed under no active intervention.

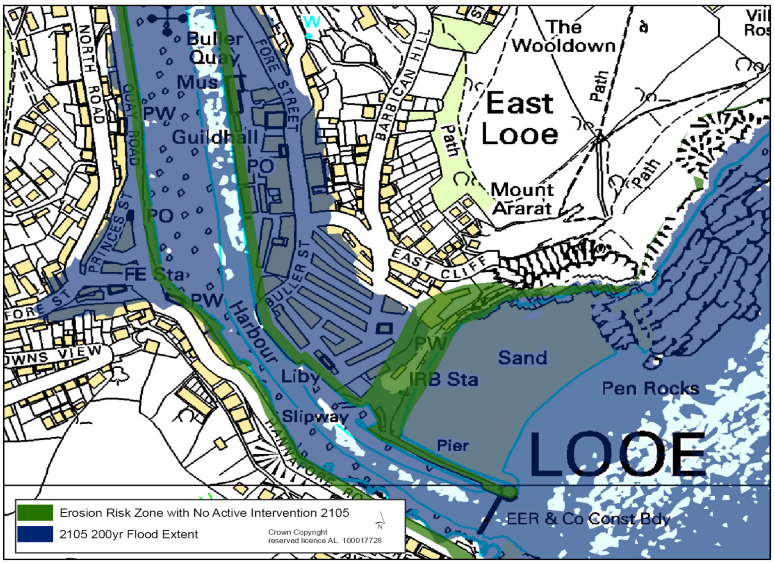


Localised erosion risk at the rear of **Millendreath** Beach exists if defences are not maintained. The privately maintained defences here are associated primarily with the slipway and access to the beach. Flood risk also exists along a narrow area behind the defences. The existing SMP1 policy is to hold the line; the intention is to manage the flood risk through flood warning services but to effectively undertake no active intervention for the structures. This would not preclude the privately funded upkeep of the defences and slipway, as their local values are recognised, however the slipway has not been raised as an issue by stakeholders.

Cornwall Council maintained revetment structures are in place in front of the cliff line at **Plaidy** although little erosion risk is indicated under a no active intervention approach. It is suggested that a hold the line policy is maintained in this area for epoch 1 (during which monitoring and further study can assist in identifying if there are indeed any more complex issues). Following this, a no active intervention approach could be adopted in epochs 2 and 3.

Localised management intervention to combat the risk of sea level rise and storm surge combined with the low quay heights could be undertaken at **East and West Looe** without impacts occurring to the adjacent sections of coast to the east or west due to the general lack of alongshore connectivity of sediment transport.

The level of risk at Looe is considerable with over 300 commercial and residential properties at risk (see inset map to right). Much of the area at risk is a Conservation Area and there are many listed buildings present. The quay structures themselves are also listed.



The nature of flooding at Looe, which aside from quay overtopping includes quay wall permeability, drainage back-up and possible wave overtopping in extreme storm conditions, dictates that possible technical solutions to the risk are likely to be complex and any solution may need to employ a combination of measures. The East and West Looe Tidal Defences Preliminary Options Appraisal Report (Environment Agency/Mott McDonald 2001) considered the following solutions: raised walls (1.2m high); an opening tidal barrier in one of three locations and flood warning or low level defences. After consideration, the raised walls were not considered an appropriate solution due to high operational risks, high compensation costs, costs of dealing with sub-surface tidal intrusion and surface water and the extensive temporary and permanent disruption. The capital cost for these works was estimated at £7.41M.


East Looe Beach and cliffs

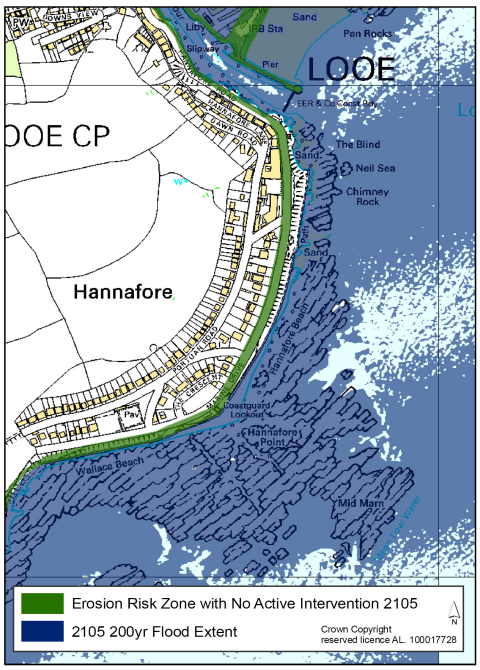
The Options Report considers an opening tidal barrier to be the most effective means of flood defence at this location and its construction would lead to only temporary disruption of people's lives. Costs associated with three

differing barrier options are likely to range between £4.81M and £5.14M. Flood warning is not considered to significantly reduce amount of damages due to the already high level of awareness regarding tides and general sea conditions which are likely to cause flooding to the town. Benefits and costs options calculated by the report indicated that none of the barrier options reached unity (and the economic analysis for MA3 indicated a B/C ration of 0.60, as presented in the Economic Summary Table below and Appendix H). Therefore a combination of private funding together with FDGiA would be likely to be required to move ahead with the preferred technical solution at Looe.

In addition to flooding, erosion of the order of 50m of the low-lying frontage could occur were coast protection structures not maintained. There are also cliff stabilisation issues. East Looe beach performs an important coast protection role and has an important interaction with the east harbour wall and has been identified as a strategic issue for this frontage. The continued health of the beach in terms of sediment volume and width is therefore a vital part of continued defence of East Looe.

East and West Looe are therefore likely to be subject to major studies and works over the period of epoch 1 which will further build on the findings of the 2001 Options Appraisal Report. A possible marina development at the Mill Pool area has been considered. It is felt that the preferred plan for East and West Looe is to hold the line through all epochs (with a possible advance of the line being available if a particular solution were to prove desirable). Holding the line is likely to be justified through meeting a number of both high level objectives and locally issue driven objectives.

The Local Development Framework should include policies to support the adaptation of Looe against rising sea levels due to climate change. This may require changes to land use type as well as improved community resistance and resilience measures, which should also be considered in any Town Strategy. Cornwall Council and the Environment Agency should, in partnership, support the CFMP action to investigate measures for reducing flood risk at Looe from tidal and surface water flooding.



Upper Estuary – The upper estuary was not considered as part of SMP1. Whilst the East and West Looe Rivers are both steep sided in their low reaches, with subsequent zero flood risk, the more upper reaches of the tidally influenced rivers are more at risk from flooding beyond the mean high water mark. Some local road infrastructure and residential housing is at risk under the 1:200 year flood scenario in 2105 at Sandplace and Tregarland Bridge on the East Looe River. Environmental opportunities may exist in the upper reaches of both East and West Looe Rivers. Railway and communication lines hold historic value within this area and some listed lock structures exist. There are also a number of undesignated historic features. It

is intended that the upper estuary be managed under a no active intervention policy.

At **Hannafore Point** the baseline scenario testing shows that the current defences may be at risk in the medium to longer term (see inset map above). This in turn would impact on Marine Drive and the route of the South West Coast Path over the three epochs. Whilst not strategic, the loss of Marine Drive would slightly increase the much longer term risks to around 30 residential homes. This particular section of the coast path is also important, with access afforded to the shore and wave cut platforms of Hannafore and providing views back down to Looe, across to Rame Head, and more locally, St Georges Island. It is proposed that in the short term hold the line is employed and erosion and sea level rise trends are monitored and the pressure on the defences reviewed in detail as a result. This would determine the scale of any necessary managed realignment in epoch 2, which may require either narrowing of the defence structures and Marine Drive, or if more significant pressures are demonstrated, a future need to re-route access to Hannafore by an alternative inland route. The position of harder geology behind the current defences will also help to dictate how the frontage needs to be managed and realigned. In the much longer term the intent would be to return the coastline to a naturally functioning frontage under a no active intervention approach.

SMP1 established a hold the line policy in place for **Talland**. The mapping of erosion risk has indicated that there is little risk at Talland Bay other than small-scale erosion. No infrastructure or property is at risk and there are no Council or Environment Agency maintained structures. The preferred plan here is to undertake no active intervention from epoch 1 onwards.

Polperro – The recent introduction of a steel tidal gate and raised defence heights at Polperro has improved the standard of flood defence provided to this small fishing village. The village and entire surrounding hinterland is a Conservation Area and there are an extremely high number of listed buildings. The harbour walls, quays and piers are listed and a submerged forest is present within the nearshore area. A continuation of the hold the line policy introduced by SMP1 is preferred here, through all epochs, due to the historic interests and in the management of the flood risks to the community. There is little scope for realignment of the shoreline and erosion risks are low due to the hard surrounding geology. The hold the line approach does not preclude the sacrifice of the Prince of Wales Pier as a planned part of the recent improvement strategy.

Other heritage interests include Palace Cove in the far west of the management area (around 1km east of Pencarrow Head) has locally important remains of a harbour and fish cellars and whilst not dictating policy, these features should be recorded before the natural erosion and weathering causes them to be lost.

There are possible environmental opportunities in the upper East and West Looe Rivers relating to enhancement of intertidal habitat areas.

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

PLAN:

Location reference:	**Seaton to Pencarrow Head**
Management Area reference:	**MA03**
Policy Development Zone:	PDZ1

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day (0-20 years)	NAI for undefended cliffs and upper rivers, Millendreath and Talland; HTL at Plaidy, Looe, Hannafore and Polperro.
Medium term (20-50 years)	NAI for undefended cliffs and upper rivers, Plaidy, Millendreath and Talland; HTL at Looe and Polperro. MR at Hannafore. Allow possible consideration of ATL at Looe to allow different technical solutions to be assessed.
Long term (50 -100 years)	NAI for undefended cliffs and upper rivers, Plaidy, Millendreath, Hannafore and Talland; HTL at Looe and Polperro.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		**Policy Plan**			
		2025	**2055**	**2105**	**Comment**
3.1	Undefended cliffs and beaches	NAI	NAI	NAI	Meets objectives of Heritage Coast, AONB and SSSI designations.
3.2	Millendreath	NAI	NAI	NAI	NAI should not constrain regeneration of area but facilitate rollback of the frontage to accommodate coastal squeeze. Continue to monitor.
3.3	Plaidy	HTL	NAI	NAI	Possible study required in Epoch 1 regarding cliff stability.
3.4	East and West Looe	HTL	HTL	HTL	Undertake further study to identify potential solutions to alleviate increasing flood risk.
3.5	Upper Estuary (East and West Looe Rivers)	NAI	NAI	NAI	Not previously considered in SMP1. Meet objectives relating to natural processes. Limited infrastructure at risk from flooding.
3.6	Hannafore	HTL	MR	NAI	Manage erosion risks through gradual adaptation from holding defences to NAI. No significant risk to properties over SMP timeframe under NAI. Monitor recession rates with regard to road access.
3.7	Talland	NAI	NAI	NAI	No intervention necessary, erosion risks are low.
3.8	Polperro	HTL	HTL	HTL	Limited scope for any realignment. Erosion risks very low due to hard geology of frontage. Recent improvements to standard of flood protection due to installation of new tide gates.

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 stretch of coastline is to ensure natural processes continue through NAI allowing such environments as fen and lowland beech & yew woodland BAP priority habitats to be maintained and continued exposure of the Portnadler Bay RIG site. This is to be undertaken in conjunction with providing for the continued protection of residential and commercial properties and assets through HTL at Looe, Hannafore and Polperro and the following key features: East Looe and Hannafore beaches; Looe Harbour, boat mooring facilities; Ambulance and police stations; Polperro fishing harbour with associated facilities; Polperro beach; and Looe Conservation Area.

The policy plan of NAI will however potentially impact upon the residential communities along the undefended cliff frontages and the following key Listed Buildings including The Studio and Quay Walls and thus monitoring should be undertaken. In addition, natural processes essential for the maintenance of the Cornwall AONB and heritage coast may be reduced under the policy of HTL.

Habitats Regulations Assessment (HRA):

HTL policies are proposed at Looe, Hannafore, and Polperro. These policy locations are an extensive distance (at least 6km) from all Sites with the exception of the Polruan to Polperro SAC. However, no HTL policy occurs within this SAC, rather HTL at Polperro would occur outside the SAC, and applies only to the existing harbour pier and walls and would not result in indirect hydrodynamic effects that would affect the Site features due to the resistant nature of the geology.

IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics Summary		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages (£k PV)	2963.6	2185.7	916.3	6065.5
	Preferred Plan Damages (£k PV)	1415.1	877.7	315.5	2608.3
	Benefits of preferred plan (£k PV)	1548.4	1308.0	600.9	3457.3
	Costs of Implementing plan £k PV	3166	1568	998	5732
			Benefit/Cost ratio of preferred plan		0.60

Notes

B/C ratio below unity as large linear lengths of defences required for future protection due to rivers and unlikely that will be more that 50% effective. Benefits assume future defences only 50% effective & economics sensitive to this number. Complex problem that will require assessment of numerous issues, not simply economics. The East and West Looe Tidal Defences Preliminary Options Appraisal Report (Environment Agency/Mott McDonald 2001) reported present values damages to be £4.63 million in 2001.