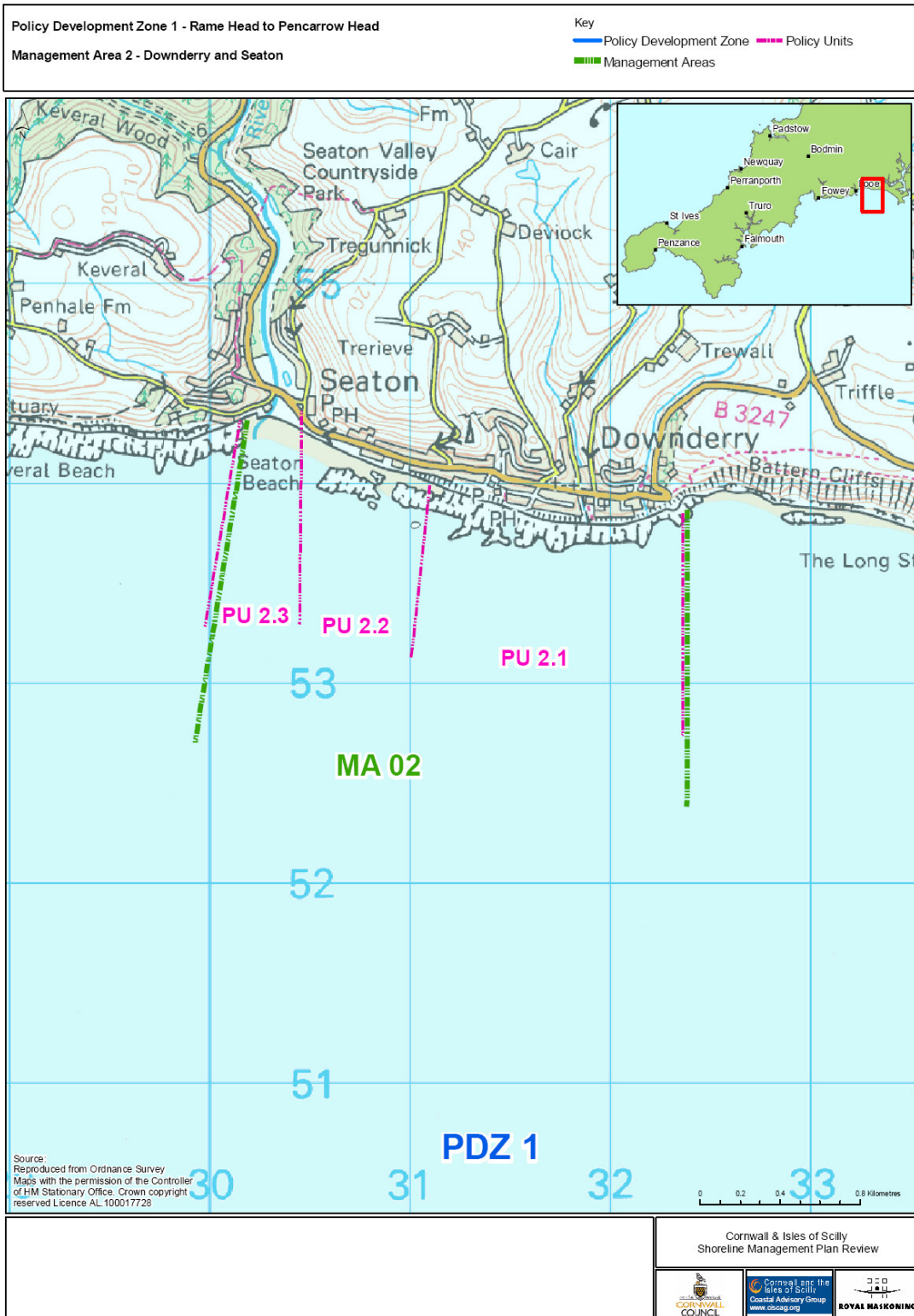


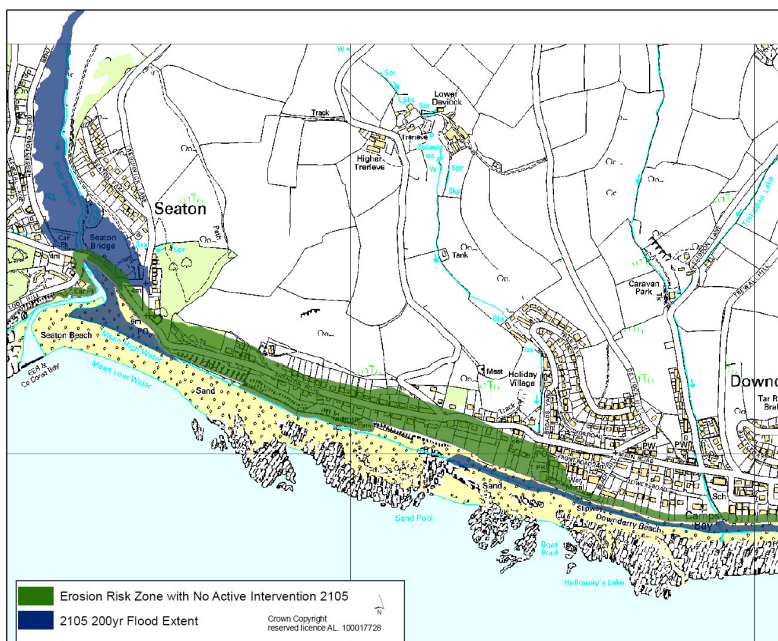
<b>Location reference:</b>	<b>Downderry and Seaton</b>
<b>Management Area reference:</b>	<b>MA02</b>
<b>Policy Development Zone:</b>	<b>PDZ1</b>



## DISCUSSION AND DETAILED POLICY DEVELOPMENT

Downderry and Seaton are very popular residential settlements which have developed in a fairly linear fashion adjacent to the cliffs along 2.5km stretch of the coastline. The Brenton Road section between the two villages is particularly linear in nature. Downderry is located on a prominent section of the coastline held forward of the coast to the east and west by a combination of the more elevated rocky shore platform and (along the Seaton Road frontage) by a rock revetment. Seaton further to the west, is defended by seawalls and is lower-lying, with the Seaton River emerging through a lower-lying valley and issuing across the beach below Looe Hill. Significant erosion risk exists to the main link road (B3247) which links Downderry with both Seaton and Looe

and this is a locally significant transport route. Over 60 residential properties are potentially at risk (many within the Brenton Road area) by 2105 under a no active intervention scenario (see inset map, left).



There are no significant historic or environmental interests or designations within this Management Area which are likely to define policy. There is however a

Regionally Important Geological Site designation at Seaton Beach. This applies to the western section which is undefended (and would remain so under continued hold the line). Therefore the built environment and local infrastructure are more influential in defining policy, at least in the short term. The high level objective to reduce reliance on defences is still considered here however and policy aims to at least move this shoreline section toward a more sustainable position.

Some key considerations for this frontage are as follows:

- The whole frontage is moderately exposed to the dominant westerly wave climate. The mean high water position is however closer to the base of the cliffs along the more westerly part of the frontage meaning the cliffs here experience more pressure from wave action than those further east.
- Futurecoast states the recession potential for the cliffs is up to 1.0m/yr
- (up to 100m over next 100 years) and the coast protection scheme information describes ongoing historical erosion rate of 0.5m/yr (50m over 100 years)

- HTL for DOWDERRY west in epoch 1 will allow the current rock armour revetment and re-curved concrete sea wall which runs to Seaton to be maintained until 2025. Assuming that well-maintained rock armour may provide 20-25 years residual life, protection would effectively be maintained for up to 40 years (2050).
- Both the council defences and private defences effectively stop the primary source of new sediment, i.e. material from the eroding cliffs, reaching the beach. This means there is no new sediment to replace that being lost due to coastal squeeze.
- Defending the cliffs and preventing erosion at DOWDERRY does affect the beach locally but does not have a knock-on effect in adjacent coastal units due to limited long-shore linkages.
- A critical aspect of managing the DOWDERRY-Seaton frontage is monitoring and survey. Of particular importance is information which will provide guidance on the following questions:
  - What are on-going rates of cliff recession.
  - How the foreshore responds (width, elevation, volume etc.) to defences being held.
  - How foreshore responds to absence of defences.
  - How does continued starvation of sediment inputs from cliff to beach affect beach levels under rising sea level scenario.
  - How are groundwater and rainfall run-off causing erosion and slope failures.

Benefit cost analysis in 2001 indicated there was no eligibility for the central and eastern parts of the frontage to have MAFF (Defra) coast protection grant, based on the then current Priority Scoring mechanism. An action line was however established as part of an agreement to provide ongoing monitoring of cliff recession rates. With Priority Scoring now effectively replaced by Outcome Measures, the sustainable development principles would support the adaptation of the DOWDERRY community to the effects of climate change but not an ongoing, inflexible, hold the line approach.

At DOWDERRY East (PU 2.1), the frontage is currently made up of a combination of undefended cliff face and private defences. The preferred policy along this frontage is no active intervention. This does not preclude the private maintenance of defences to properties, as has occurred in the past, including the gabion wall defences adjacent to the slipway and the substantial vertical masonry walls which are present immediately below the 'Inn on the Shore' (see inset photo, below). Around 10 years ago, a feasibility study was undertaken (John Grimes Partnership, 2001) looking at possible coast protection along this frontage. It concluded that there was little economic justification for publicly funded works and that the set back properties were unlikely to be at risk under current erosion rates, with only localised loss of gardens likely to occur. It also concluded that hard defences could lead to a localised reduction in beach levels. As part of this work, an 'action line' was established for the purpose of monitoring ongoing



erosion rates. When erosion reached the 'action line' the need for coast protection would then be considered urgent and would (based on criteria at the time) then probably allow grant aid to be sought. The SMP Review recognises the commitment from Cornwall Council to the ongoing monitoring of the action line and recommends this monitoring is continued, to provide an ongoing re-assurance to the community. The most recent monitoring report (John Grimes Partnership, 2006) indicated that erosion rates were generally low across the frontage, with maximum erosion of around 300mm over 5 years being recorded along the section of cliff to the west of the Inn on the Shore.

It is envisaged that economic and technical justifications exist during epoch 1 to continue to hold the line along the currently defended sections of the western Downderry frontage. This initial hold the line approach along the western part of the Downderry frontage is supported at a high level by the economic assessment for Management Area 2, which calculated a general B/C ratio of 1.62 (as presented in the Economics Summary Table below and in Appendix H).



In the medium to long-term, accelerating sea level rise, the soft nature of the cliff geology and the increasing cost to maintain defences are likely to dictate that within epoch 2 and 3, allowance for the retreat of the cliff line to a more stable, sustainable position will be required. Under the long term plan this frontage could gradually return to a more naturally functioning coastline, and utilise the accessible but higher hinterland to allow gradual adaptation of the community and infrastructure to coastal change. The intention is to hold the line during epoch 1 and to continue to monitor beach levels in front of the defences and cliff line recession to the east and west. Managed realignment is then proposed during epochs 2 and 3, in order to address potentially increasing pressure on the frontage, whilst continuing to manage the erosion risks. An improved geotechnical understanding of where the hard geological cliff line is positioned behind the head material and defences will be required as part of a managed realignment approach.

However it must be acknowledged that any restriction of movement along the rear of the upper beach, (particularly through holding the line statically) has potential implications for the beach. With rising sea levels pressure will increase against fixed defences, resulting in scour and possible erosion of the upper foreshore. The presence of the wide intertidal rock platform also dictates that this frontage may be particularly sensitive to sea level rise with a marked increase in erosion as sea levels increase and allow larger waves to attack the base of the cliff or the defence. Loss of the beach would have

serious implications for both the natural defence afforded to the cliffs and on the local economy in terms of recreational value and tourism.

Under a future managed realignment policy, Dowederry will be subject to significant coastal change. As such, the Local Development Framework should consider



identifying this as a Coastal Change Management Area, in order to facilitate roll back of property and infrastructure away from the area of erosion risk. Transport Planners should also consider options for re-routing the B3247.

There is flood risk to the road and associated infrastructure at Seaton, including car parking,

although there is little risk to property indicated. The lower-lying Seaton River valley (see inset photo below) will come under pressure as tide levels increase and the beach will tend towards moving landward and raising its crest. The constraints placed by the position of the road and retaining seawalls may lead to some beach narrowing in epoch 2. The preferred plan supports realignment of the road. Any realignment scheme should aim to reduce flood risks upstream of the road bridge by improving alignment, capacity and design. This should also provide an increased width for the beach to adjust to rising sea levels.

It is unlikely that the risk to properties alone would qualify the frontage for coast protection funding. It is likely that the importance of the highway route will need to be considered under a moderation case in order to get funding approved.

Technically, there is not seen to be any detriment to the adjacent sections of coast under a policy of holding the line, due to the very insignificant alongshore process links. There would be a local benefit to the Dowederry frontage under a managed realignment (or no active intervention) policy which allowed the introduction of eroded cliff material to the beaches and intertidal zone.

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

<b>Location reference:</b>	<b>Downderry and Seaton</b>
<b>Management Area reference:</b>	<b>MA02</b>
<b>Policy Development Zone:</b>	<b>PDZ1</b>

PREFERRED POLICY TO IMPLEMENT PLAN:	
<b>From present day (0-20 years)</b>	Manage erosion risks at Downderry west through continued coast protection, allow natural slower erosion at Downderry east of Beach Hill. Monitor erosion rates / beach levels. Initiate managed realignment at Seaton.
<b>Medium term (20-50 years)</b>	Continue NAI at Downderry east, based on monitoring. Move to MR for Downderry west. NAI at Seaton following realignment in epoch 1.
<b>Long term (50 -100 years)</b>	Continue NAI at Downderry east, based on monitoring. Continue MR for Downderry west. NAI at Seaton.

**SUMMARY OF SPECIFIC POLICIES**

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
2.1	Downderry East	NAI	NAI	NAI	Commitment from Cornwall Council to ongoing monitoring of the 'Action Line', to provide an ongoing re-assurance to the community. Most recent monitoring indicates maximum erosion of around 300mm over 5 years. Private defences have slowed down natural rates of erosion
2.2	Downderry West & Seaton	HTL	MR	MR	Initially hold defences during epoch 1, continuing SMP1 policy. Longer term objective is to allow coast to adjust in medium to longer term through managed realignment. This is a coastal change area and would require support through the land use planning system to manage the relocation of development away from the risk zone over time.
2.3	Seaton Beach	MR	NAI	NAI	The preferred plan requires commitment to early realignment of the road and promotes robust resilience to flooding. Any realignment undertaken should not reduce the capacity of the river to discharge. Return to naturally functioning frontage is long term goal.
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

ENVIRONMENTAL ASSESSMENT
<b>Strategic Environmental Assessment (SEA):</b>
For Downderry and Seaton, the policy plan of NAI will ensure geological interests are maintained through promoting natural processes essential for maintaining the condition of Regionally Important Geological and Geomorphological Sites (RIGS) such as Seaton Beach.
The policy for the frontages during epoch 1 (HTL) and 2 (MR) will ensure continued protection to both residential and commercial properties which will allow for a more natural alignment and natural defence

system reverting to the long-term policy of NAI.

**Habitats Regulations Assessment (HRA):**

HTL policies are proposed at Downderry West. These policy locations are an extensive distance (at least 6km) from all Sites.

**IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT**

Economics Summary		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages (£k PV)	0.0	544.0	1330.9	1875.0
	Preferred Plan Damages (£k PV)	0.0	136.0	332.7	468.7
	Benefits of preferred plan (£k PV)	0.0	408.0	998.2	1406.2
	Costs of Implementing plan (£k PV)	520	250	98	869
			Benefit/Cost ratio of preferred plan		1.62