

<b>PDZ: 3</b>	<b>Gribbin Head to Black Head</b>	<b>Management Area 06 Management Area 07</b>
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**Gribbin Head to Black Head**

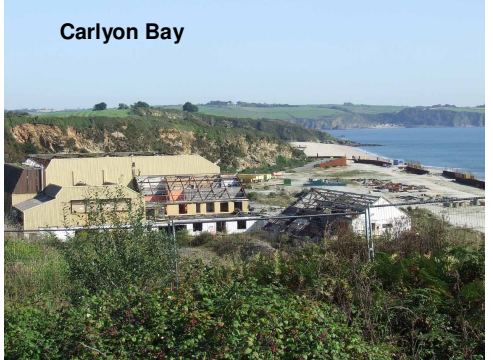


This section of coastline encompasses St Austell Bay and includes the communities of Polkerris, Par, Carlyon Bay, Charlestown, Duporth and Porthpean as well as open countryside, tourist amenities and agricultural land. The bay faces south and is a rocky embayment that is relatively protected and rich in sediment with Par Sands and Carlyon Bay relatively large sandy beaches.


**Policy Development Zone 3 - Gribbin Head to Black Head**

Key  
 Policy Development Zone



Cornwall & Isles of Scilly Shoreline Management Plan Review		
 CORNWALL COUNCIL	 Cornwall and the Isles of Scilly Coastal Advisory Group <a href="http://www.ciscag.org">www.ciscag.org</a>	 ROYAL HASKONING

<b>General Description</b>	
<b>Built Environment</b>	
<p>There are a number of fixed assets at the coast, particularly related to the major dock and harbour infrastructure at Par and the communities at Carlyon Bay, Charlestown and Duporth. There is also a harbour wall and quayside at Polkerris. There are significant works on Crinnis Beach at Carlyon Bay (see photo opposite), relating to proposed development of Crinnis and Shorthorn beaches above the current mean high water position, on the site of the now derelict Cornwall Coliseum.</p>	<p style="text-align: center;"><b>Carlyon Bay</b></p> 
<b>Heritage</b>	
<p>Historic features are present with four Scheduled Monuments in the area including a Bronze Age barrow close to Gribbin Head, and an Iron Age fort at Black Head. Also present are numerous barrows, and Par and Charlestown (photo, right) are historic china clay ports. There are also Historic Parks and Gardens at Tregrehan and a number of Conservation Areas present including Charlestown and Polkerris. Charlestown Harbour is included within the Cornwall and West Devon World Heritage Site designation.</p>	<p style="text-align: center;"><b>Charlestown Harbour</b></p> 
<b>Environment and Nature Conservation</b>	
<p>In comparison to other sections of coast there are relatively few environmental designations in this area with BAP priority habitat the only designated assets. The area however does have both Cornwall ANOB and Heritage coast landscape designations. There are also 4 Regionally Important Geological Sites in the area at Blackhead to Ropehaven, Duporth (photo, right), Carlyon Bay East and Carlyon Bay West. Par Sands represents some 10ha of active BAP dune system. This is backed by a nature reserve, area of standing water, reed beds, marshy ground, scrub, woodland, and plantation. The dunes are thought to be under pressure from the Holiday park, car park that back the dunes and from paths through the dunes</p>	<p style="text-align: center;"><b>Duporth Beach</b></p> 

<p><b>Recreation and Amenity</b></p>	
<p>Although the main area of St Austell is set back from the immediate frontage, this is a large settlement, for which the coastline serves as a significant amenity resource. The area is also popular with tourists with seven designated bathing beaches, a caravan park at Par and other tourist attractions including the historic harbour of Charlestown and the small harbour village of Polkerris (photo, right).</p>	
<p><b>Key Values and Drivers</b></p>	
<p>The key values of the area are the historic and existing interaction of the communities with the coast for economic activity and amenity value which the Heritage Coast and Cornwall ANOB landscape designations support.</p> <ul style="list-style-type: none"> <li>• St Austell conurbation</li> <li>• Historic harbour and World Heritage Site at Charlestown</li> <li>• The natural and unspoilt nature of the coast between the settlements including Heritage Coast and AONB Designations</li> </ul>	
<p><b>PDZ Management Intent</b></p>	
<p>The provision of a 'yellow lung' for the significant settlement of St Austell, and those that are situated on the immediate frontage itself, maintaining the community viability of Par through reducing flood risk and maintaining the tourism and recreation amenity value of the area including the historic harbour at Charlestown. Natural shoreline processes recognised in the RIGS designations drive the need to allow such processes to occur in St Austell Bay especially as sediment input to the beaches may decline as china clay activity decreases.</p> <p>The overarching management principle is to promote shoreline management which maintains the natural amenity value and landscape designations. This should take account of the tourist and recreational importance of the area and the need for natural evolution of the coast where possible.</p>	

Gribbin Head and Black Head are approximately 5.5 km apart. Between them the coastline encompasses St Austell Bay, an indentation approximately 3 km across (see Figure 3.5). The largest beaches are at Par Sands, Carlyon Bay (Crinnis, Shorthorn and Polgaver Beaches) and Duporth. Most of the circumference of the bay is composed of hard rocky cliffs and wave cut platforms.

**TIDE AND WATER LEVELS (mODN)**

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**Extremes(mODN)**

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This area is estimated to have an annual 10% exceedance significant wave height of 1.5 to 2 m. Par and Carlyon Bay face south and are exposed to waves from the south and south-west. The areas of Charlestown, Duporth and Porthpean are all more sheltered from the dominant Atlantic conditions. They do though have an exposure to waves and the less frequent storms from the south-east, which can be severe.

The tidal range in this area is approximately 3.4m. The residual currents driven by these tides are not thought to be significant for sediment transport.

**PROCESSES**

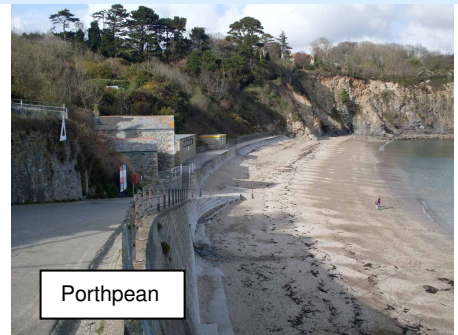
**Control Features:**

Black Head is a prominent controlling headland which effectively separates St Austell Bay from processes to the south.

Longshore sediment linkages are fairly non-existent within St Austell Bay, due to the presence of regular controlling headlands and rocky shore platforms between the beaches, combined with the relatively low energy hydrodynamic climate. Sediment is generally moved on-shore and off-shore in response to seasonal changes in the wave conditions.

**Existing Defences:**

Defences and harbour, port and quay structures exist at Polkerris (owned and maintained by Duchy of Cornwall), Par Sands (including defacto defences due to the rail link embankment) Par Docks, Charlestown (privately owned and maintained harbour structures) and seawalls at Porthpean which are owned and maintained by Cornwall Council (photo, right).



Porthpean

A Planning application for development of a large holiday apartment complex on Crinnis and Shorthorn beaches at Carlyon Bay, at the site of the now derelict Cornwall Coliseum, has led to the construction of temporary defences close to the position of mean high water, for the entire length of Crinnis Beach (see photo, right). These consist of piled steel sections fronted with ad hoc placement of rock armour.



Crinnis Beach, Carlyon Bay

**Processes:**

The principle sediment linkage within this area is one of a common source – china clay mine tailings. These have played an important role in establishing the beaches of St Austell Bay at their present day extents and elevations, particularly the beach of Par Sands, but also the beaches of Carlyon Bay, Charlestown, Duporth and Porthpean. There is also some limited sediment input due to erosion of the cliffs around Duporth and Porthpean.

Longshore sediment linkages are fairly non-existent within St Austell Bay, due to the presence of regular controlling headlands and rocky shore platforms between the beaches, combined with the relatively low energy hydrodynamic climate. Sediment is generally moved on-shore and off-shore in response to seasonal changes in the wave conditions.

Notwithstanding the relict source of sediment, the general trend within this area is one of stability on the beaches. Localised recent cliff falls have enhanced cliff recession rates at Charlestown, Duporth and Porthpean. The frontage may demonstrate some sensitivity to sea level rise, with most beaches being constrained by hard cliffs or hard defences – a situation which will increase pressure and result in coastal squeeze with a subsequent narrowing of the beach and a steepening of the beach slope. Par Sands may display more adaptability to sea level rise due to the lower-lying hinterland (i.e. it is not constrained by hard cliffs) and greater sediment accumulations, however an appropriate management scenario would be required. The eastern corner of Par Docks effectively fixes the western end of Par Sands in place and so future use or adaptation of the docks could influence the plan form and position of the beach. The recent Cornwall Sand Dune and Beach Management Strategy describes the dunes and beach at Par as likely to be able to adapt to climate change and unlikely to experience significant problems in the short to medium term.

*Unconstrained Scenario:*

Although unrealistic, because of the residual impact of defences, this scenario considers how the coast would evolve in the absence of defences.

The cessation of china clay waste dumping has removed the only significant source of sand for Par Sands and Carlyon Bay, and more importantly the source that is responsible for building them to their current size. However, there will remain small inputs from erosion of adjacent cliffs, from the rivers which discharge onto these beaches and, possibly of most importance, the offshore sand deposits. It is likely that there will be some retreat of the foreshore, however it is not considered that this will significantly alter the beach position or flooding/erosion threat of backing features. Although the dunes at Par are likely to retreat significantly over the next century due to sea level rise (potentially by as much as 100m - as indicated in the table below) their general form and stability should not be adversely affected if they are allowed to migrate naturally. The future management of the holiday park behind Par Sands will dictate the future width of the dunes as this currently occupies the area where it would be expected to see the dunes gradually migrate. Beyond 100 years the haulage road may constrain further landward movement if it were to be maintained in position. There are likely to be continued localised cliff slips and rock falls along the cliffed sections, particularly in the Charlestown, Duporth and Porthpean areas.

**POTENTIAL BASELINE EROSION RATES**

Base rates have been assessed from monitoring and historical data. The range of potential erosion is assessed in terms of variation from the base rate and sensitivity in potential sea level rise.. The base rates provided below are taken as an average based on historical records. The rates are a composite value based on erosion of the toe and recession of the crest of the cliff and reflect the erosion rates following failure of defences.

*(Sea Level Rise assumed rates: 0.06m to year 2025; 0.34m to year 2055; 0.96m to year 2105.)*

Location	Historic recession rate (lower) (m/100 yr)	Historic recession rate (upper) (m/100 yr)	Projected 100 year erosion rate (lower) (m)	Projected 100 year erosion rate (upper) (m)	Notes
Polkerris	0	10	9.5	35.8	Seawall , 5 year SoP
Par	-	0	60	100	Dunes at back of beach.
Carlyon Bay	0	0	3.7	9.3	
Charlestown	0	0.5	3.0	5.9	Cliff fronted by coastal protection wall, 100 year SoP
Lower Duporth	0	1.0	8.7	20.3	Small section of cliff, revetment and splash wall present, 100 year SoP at back of beach.

## BASELINE MANAGEMENT SCENARIOS

### PRESENT MANAGEMENT

Present Management is taken as that policy defined by SMP1, modified by subsequent strategies or studies. It should be noted that both in the case of SMP1 and that of many of the strategies undertaken before 2005, the period over which the assessment was carried out tended to be 50 years.

SMP1		
MU	LOCATION	POLICY
6D-2	Gribbin Head to Polkerris	Do nothing
6D-2	Polkerris	Long term hold the line
6D-2	Polkerris to Par	Do nothing
6D-2	Par Sands	Short term do nothing, monitor dune evolution to establish future policy
6D-2	Par Harbour	Hold the line
6D-2	Par Docks to Crinnis Beach (Fishing Point)	Do nothing Do nothing Do nothing
6D-2	Carlyon Bay	Hold existing defence at harbour. Do nothing at Appletree Point
6D-2	Crinnis Beach to Appletree Point	Do nothing, monitor cliff stability
6D-2	Charlestown	Hold the line along developed beach frontage. Do nothing elsewhere.
6D-2	Duporth	Do nothing
6D-2	Porthpean	Do nothing
6D-2	Porthpean to Pentewan	Long term hold the line



## Economic Assessment

The following table provides a brief summary of damages under the No Active Intervention scenario, determined by the SMP2 analysis for the whole PDZ. Further details are provided in Appendix H. Where further, more detailed information is provided by studies, this is highlighted. The table aims to provide an initial high level assessment of potential damages occurring under the erosion and flooding scenarios. The damages for each epoch are discounted present values.

### ASSESSMENT OF EROSION DAMAGES

Epoch	0 -20 year		20 – 50 years		50 – 100 years		Total	
<b>No Active Intervention</b>								
<i>Location</i>	Number of properties	Present Value x £1000	Number of properties	Present Value x £1000	Number of properties	Present Value x £1000	Number of properties	Present Value Damages (£x1000)
PDZ3	0	0	3	140	2	28	5	168
Total for PDZ								

### ASSESSMENT OF POTENTIAL FLOOD RISK

Epoch	Flood risk tidal 2025		Flood risk tidal 2055		Flood risk tidal 2105		Total	
<b>No Active Intervention</b>								
<i>Location</i>	Number of properties	Present Value x £1000	Number of properties	Present Value x £1000	Number of properties	Present Value x £1000	Number of properties	Present Value Damages (£x1000)
PDZ3	407	2883	487	1863	590	687	590	5433



### **Management Areas**

PDZ 3 has been sub-divided into 2 principal management areas, these being:

MA05 Gribbin Head to Par Docks

MA06 Par Docks to Black Head

Within these areas a summary of policy is provided below. Management Areas statements are provided in the following sheets.

## PDZ 3: Gribbin Head to Black Head Management Area Statements

PDZ 3 has been sub-divided into 2 principal management areas, these being:

MA05 Gribbin Head to Par Docks  
MA06 Par Docks to Black Head

Within these areas a summary of policy is provided below. Management Areas statements are provided in the following sheets.

### MA05 – Gribbin Head to Par Docks

Covering previous SMP1 management units:

6D-2	Gribbin Head to Polkerris
6D-2	Polkerris
6D-2	Polkerris to Par
6D-2	Par Sands
6D-2	Par Harbour

### MA06 – Par Docks to Black Head

Covering previous SMP1 management units:

6D-2	Par Docks to Crinnis Beach (Fishing Point)
6D-2	Carlyon Bay
6D-2	Crinnis Beach to Appletree Point
6D-2	Charlestown
6D-2	Duporth
6D-2	Porthpean
6D-2	Porthpean to Pentewan