
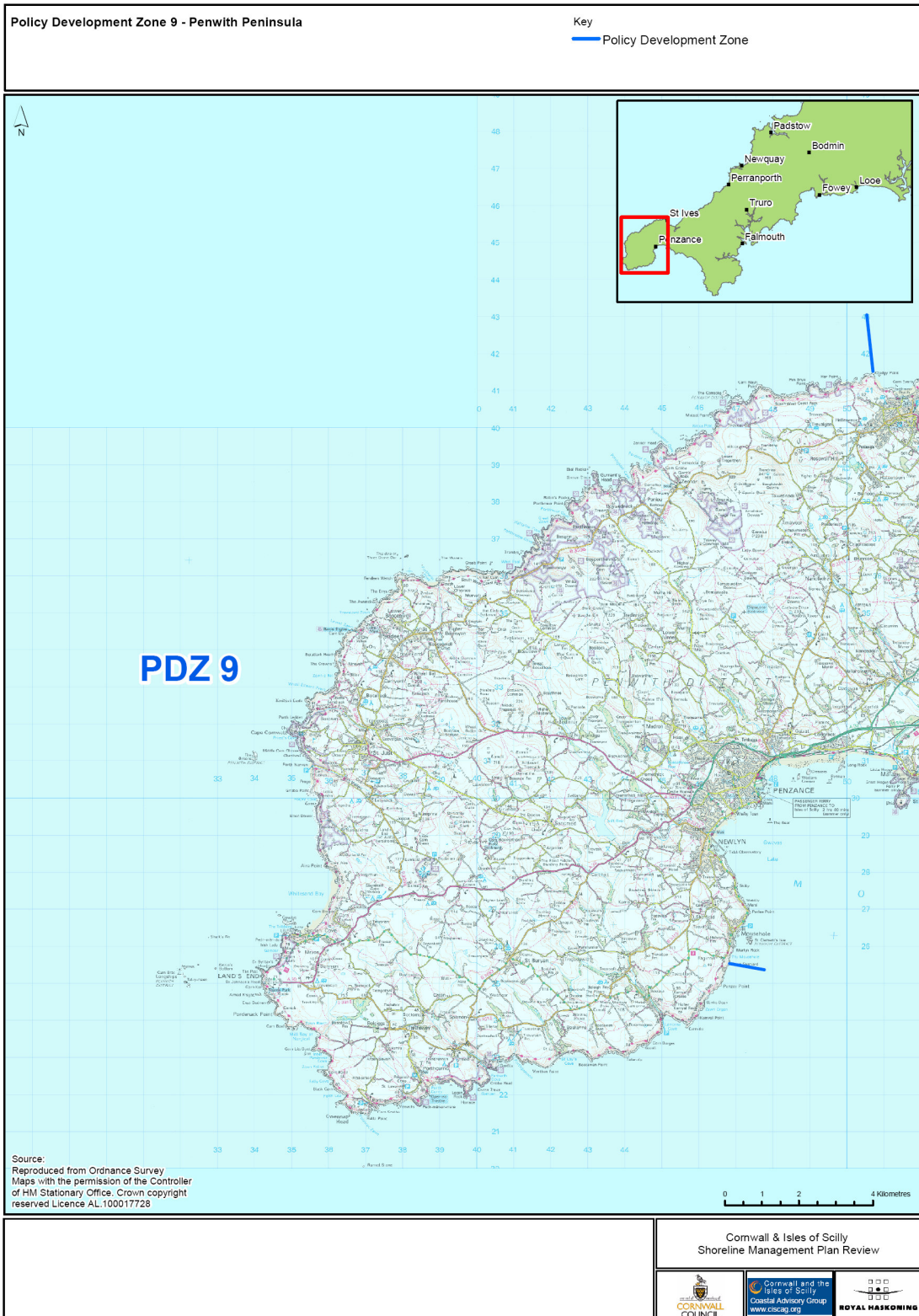


|  |   |  |
|--|---|--|
| <b>PDZ: 9</b>  | <b>Penwith Peninsula (Point Spaniard to Clodgy Point)</b> | <b>Management Area 23<br/>Management Area 24</b> |
| <p style="text-align: right;"><b>Porthcurno, looking east toward Treen cliff</b></p>    |   |  |
| <p><b>Penwith Peninsula (Point Spaniard to Clodgy Point)</b></p> <p>This section of coast encompasses the most western tip of the Cornish Peninsular and includes Land’s End and Cape Cornwall. The area is very rural and feels generally isolated, with a few scattered settlements mainly set back from the immediate frontage of hard rocky sea cliffs. The shoreline is extremely exposed to the dominant Atlantic wave climate and weather systems. The rugged cliffs and inaccessibility of much of the shoreline reflects the often isolated and exposed feeling of the coastline.</p> <p>Whitesand Bay is the most significant area of beach but a number of other small beaches are found at Pednvounder, Percella Cove, Porthcurno, Porth Chapel, Porthgwarra, Nanjizal, Portheras, Porthmeor, Treen and Porthglaze, where small streams enter the sea through steep sided valleys.</p> |   |  |

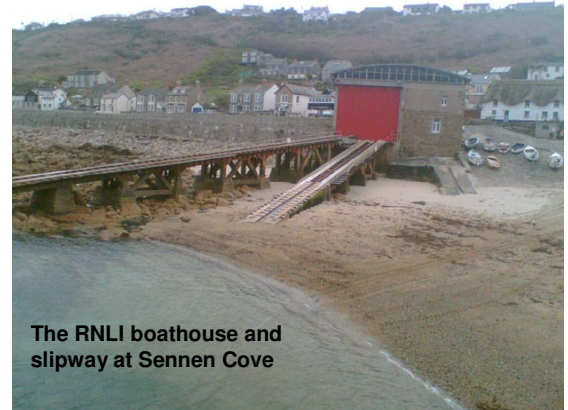


## General Description

### Built Environment

There are small communities at Lamorna, which has a small harbour, Boskenna, Penberth, Porthcurno and Sennen Cove where a RNLI lifeboat station is located (photo, right). St Just lies about 1km inland from the frontage.

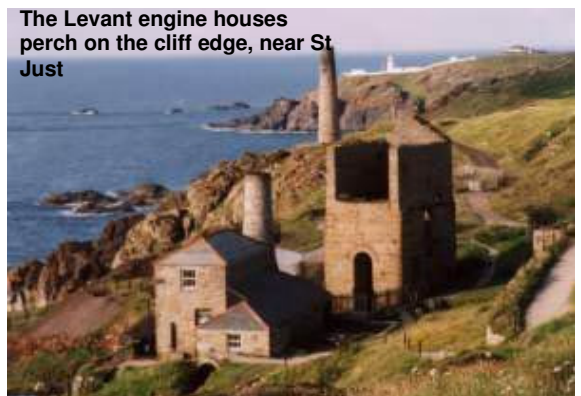
There is limited infrastructure in this area however; the B3306 road from St Ives to Land's End is close to the cliff edge in parts.



The RNLI boathouse and slipway at Sennen Cove

### Heritage

The area is particularly renowned for its mining heritage with the Cornwall and West Devon Mining landscape World heritage Site designation a reflection of this importance. Botallack, Levant and Pendeen are all home to significant heritage. At Levant (pictured) stands Cornwall's oldest winding engine house, built in 1840. In addition Porthcurno is significant as the landing place of submarine telegraph cables and associated telegraph station. South of Mousehole is a network of precariously placed coastal market gardens, consisting of tiny enclosures, often hedged by fuchsia bushes or high stone walls. The Minack theatre is a prominent and well known historic landmark. Numerous prehistoric features dot the whole of the coastline, including numerous cliff castles, settlements and field systems. The north coast is celebrated as a landscape which has not lost its original prehistoric field pattern. It is likely that there are historically and archeologically important wrecks present around the peninsula.



The Levant engine houses perch on the cliff edge, near St Just

### Environment and Nature Conservation

The landscape value of the area is great with Heritage coast and AONB designations throughout. This part of the SMP coastline is renowned for its ancient granite geology.



### Recreation and Amenity

The tourism and recreation significance of this area is great, primarily due to the geographical position of this section of coastline at Land's End where a significant tourist attraction is located and the unspoilt and developed nature of the coastline.



### Key Values and Drivers

The key values of this area are the remote, wild and unspoilt nature of the coastline within which small communities have worked with the coastal environment to survive on traditional activities of fishing and mining and more latterly through tourism. Agriculture is also a very important aspect of the rural economy in this part of Cornwall and in many places this extends to the cliff edge.

- The natural and unspoilt coastline, isolated beaches and dramatic cliffs and seascapes
- Internationally recognised features from the historic mining industry (WHS)
- Tourist and recreation value associated not only the landscape features but the geographical location of 'Land's End'

### PDZ Management Intent

The overarching management principle is therefore to allow the natural evolution of the coast, while supporting the coastal communities in the area and their adaptation to coastal change. Supporting tourist amenities and the World Heritage Site features is important in assisting the adaption of communities.

The National Heritage Coast objectives are felt to appropriately define the key values and management principles:

- Conserve, protect and enhance the natural beauty of the coasts, their marine flora and fauna, and their heritage features.
- Facilitate and enhance their enjoyment, understanding and appreciation by the public.
- Maintain and improve the health of inshore waters affecting Heritage Coasts and their beaches through appropriate environmental management measures.
- Take account of the needs of agriculture, forestry and fishing, and of the economic and social needs of the small communities on these coasts.

Although the initial observation might be one of a sediment starved section of coast, the beach forms at Porthcurno and Whitesand Bay are very representative of a coastline with plentiful sediment supply and wave dominance. Besides these larger pocket beaches, are numerous other small coves with sandy accumulations. The majority of these beaches are constrained by high cliffs and hard geology.

The general lack of defences dictates that where possible the beaches can adapt their form in line with sea level rise, but the hard geology and topography may cause coastal squeeze and a narrowing of beach widths. The existing overtopping risks at Lamorna Harbour will increase in line with sea level rise.

**TIDE AND WATER LEVELS (mODN)**

|                       |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|
|                       |  |  |  |  |  |  |  |  |  |
| <b>Extremes(mODN)</b> |  |  |  |  |  |  |  |  |  |
|                       |  |  |  |  |  |  |  |  |  |
|                       |  |  |  |  |  |  |  |  |  |

The dominant waves are Atlantic wind waves and swell from the west to south-west, Futurecoast estimates an annual 10% exceedance significant wave height of 2 to 2.5 m. The more westerly part of this coastline from Gwennap Head to Lands End and then around to Clodgy Point is very exposed – to the east of Gwennap Head the south facing coastline receives slightly less wave energy.

The tidal range in this area is approximately 3.5m. Residual tidal currents are low. Tidal influences are generally insignificant along this wave dominated coastline.

**PROCESSES**

**Control Features:**

To the south of Spaniard Point, hard geology controls the coastal processes and the

incised nature of the shoreline, with a series of rocky shore platforms and headlands, restricts any sediment movement to within the localised bays and coves. The convex orientation of the coastline also inhibits any along shore connectivity in processes.

The predominant bedrock is granite, which has a capping of head material. This generally forms a steep slope over a near vertical cliff. The hardness of the shore platforms means that they respond very slowly to wave attack and sea level rise. As a consequence they tend to be steep.

#### Existing Defences:

There are infrequent defences along this section of coastline. Those present tend to be related to beach access points. However there is a small harbour at Lamorna which acts to provide some coast protection (and flood defence from wave action) to the small community at Lamorna Cove. At Sennen Cove there is a harbour at the southern end of the cove and a seawall runs behind the beach providing flood defence to properties for some 400m. Both these structures are owned and maintained by Cornwall Council.

#### Processes:

The Futurecoast project studied the currents driven by tides and concluded that they are typically less than 1 m/s and drive no significant sediment transport. Principal transport mechanisms therefore are driven by waves – these tend to be cross shore movements with very little in terms of longshore sediment transport occurring. All the bays and coves are essentially self contained in terms of sediment movement and supply.

#### 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 very slow, gradual erosion of the hard granite cliffs demonstrated historically is very likely to be observed over the next 100 years, with no significant loss of cliff and no significant change in shoreline position. Erosion and loss of assets could be expected at Sennen.

## 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                                  |
|-------------|--|--|---|---|--|
| Porthcurno  | 0  | 10   | 0   | 9.6   |  |
| Sennen Cove | 0  | 0.5  | 15  | 15.9  | Beach between breakwaters used as Isip |
| St Just     | 0  | 3  | 0   | 5.5   |  |
| Zennor      | 0  | 0  | 0   | 1.8   |  |

## 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   |
| 6E-1 | Newlyn Harbour to Carn-du    | Do nothing along undefended length. Hold the line along defended frontages.                      |
| 6E-1 | Carn-du to Gwennap Head      | Do nothing along undefended length. Hold the line along defences along Lamorna frontage.         |
| 6E-1 | Gwennap Head to Lands End    | Do nothing strategy  |
| 7A-1 | Lands Ends to Sennen Cove    | Do nothing strategy  |
| 7A-1 | Sennon Cove to Whitesand Bay | Hold the existing defence line strategy along developed frontage. Do nothing strategy elsewhere. |
| 7A-1 | Aire Point to Clodgy Point   | Do nothing strategy  |

## Economic Assessment

The following table provides a brief summary of damages 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 two baseline scenarios. The damages for each epoch are current values. These are discounted to give present values in the final column.

### ASSESSMENT OF EROSION DAMAGES

| Epoch                  | 0 -20 year           |                       | 20 – 50 years        |                       | 50 – 100 years       |                       | Total                |                                |  |
|------------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|--------------------------------|--|
| No Active Intervention | 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) |  |
| Location               |                      |                       |                      |                       |                      |                       |                      |                                |  |
| PDZ9                   | 0                    | 0                     | 0                    | 0                     | 2                    | 22                    | 2                    | 22                             |  |
| <b>Total for PDZ</b>   |                      |                       |                      |                       |                      |                       |                      |                                |  |

### ASSESSMENT OF POTENTIAL FLOOD RISK\*

| Epoch                  | Flood risk tidal 2025 |                       | Flood risk tidal 2055 |                       | Flood risk tidal 2105 |                       | Total                |                                |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|--------------------------------|
| No Active Intervention | 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) |
| Location               |                       |                       |                       |                       |                       |                       |                      |                                |
| PDZ9                   | 0                     | 0                     | 0                     | 0                     | 0                     | 0                     | 0                    | 0                              |

\* Flood risk is assessed based on still water flooding only. Although no properties are shown to be at risk from still water flooding within PDZ9 by flood mapping, historical evidence shows that some property is at risk from wave run-up and spray overtopping at Lamorna Cove and Sennen Cove.



## PDZ9: Penwith Peninsula (Point Spaniard to Clodgy Point (St Ives)

### Management Areas

PDZ 9 has been sub-divided into 2 principal management areas, these being:

MA23 Point Spaniard to Land's End

MA24 Land's End to Clodgy Point (St Ives)

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

### MA23 – Point Spaniard to Land's End

Covering previous SMP1 management units:

|      |                           |
|------|---------------------------|
| 6E-1 | Newlyn Harbour to Carn-du |
| 6E-1 | Carn-du to Gwennap Head   |
| 6E-1 | Gwennap Head to Lands End |

### MA24 – Land's End to Clodgy Point (St Ives)

Covering previous SMP1 management units:

|      |                              |
|------|------------------------------|
| 7A-1 | Lands Ends to Sennen Cove    |
| 7A-1 | Sennen Cove to Whitesand Bay |
| 7A-1 | Aire Point to Clodgy Point   |