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| PDZ: 13 | Trevelgue Head to Steeper Point | Management Area 33 Management Area 34 |
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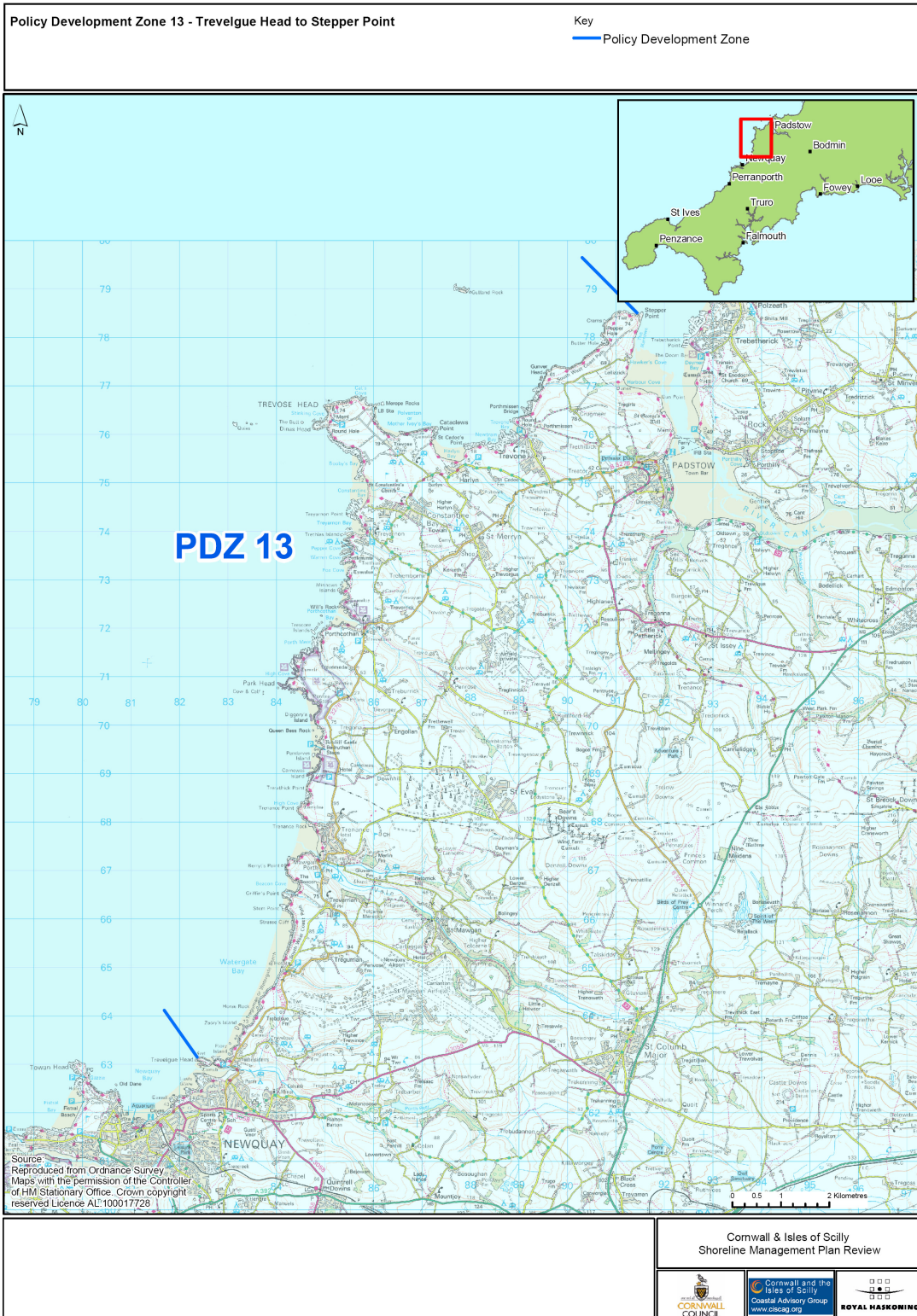





Trevelgue Head to Steeper Point

This stretch of coastline starts immediately to the north of Newquay and continues around Trevoze Head to finish at Steeper Point. It is an area that feels more relaxed and is significantly less busy and touristic than the Newquay area to the south.

The coastline faces mostly north-west for the length of this unit and is therefore very exposed to the dominant Atlantic westerly wave climate and weather systems. Whilst dominated by long stretches of rocky cliffs and the prominent headlands there are sandy beaches present with the most extensive sands at Watergate Bay. Other beaches are Mawgan Porth, Porthcothan, Treyarnon, Constantine and Booby’s Bay, Harlyn, Mother Ivey’s Bay and Trevone. Bedruthan Steps, owned by the National trust are the specific visitor attraction of significance in this area, and there is a popular links golf course near Trevoze Head.

The area is sparsely populated, with agricultural grassland dominating the cliff tops with grazing often seen. Minor roads criss-cross the cliff tops linking hamlets and villages.



| | |
|---|---|
| General Description | |
| Built Environment | |
| <p>The fixed assets at the coast are relatively few. Trevoze Head lighthouse is prominent, and the B2376 hugs the coast for some of this area providing stunning sea views. Mawgan Porth is the community of most significance at the immediate coast with residential development built into the cliff and commercial and tourist amenities located in the valley behind the beach. There is some development at Treyarnon, Constantine, Haryln and Trevone, but this is limited at the immediate frontage. There are minor defences at Watergate Bay, Mawgan Porth Treyarnon and Constantine Bay.</p> | |
| Heritage | |
| <p>This stretch of coastline contains some of the largest known concentrations of Bronze Age barrows, notably at Pentire and Constantine Bay. In addition numerous cist burials have been excavated at Harlyn Bay due to ongoing coastal erosion. The cliff castle and stone hut circles at Trevelgue Head are particularly good examples of prehistoric settlement.</p> |  |
| Environment and Nature Conservation | |
| <p>The landscape value of this area is recognised by the Cornwall AONB and heritage coast designation (Trevoze Head). Bedruthan Steps and Park Head, and Trevoze Head and Constantine Bay and Trevone Bay areas are identified as SSSIs for their national importance.</p> |  |
| <p>Bedruthan Steps</p> | |
| Recreation and Amenity | |
| <p>Tourist infrastructure is most significant at Whipsiderry and Watergate Bay - this is fairly low key in comparison to the main Newquay conurbation but Watergate is still an extremely popular destination in its own right. Water sports (particularly surfing), are an integral part of the draw for visitors to Watergate and also Constantine and Harlyn Bays. Numerous camp sites and holiday parks are present. Other sites such as Bedruthan Steps and Mawgan Porth contribute significantly to the local tourist-based economy.</p> |  |
| <p>Surfers at Watergate Bay</p> | |
| Key Values and Drivers | |
| <ul style="list-style-type: none"> • Landscape and heritage coast designations of the coastline • Undeveloped and rural nature of the area • Amenity value of the beaches attracting significant numbers of tourists and day trippers • Bedruthan Steps and Park Head natural environment attraction | |

PDZ Management Intent

The overarching management principle is therefore to allow the natural evolution of the coast while recognising the need to support the adaptation and resilience of the coastal settlements. Continuing to support the recreational and amenity value of the coast is an important part of this intent, but it cannot dictate the long-term shoreline position where a more sustainable long-term realignment is desirable.

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

There are a number of areas designated for their geological, nature conservation or archaeological interest. In particular Bedruthan Steps and Park Head.

This zone extends through the frontage of Watergate Bay, Porthcothan, Treyarnon, Constantine Bay and Booby's Bay through Trevoze Head to Stepper Point.

The coastline faces mostly west and is therefore exposed to the dominant Atlantic wave climate and weather systems. The area is characterised and dominated by hard rocky cliffs interspersed by sandy pocket beaches.

This area is sparsely populated and there are small communities at Porthcothan, Treyarnon and Constantine Bay. In common with many other areas of Cornwall, agriculture is an important aspect of land use, particularly along the cliff top.

Trevoze Head marks a temporary change in orientation of the coast from northward to eastward.

Trevoze Head and Trevone Bay are designated as SSSIs.

TIDE AND WATER LEVELS (mODN)

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|-----|------|
| | | | | | | | | | |
| | | | | | | | | 6.4 | +3.6 |

Extremes(mODN)

| Location: | 1:1 | 1:10 | 1:25 | 1:50 | 1:100 | 1:200 | 1:500 | 1:1000 |
|-----------|------|------|------|------|-------|-------|-------|--------|
| Newquay | 4.14 | 4.35 | 4.46 | 4.52 | 4.63 | 4.71 | 4.81 | 4.89 |

Exposure to the dominant westerly wave climate.

This stretch of coast is west facing and therefore exposed to extremes in North Atlantic wave height and energy. The annual 10% exceedance wave height is 2.5m – 3m, with a 1 in 50 year extreme offshore wave height of 20m. Recent wavebuoy recordings (at Perranporth) have demonstrated that significant wave heights frequently exceed 5m during the winter months and wave periods of 15 seconds and higher are not uncommon.

Tidal Flow

Tidal currents are generally weak, although they do increase in velocity around the headlands where they may have some local influence on sediment re-distribution. Mean spring tidal range is 6.4m

PROCESSES

Control Features:

Devonian slate cliffs dominate the coastline geology. The principle controlling headlands are Trevelgue Head, Beryl's Point, Trenance Point, Park Head and Trevoise head. These headlands effectively create the bays – Newquay; Watergate; Mawgan Porth and Bedruthan.

Control is provided through the resistant nature of the geology. There is no significant sheltering or attenuation of the wave climate provided by the headlands.

Trevoise Head is very prominent, resistant headland marking the boundary of this zone. The headlands of Trevoise Point, Cataclews Point and Stepper Point provide some control over sediment movement and also act to provide some shelter from the extremes of the westerly wave climate.

Existing Defences:

Defence structures are located in discrete lengths throughout this unit, at Watergate Bay and Mawgan Porth. Rock revetment defences exist at Trevone Bay.

There are some privately owned defences located between Treyarnon and Constantine Bay. Royal Haskoning (2007) conclude that some lateral deflection of wave energy may occur at Constantine as a result of these defences.

Processes:

The shoreline is swash aligned due to the almost shore-parallel approach of the waves. Therefore most sediment transport is cross-shore up and down the beach profile in response to storms and seasonal variation in the wave climate.

Futurecoast (2002) suggests that there is no sediment exchange between the beaches and that they are all self-contained sediment cells. This is probably true given the deeply incised nature of this section of coast and its swash aligned tendencies. However the nature of the low cliffs and rocky foreshore platforms which exist between Treyarnon and Constantine, suggest there may be some exchange of sediment between the two bays under certain high-energy conditions.

New sediments are derived from offshore calcium carbonate sources (marine organisms) and from limited erosion of the local cliffs. The predominance of sand derived from marine organisms is particularly notable at Constantine and Booby's Bays, where it accounts for 90% of the beach composition.

Unconstrained Scenario:

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

Future evolution of the beaches and dune areas in this unit is likely to include some potential narrowing of the foreshore and erosion of the dune areas due to rising sea levels and increased wave energy.

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 |
|-----------------|--|--|---|---|-------|
| Pothcothan | 0 | 0 | 13 | 32.6 | |
| Treyarnon Beach | - | - | 13 | 32.6 | |
| Constantine Bay | - | - | 18.6 | 46.6 | |
| Harlyn Bay | - | - | 18.6 | 46.6 | |

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 |
| 7A-3 | Trevelgue Hotel to Watergate | Do nothing |
| 7A-3 | Watergate Bay | Hold the existing defence line |
| 7A-3 | Watergate Bay to Mawgan Porth | Do nothing |
| 7A-3 | Mawgan Porth | Hold the existing defence line |
| 7A-3 | Mawgan Porth to Porthcothan | Do nothing |
| 7A-3 | Porthcothan to Treyarnon | Do nothing |
| 7A-3 | Treyarnon and Constantine Bay | Do nothing |
| 7A-3 | Constantine to Trevoise Head | Do nothing |
| 7B-1 | Trevoise Head to Harlyn | Do nothing |
| 7B-1 | Harlyn | Hold the existing defence line |
| 7B-1 | Harlyn to Trevone Bay | Do nothing |
| 7B-1 | Trevone | Hold the existing defence line |
| 7B-1 | Trevone to Padstow | Do nothing |

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 | | | | | | | | |
| <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) |
| | 0 | 0 | 0 | 0 | 9 | 179 | 9 | 179 |
| Total for PDZ | | | | | | | | |

ASSESSMENT OF POTENTIAL FLOOD RISK

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

PDZ 13: Trevelgue Head to Stepper Point Management Area Statements

MA33 – Trevelgue Head to Trevoze Head

Covering previous SMP1 management units:

| | |
|------|-------------------------------|
| 7A-3 | Trevelgue Hotel to Watergate |
| 7A-3 | Watergate Bay |
| 7A-3 | Watergate Bay to Mawgan Porth |
| 7A-3 | Mawgan Porth |
| 7A-3 | Mawgan Porth to Porthcothan |
| 7A-3 | Porthcothan to Treyarnon |
| 7A-3 | Treyarnon and Constantine Bay |
| 7A-3 | Constantine to Trevoze Head |

MA34 – Trevoze Head to Stepper Point

Covering previous SMP1 management units:

| | |
|------|------------------------|
| 7B-1 | Trevoze Head to Harlyn |
| 7B-1 | Harlyn |
| 7B-1 | Harlyn to Trevone Bay |
| 7B-1 | Trevone |
| 7B-1 | Trevone to Padstow |

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