

Appendix C Defences Assessment

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Defences Assessment

The following text summarises the coast protection and sea defences present in the Cornwall and Isles of Scilly SMP2 area. The summary text is broken down into Policy Development Zones.

PDZ1: Rame Head to Pencarrow Head

Discrete defences exist at Portwrinkle (harbour and rock revetment - council maintained); Downderry and Seaton (rock revetment and masonry / concrete seawalls – council maintained); Millendreath (seawalls and gabions – privately maintained); Plaidy (revetments and rock armour – council maintained); East and West Looe (quay and harbour structures, concrete seawalls – council/ harbour commissioners maintained); Hannafore (concrete & masonry revetment and walls retaining the highway – council maintained); Talland Bay (seawall - privately maintained); Polperro (quay and harbour structures, masonry seawall, tidal barrier – various maintainers, gate replaced in 2009 by Environment Agency).

PDZ2: Pencarrow Head to Gribbin Head (including Fowey Estuary)

Existing Defences:

There are no existing defences along the open coast section of this policy development zone. Within the Fowey Estuary there are a variety of quay structures along the frontages of Polruan and Fowey (owned and maintained by the Harbour Commissioners) and there are Cornwall Council maintained seawalls at Readymoney Cove. Further up the estuary, the railway line and embankment which runs alongside the estuary down to Fowey Docks acts as a defacto defence for around 700m directly to the east of Golant. As the estuary approaches Lostwithiel, it enters a continually modified channel which comprises a series of earth embankments, flood defences walls and privately owned defences. There is also a section of quay wall at the southern end of the right hand bank. The earth embankments are owned and maintained by the Environment Agency.

PDZ3: Gribbin Head to Black Head

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).

PDZ4: Black Head to Zone Point:

Existing Defences:

There are existing defences at: Pentewan (harbour structures); Mevagissey (harbour arms, quay walls and seawalls); Portmellon (masonry seawalls, road retaining wall); Gorran Haven (harbour arm, quay walls, masonry seawalls, promenade and steps); Hemmick Beach (masonry seawall and revetment); Porthluney (Caerhays) Cove (wall and revetment); East and West Portholland (masonry seawall and apron); Portloe (maintained channel); Pendower Beach (seawalls and rock revetment); Portscatho (seawall and apron).

Mevagissey will be particularly vulnerable to sea level rise and increased occurrence of storm surge due to existing quay heights. The lack of processes connectivity along the coastline dictates that discrete intervention measures could be undertaken at Mevagissey to achieve local objectives without impacting on adjacent areas of coastline.

PDZ5: Zone Point to Nare Point (including the Fal estuary)

Existing Defences:

The estuary is relatively undeveloped overall although some development is present at Falmouth, Feock, Penryn, Restronguet, Devoran, St Mawes, Mylor, Flushing and St Just in the form of coastal defence, quays, harbour walls and docks. The main concentration of development is at Falmouth where a cruise terminal and dock facilities are situated.

PDZ6: LIZARD (Nare Point to Baulk Head - Gunwalloe)

Existing Defences:

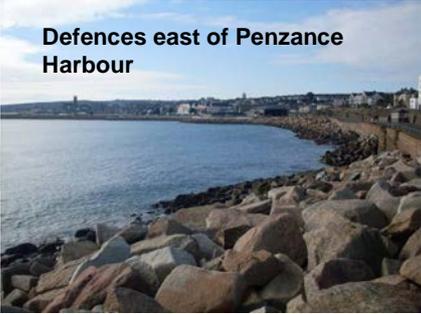
Lizard east: There are raised defences and channel outfall structures at Porthallow; quay wall / jetty structures exist at Porthoustock and Dean Quarry (associated with the quarry works); there is a Cornwall Council maintained breakwater and seawall at Coverack; at Kennack Sands there are vertical sea walls and rock armour positioned at the rear of the beach; there are slipway and masonry wall structures in the cove at Cadgwith.

Lizard west: The harbour structure at Mullion is owned by the National Trust; there are low vertical masonry walls at the rear of Poldhu cove, acting to retain the road but also providing a coastal protection role; a vertical masonry wall defends the south-eastern boundary of St Wynwalloe Church at Church Cove; some poor condition rock armour revetments are in place at Jangye-ryn.

PDZ7: Mounts Bay East (Baulk Head (Gunwalloe) to Marazion)

<p>Existing Defences: There are a number of discrete defence lengths at Gunwalloe Fishing Cove, including walls and rock placements, most of which have been privately constructed, giving a piecemeal appearance (and performance) of the defences (photo, right). Erosion of the cliff faces continues despite presence of defences. The National Trust own the slipway.</p> <p>At Loe Bar, there are culverts through the barrier which manage water levels in the pool which are maintained by the Environment Agency.</p>	 <p>Gunwalloe private defences</p>
<p>At Porthleven, in addition to the main harbour structures, there are open coast defences to the east, running for some 450m, consisting of vertical and sloped concrete and masonry walls, plus some stepped aprons.</p> <p>At Praa Sands, there is a 200m length of rock armour fronting the low head cliffs at the eastern end of the beach, at the western end (Sydney Cove) there are rock revetments and concrete seawalls present (Council maintained). To the north east of Praa Sands, Perranuthnoe (Perran Sands) has a concrete slipway providing beach access – the slipway is defended by a relatively large placement of rock armour to either side of it.</p>	 <p>Porthleven foreshore and seawalls</p>

PDZ8: Mounts Bay West (The Greeb to Point Spaniard)

<p>Existing Defences:</p> <p>Development of this area has resulted in extensive structural protection of the coast, including breakwaters at the three harbours and linear defences at Newlyn, Wherry town and a revetment south of Newlyn harbour. There are also linear defences stretching almost continuously from Marazion through to Penzance harbour along the Longrock frontage (a combination of sloped revetments, rock and masonry walls). The Penlee quarry is also protected with a masonry seawall. The Jubilee Pool (Lido) is protected by a wall at Battery Rocks. In addition are the defences and harbour structures of the Mount.</p> <p>The small dune system at Marazion provides protection to West End Rd, Green Lane and the Red River Bridge and the associated hard defences. The toe of the dunes has remained relatively stable in response to the building of defences and dune strengthening strategies. MLW has retreated, causing gradual loss of intertidal and a steepening of the beach slope.</p>	
<p>A very significant component of the defences within this PDZ is the 1.25km of rock revetment which defends the position of the railway line, station and railway sidings. The revetment is maintained by Railtrack and as such the continued presence of the defence and availability of funding for its maintenance must be considered within the development of policy.</p>	 <p>Defences east of Penzance Harbour</p>

PDZ9: Penwith Peninsula (Point Spaniard to Clodgy Point)

<p>Existing Defences:</p> <p>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.</p>

PDZ10: Clodgy Point to Godrevy Point

The eastern side of this PDZ has defences and harbour structures present along much the frontage.

Defences are present along the rear of the beach at Carbis Bay.

Quay walls are in existence around most of the Hayle frontage. They are generally in very poor condition and collapses have occurred in several locations. Sluicing gate structures exist at the entrances to the Carnewas and Copperhouse Pools. There are some defensive structures on the left hand bank in the vicinity of Lelant.

There is an artificially created bund that exists in place at the rear of the beach between Gwithian and Godrevy. This was created to provide defence to the former sand extraction works located behind the beach.

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PDZ11: North Cliffs (Godrevy Point to Pentire Point West)

Existing Defences:

There are a series of defences and general coast protection structures at each of the coastal settlements. There are also small scale private defences at Chapel Porth.

Portreath has an array of structures, with a stepped masonry sea wall and fronting the car park at the rear of the beach, and a small harbour through which the Portreath Stream discharges and the 250m long pier orientated north-west which maintains the harbour channel and provides shelter to the harbour entrance and Lighthouse Hill. In addition, there are seawalls protecting the cliff line and a number of properties at Battery Hill, at the western end of the beach.

Porthtowan has some very minor defences in the form of gabions (council owned / maintained) which front the car park adjacent to the RNLI lifeguard station. There are also some low masonry (block-work) walls fronting properties on the Westcliff side of the beach.

At Chapel Porth there is a masonry vertical wall at the rear of the beach, with an access point through it at the centre. It is primarily a retaining wall for the car park immediately above the beach, rather than coast protection structures, though under extreme conditions it is likely to provide that function as well.

Trevaunance Cove at St Agnes has development close to the mean high water position directly at the rear of the beach, including changing huts and cafes. These are fronted by some vertical concrete and masonry sea walls and small revetment. There are two concrete slipways onto the beach, one providing public access and the other private access from where the fishing boats pull up off the beach.

Perranporth has a number of low sea walls at the rear of the beach adjacent to the car park. It also has concrete structures associated with two engineered channels where the Perran Stream and Bolingey Stream discharge out on to the beach. These have a dual tidal / fluvial flood defence function as Perranporth is particularly at risk from combined fluvial tidal events and tide locking in the channels through the town.

There are no specific flood defences or coast protection structures at Holywell Bay as the settlement is set well back behind the dune system.

PDZ12: Newquay (Pentire Point West to Trevelgue Head)

Existing Defences:

Some rock armour defences are present at the southern end of Fistral Beach. Although there are no formal sea defences at north Fistral other than dune stabilisation measures (gabions and fencing), the presence of the National Surfing Centre building and a surfaced car park (both constructed in 2003) means that this end of Fistral beach has become disconnected from the dune system behind it.

Defence structures are located in discrete lengths throughout this unit, at Towan Beach, Great Western Beach, Lusty Glaze, and Porth.

PDZ13: Trelvague Head to Stepper Point

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.

PDZ14: Camel Estuary (Stepper Point to Pentire Point)

Harbour walls and a harbour gate alleviate the risk of tidal flooding at Padstow. Embankments, flood walls and steel sheet piled walls in place at Wadebridge to alleviate the risk of tidal flooding.

Defences at Sladesbridge to alleviate the risk of tidal and fluvial flooding

There are coastal protection structures at Rock, granite steps and timber defences exist at Polzeath and a cliff protection structure at New Polzeath.

PDZ15: Pentire Point to Wanson Mouth

Existing Defences:

Coastal defence structures (mainly in the form of harbour walls and quays) are present at Port Quin, Port Issac, Port Gaverne and Boscastle. Crackington Haven and Trebarwith Strand have small-scale defences located at the rear of their respective beaches.

None of these defences are influential on wider-scale coastal processes, they just perform a local coast protection or flood defence role at their respective locations.

PDZ16: Widemouth and Bude (Wanson Mouth to Lower Sharpnose Point)

A rock armour revetment defends the back of the beach at north Widemouth. The defence sits seaward of the small dune area which is immediately north of the car park area and has played a role in disconnecting the dunes from the beach.

At Bude, there are a variety of small scale defences present at both Crooklets Beach and Summerleaze beach. At Summerleaze there are gabions forming a training wall alongside the right bank of the River Neet (photo, top right) as it discharges onto the beach and a sloped masonry revetment on the left bank between the river channel and the Bude Canal. A large moveable sluice gate retains water within the River Neet for amenity purposes. There are sections of rock armour protecting the dunes and development at the rear of the beach to the north. There are a number of vertical masonry walls protecting property at the mouth of the Bude Canal (photo, right) and there are the concrete and masonry walls of the Canal itself.

In addition there are inner and outer Canal sea gates (photo, right) which control water levels within the canal and provide a flood defence function during storm surge events. There is also a small tidal swimming pool at Summerleaze beach with walls and concrete access steps which affords some protection to the cliffs behind from wave action.

At Crooklets, small concrete walls and revetments provide some protection to beach huts and other development at the rear of the beach. A more substantial, but short, section of concrete revetment at the northern end of the beach provides protection to six properties from cliff erosion (photo, right).



Gabion training wall



PDZ17: Lower Sharpnose Point to Hartland Point

Existing Defences:

The only significant coastal structures present within the policy development zone are associated with Hartland Quay (quay structures and seawalls) and Hartland Point Lighthouse (retaining walls). There are relic defensive masonry walls at Welcombe Beach.

PDZ18 Isles of Scilly

Existing Defences:

A number of defence structures, including seawalls, embankments and revetments are located at the back of beaches around St Mary's. Several of these schemes were put into place following severe winter storms and flooding/erosion that occurred during 1989/1990.

There are no sea or coastal defence structures located on St Martins.

Tresco has defences in place at New Grimsby (rock armour revetment) and Appletree Bay, to prevent erosion affecting properties. Defences exist in several areas on Bryher, all are designed to prevent erosion of the sand dunes (and hence prevent flooding of the lower-lying hinterland).

There are a number of discrete lengths of revetment and embankment located at the back of the beaches in the aforementioned lower-lying areas.

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