Appendix M: Flood information, key quotes and maps

1. Climate Change and Cornwall's Shoreline

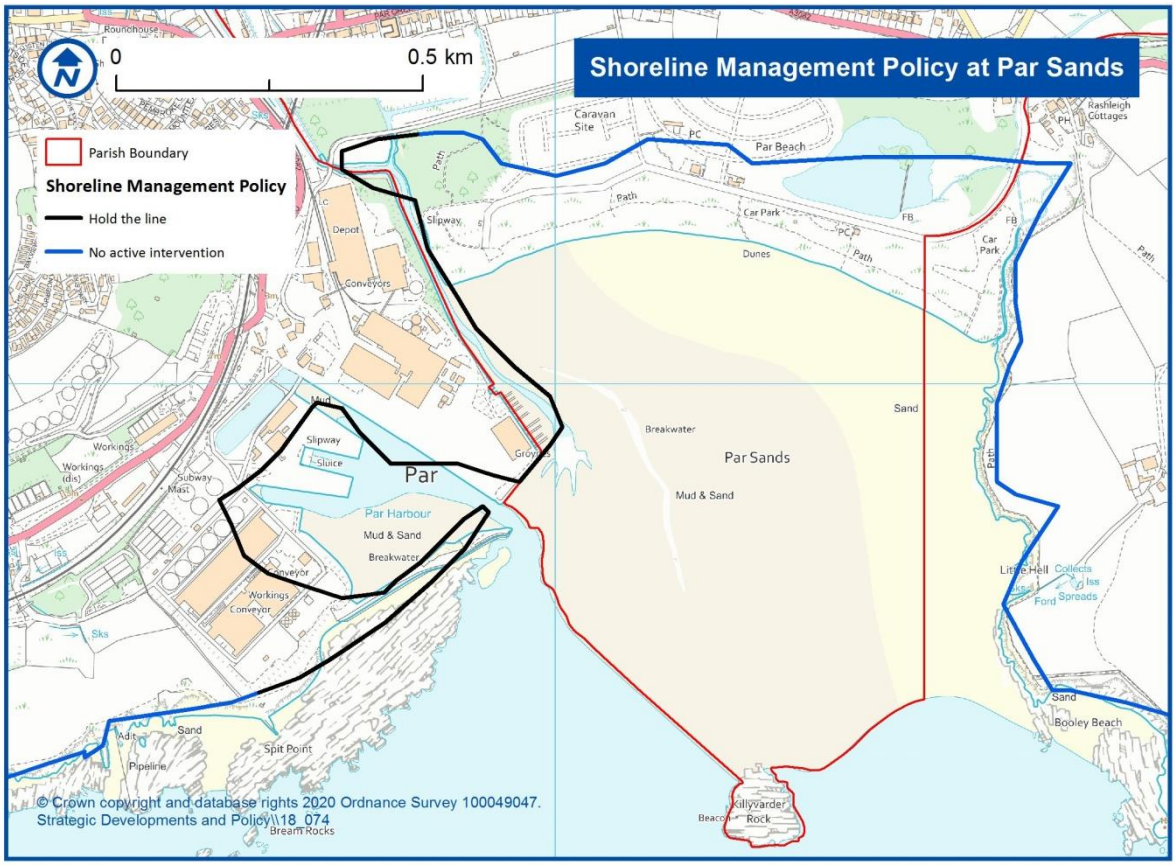

Figure 12, Shoreline Management Map

The map shows the current policy for shoreline management for Par Sands (also known as Par Beach) as denoted by the blue and **black** lines.

"The no active intervention line means that "there is no investment in coastal defences or operations." From 2025, it is proposed to move to "managed realignment which means that the shoreline will be allowed to move backwards or forwards, with management to control or limit movement (such as reducing erosion or building new defences on the landward side of the original defences)."[1]
The hold the existing defence line in **black** means " maintaining or changing the standard of protection."[1]

"….there is sufficient scientific evidence to suggest that we need to plan very carefully for the effects of climate change. It is no longer sufficient to simply maintain all defences in their current positions – we need to realise that communities will need to adapt and in some cases the shoreline position will need to be realigned to reduce the risks that climate change poses." [2]

1.Shoreline management plan guidance Volume 1: Aims and requirements, 2006, p14, Defra, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69206/pb11726-smpg-vol1-060308.pdf

[2] Cornwall and Isles of Scilly Shoreline Management Plan 2, 2011, p.8, Cornwall Council https://www.cornwall.gov.uk/media/33487170/cios-smp2-summary-document-final-040411.pdf

2. Sustainability and coastal systems: Projected coastal erosion, Par Sands

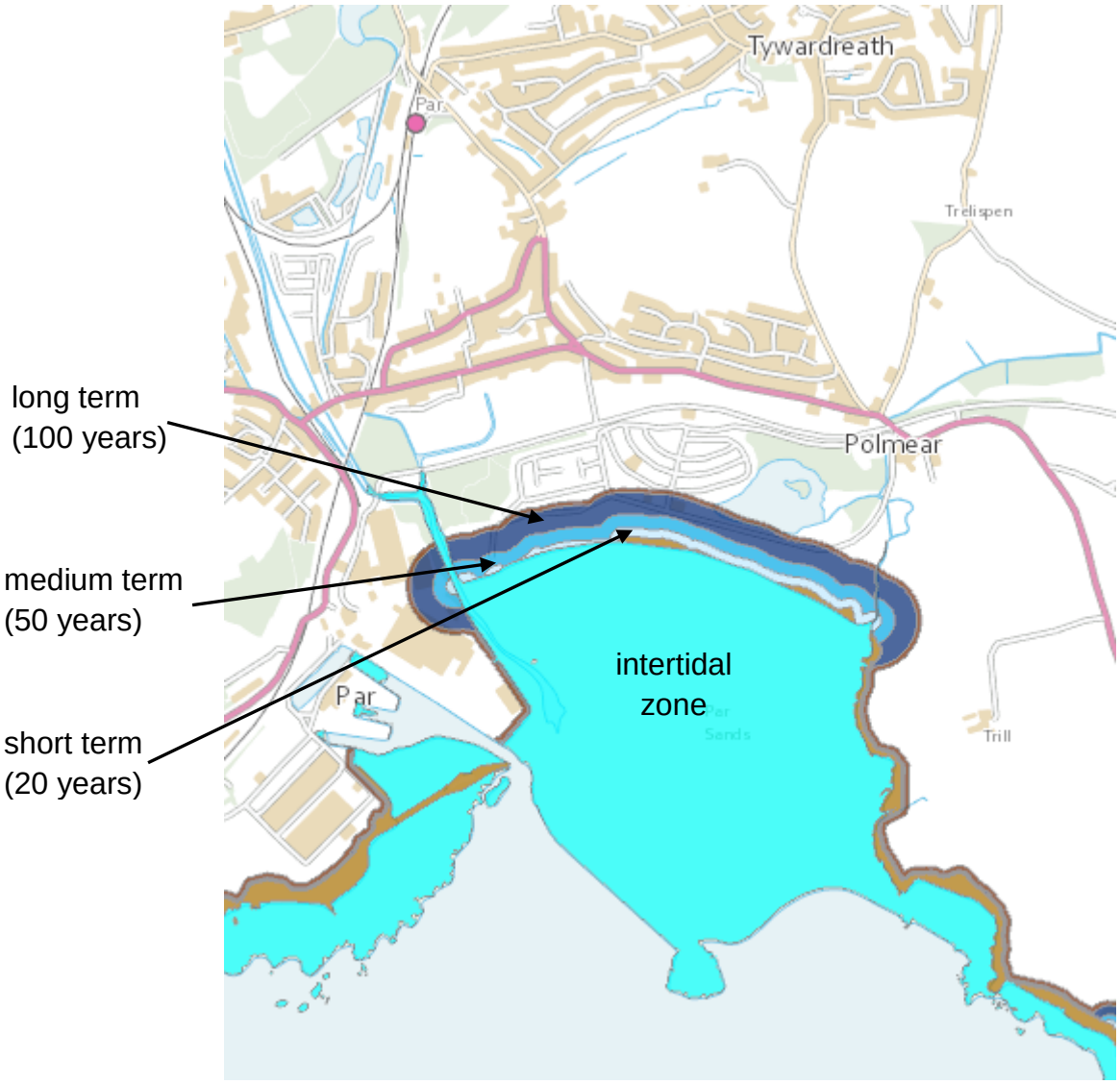

Figure 13, Map showing projected coastal erosion at Par Sands

The map shows projected coastal erosion with a probability of 5% (1 in 20 chance) over the short term (20 years), medium term (50 years) and long term (100 years).

Source:https://map.cornwall.gov.uk/website/ccmap/index.html?zoomlevel=6&xcoord=207704&ycoord=53018&wsName=sfra&layerName=Coastal%20erosion%20-%20NCERM_NAI_LT_05_10m

"The Cornwall and Isles of Scilly Plan has strived to achieve a balance between human aspirations and natural processes in such a way as to create the opportunity for sustainable management of the coast for future generations."[3]

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[3] Cornwall and Isles of Scilly Shoreline Management Plan 2, 2011, Chapter 3, pp.4,10,12 Basis for the development of the plan, Cornwall Council https://www.cornwall.gov.uk/media/33383993/3_basisdevelopmentplan_final_report.pdf

“As an overall principle it is adequate to take the definition provided by the original 1987 statement of sustainable development: *‘development which meets the needs of the present without compromising the ability of future generations to meet their own needs’,* subsequently amended and adopted in the Defra SMP guidance, in relation to defence management policy as avoiding: *’tying future generations into inflexible and expensive options for defence.*” [3]

“A sustainable coastal system is one that is allowed to behave as naturally as possible, without significant further intervention.” [3]

3. Par Sands

Much of the information in the documents quoted in this Section 3 is replicated in the source documents in Section 4. Where this is the case, quotes on a particular topic are only put in one of the sections to avoid repetition.

“The dunes have a flood defence function to the low-lying behind and it therefore very important that they are maintained in their current if not a more robust state.”[4]

“The key issue at Par Sands is that the dunes provide a flood defence function to the low-lying land behind. The dunes appear to be stable and in places accreting, so intervention required at present is probably limited. However, as sea levels rise and without new influx of sediment, this accreting trend will like stop and reverse to become one of erosion. This will in turn lead to erosion and narrowing of the dunes, particularly if the dune system is constrained from migrating landwards due natural or human factors. The size of the dunes in this area will therefore reduce, making the system more vulnerable to storm impacts and increased risk of erosion leading to breaching and so flooding.” [4]

“…..as sea levels rise the need for dune stabilisation measures will become increasingly necessary to ensure the dunes continue to fulfil an important flood defence role.”…… [4]
“Even in the short term under a No Active Intervention policy, some form of dune stabilisation for ‘access or safety management’ may be acceptable to, for example, ensure historic landfill within the dunes is not exposed and to address erosion of the River Par dune bank.”[4]

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[3] Cornwall and Isles of Scilly Shoreline Management Plan 2, 2011, Chapter 3, pp.4,10,12 Basis for the development of the plan, Cornwall Council
https://www.cornwall.gov.uk/media/33383993/3_basisdevelopmentplan_final_report.pdf

[4]Beach and Dune Management Plans– Par Sands, 2016, pp 27-29, Cornwall Council, Supplementary Evidence, NDP Section,
https://www.tywardreathandparparishcouncil.gov.uk/neighbourhoodplandocuments.php

“Natural forms of stabilisation, such as planting, thatching, mulching, matting or sand binders, combined with fencing and signage, would allow natural processes to continue, help retain sand on the dune system, and assuming native plants are used, could have long term positive effects on BAP habitats. Over stabilisation of the dunes would however, not be desirable for habitats and risk of the dunes becoming un-dynamic and unable to react to pressures.

If stabilisation measures are required, access management and signage will be needed to prevent beach visitors trampling any establishing vegetation and hindering stabilisation of the dunes. Although these are relatively low cost measures, they would require ongoing commitment to management and maintenance, with the expectation being that storms will periodically erode stabilised areas and thus re-stabilisation will be needed to encourage post-storm recovery.” [4]

“Trampling of the dunes has previously been a problem which has been overcome through access management, including fencing of older dunes to prevent access and the construction of ramps to provide disabled access.”…….“The construction of boardwalks in key areas may be required to reduce the impact of this high level of trampling on the dune surface.”[4]

4. Par Docks and Par Sands – looking to the future

“Identification of this area as a ‘Coastal Change Management Area’ within the land use planning system may be necessary.” [5] The beach and dunes at Par Sands serve a vital purpose in protecting the low-lying settlement area of Par and St Blazey. They also serve to protect key infrastructure, such as Par Station, the main arterial link through Cornwall; the A390 Truro- St Austell -Plymouth road; and the A3082 which runs from St. Austell through Par and Polmear to Fowey. (see photo below)

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[4]Beach and Dune Management Plans– Par Sands, 2016, pp 29, 34, 35, Cornwall Council, Supplementary Evidence, NDP Section, https://www.tywardreathandparparishcouncil.gov.uk/neighbourhoodplandocuments.php

[5]CIOS Shoreline Management Plan (SMP) 2, Mid Term Review, 2016, Gribbin Head to Par Docks, p.22, Cornwall Council, https://www.cornwall.gov.uk/media/28416326/cornwall-smp2-mid-term-review-appendix-ma01-ma18.pdf

“Even with the Harbour Pier maintained, the whole curved bay shape will develop in land, putting existing defences under greater pressure and properties at greater risk. Reinforcing defences will result in loss of the beach and will radically alter the whole character of the settlement. The intent set out in the SMP is to allow retreat of the shoreline in line with sea level rise, managing this process through adaptation of the settlement.”[5]

“Par Sands is protected and the bay is shaped, certainly over its western end, by the presence of the docks. Management of the harbour structures and, in consequence, the future use of the harbour area will strongly influence the risk and future manner in which risks to the hinterland of Par Sands are managed. The dock area is shown as being potentially at flood risk, certainly over the longer term, and this needs to be considered in relation to any proposed development, together with agreement over future management of the harbour structures.… resolving this uncertainty in relation to future use of the docks will have a major influence on the management of Par Sands itself……” [5]

“At present, there are two dune distinct ridges. The landward ridge appears to provide a coherent flood defence to the area of the caravan park behind, while the seaward ridge is not continuous and flooding does occur to the dune slack between the two ridges. The seaward ridge does, however, provide a significant sand reservoir which will tend to roll back and potentially reinforce naturally the rear ridge if allowed to do so. Essentially, there is seen to be potentially significant width in the system for maintenance of a competent defence to be maintained over the short to medium term. The on-going response of the frontage does need to be monitored to determine how this may develop into the longer term and, furthermore, in line with the intent of the SMP to encourage natural development of the shoreline, consideration needs to be given as to how further need for width needs to be accommodated within the area to the back of the rear ridge.”[5]

“Critical to this will be further investigation of [nature] the identified landfill sites and the need for management future development of and around the caravan park. Potentially, over the next 100 years, the set back of the beach could be as much as 100m. This would impact on the car park to the eastern end of the bay and various facilities along the road to the rear of the dunes.

The area to the rear of the dunes and further inland along the valley running through to Par is shown to be at flood risk. In part, development of this risk will depend on water on high sea levels feeding along the course of the river. The recommendations within the SMP for managed realignment (including the potential need for adaptation of land use) apply principally in relation to the management of the coastal bay. However, quite clearly, in terms of risk management this needs to take account of the potential flood risk via the water course. The SMP highlights the need to consider potential flooding of access to The Par Docks, potentially influencing decisions with respect to use of the area and reemphasises the need to define the area as a Coastal Change Management Area relating to future development of the broader area.”[5].

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[5]CIOS Shoreline Management Plan (SMP) 2, Mid Term Review, 2016, Gribbin Head to Par Docks, p.22, Cornwall Council, https://www.cornwall.gov.uk/media/28416326/cornwall-smp2-mid-term-review-appendix-ma01-ma18.pdf