

### 4.3 Policy Development Zone 2 - Ryde and the North-east Coastline (PDZ2)



*Left to right: Seagrove Bay; Ryde Sands*



## 4.3 Policy Development Zone 2 - Ryde and the North-east Coastline (PDZ2)

### Contents

4.3	Policy Development Zone 2 - Ryde and the North-east Coastline (PDZ2)	Page 109
1.	Overview and Description	113
2.	Baseline management scenarios	122
3.	Discussion and detailed policy development	136
4.	Management Area Statements	139

#### Key facts:

Policy Development Zone 2: includes the communities of Wootton, Fishbourne, Woodside, Ryde, Seaview, and Nettlestone.

PDZ2 frontage = approx. 22km in length

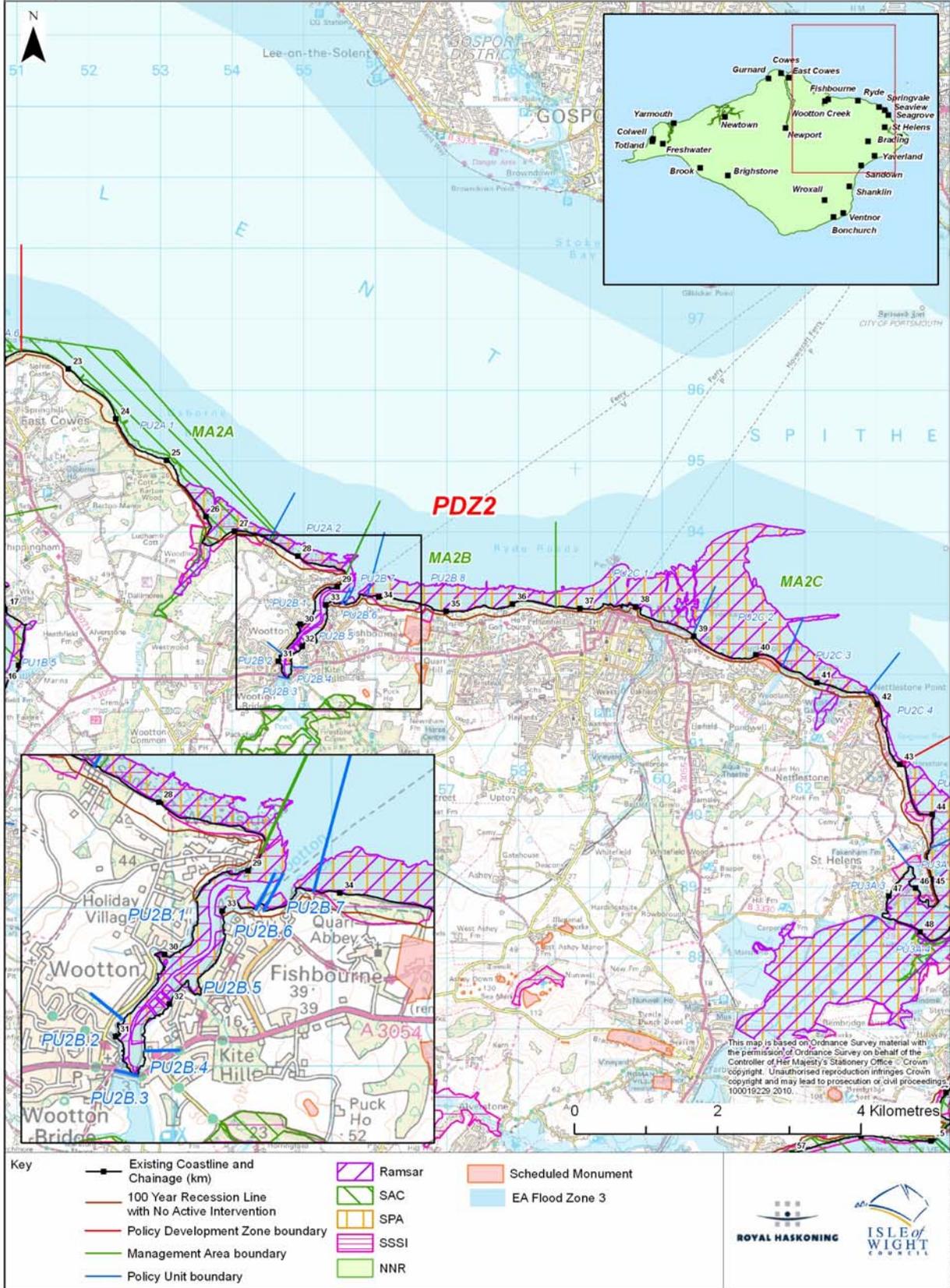
PDZ2 boundaries = From Old Castle Point (East Cowes) to Horestone Point (Nettlestone).

As listed in SMP2 Appendices: areas IW2 to IW12

#### Old policies from SMP1 in 1997, reviewed in this chapter:

Unit	Location	Length	Policy
<i>RYD1</i>	Old Castle Point to West Woodside	6091m	Do nothing or Retreat the existing defence line
<i>RYD2</i>	West Woodside to Chapelcorner Copse	1156m	Retreat the existing defence line
<i>RYD3</i>	Wootton Creek	4135m	Hold the existing line
<i>RYD4</i>	Fishbourne to Pelhamfield	2730m	Retreat the existing defence line
<i>RYD5</i>	Pelhamfield to Puckpool Hill	4180m	Hold the existing defence line
<i>RYD6</i>	Puckpool Hill to Salterns Road, Seaview	980m	Hold the existing defence line
<i>RYD7</i>	Salterns Road to Pier Road Seaview	858m	Hold the existing defence line
<i>RYD7</i>	Pier Road Seaview to Horestone Point	740m	Hold the existing defence line

**Shoreline Management Plan Sub Cell 5D + E - Isle of Wight**  
**Baseline Location Map**  
**Policy Development Zone 2 - Ryde and the North-east Coastline**



## 1. Overview & Description

### 1.1 Principal Features (further details are provided in Appendix D & E)

#### ***Built Environment:***

There is a contrast between the western and eastern stretches of PDZ2. In the west there are gentle wooded coastal slopes with scattered residential developments at Osborne, Woodside and Quarr. The main Newport-Ryde road (A3054) is located on a bridge separating Wootton Creek from the Old Mill Pond and controlling tidal flows. The coastline from Norris Castle through to the Wootton Estuary has little vehicular access although public footpaths do run the frontage in several places. The villages of Fishbourne and Wootton surround Wootton Creek.

Further east is the main coastal town of Ryde and smaller communities of Seaview and Nettlestone. The A3055 road runs along the promenade of central Ryde. Road and footpath access lines the developed coast from Ryde to Seaview and within Seagrove Bay.

Transport links on and off of the Island are key within this PDZ with a vehicle and passenger ferry running from Fishbourne to Portsmouth, a passenger ferry service running from Ryde Pier Head and a Hovercraft passenger service from Ryde seafront. The Island's only commercial train service runs from Ryde Pier Head through Ryde seafront and on to Brading, Sandown and Shanklin.

#### ***Heritage and Amenity:***

##### *Heritage:*

The coastal and intertidal zones within this PDZ have been intensively investigated and contain many areas of national and international historical importance. There are two Scheduled Monuments, 63 Grade II listed buildings, one Grade II\* listed buildings, one Grade I Listed Building, one Grade II and one Grade II\* Registered Park and Garden and 126 monument records all within the coastal and intertidal areas. In the marine area there are 44 recorded shipwrecks and five Military Remains Protected Places. There are Conservation Areas in Ryde and Seaview.

The foreshore in much of this PDZ contains significant numbers of archaeological and palaeoenvironmental sites of national or international importance. Barton Bay, Kings Quay, Wootton Creek, Fishbourne and especially Quarr are all key sites where intensive investigations have been undertaken.

Along the western coastal frontage are the private estates of Osborne (Grade II\*) and Norris Castle (Grade II), both Registered Parks and Gardens. East of Fishbourne is Quarr Abbey, a grade I listed building, and the remains of its Cistercian predecessor, now a Scheduled Monument. This area is being considered as part of an application for the East Solent to become a UNESCO Seascape World Heritage Site. In the Ryde Sands area there are numerous shipwrecks due to the shallow waters and both historical and present busy shipping routes. There is also a WWII air wreck situated off of Ryde and a Palmerston fort 'No Mans Land' in the Marine area. Further east is the 19th century Puckpool Battery, a Scheduled Monument. At Seaview there is a WWII submarine barrier.

##### *Amenity:*

The Osborne and Norris estates provide important heritage tourism amenity and the shoreline is popular with recreational anglers. In the village of Woodside there is tourist accommodation and a holiday park.

The predominantly residential villages of Wootton and Fishbourne have pocket areas of tourist accommodation, industrial/marine industry units (mainly boatyards), several pubs, sailing club and a residential outdoor education centre that fronts the Creek to the west. Access to the Creek shore is limited due to private frontages but there are several footpaths that lead to the coast and several slipways. There are numerous recreational moorings, pontoons and residential houseboats along the Creek.

Ryde is the Island's largest town and a popular seaside resort. It is characterised by Victorian housing with shops and entertainment facilities and by its sandy beaches with a long Esplanade and promenade. Along the frontage there is a marina, ice rink and a bowling alley; as well there is a golf course to the west of Ryde.

To the east is Appley Park; a frontage that is generally recreational with little residential or industrial presence. It is popular with tourists and residents with facilities including car parking, a pitch and put golf course, café and a wide, sandy beach. There are a number of beach huts along the Puckpool frontage and several beachside cafés, toilets, car parking and other facilities.

At Seaview Duver there is a managed inlet which forms a brackish lagoon of conservation interest. There are areas of woodland and agricultural land around Springvale, along with the Seaview Wildlife Encounter Park. Access to the beach is via the road running behind the seawall. Nettlestone Point is relatively low lying, a sailing club, pub and café are all positioned along the seafront and there are several slipways and a dingy park. Within this area the coast aligns itself from the east to the south into Seagrove Bay, where it is backed by the residential village of Nettlestone. Facilities at Seagrove Bay include toilets and a small café.

**Nature Conservation:**

The westerly stretch of the PDZ (East Cowes to Wootton) is almost entirely backed by semi-natural ancient woodland and plantation woodland, whilst the eastern end of the PDZ is built-up. The intertidal areas along this stretch of coastline are dominated by intertidal sand and mudflats, interspersed with areas of rocky foreshores and shingle spits, with a few small areas of coastal grazing marsh (e.g. Seaview). Subtidal seagrass beds can be found in Osbourne Bay and Ryde. There are two creeks (King's Quay Shore SSSI and Wootton Creek) that consist of estuarine habitats ranging from freshwater swamp, brackish reedbeds, saltmarshes, shingle spits and intertidal mudflats and that are used as feeding grounds for Brent geese and other water birds and waders. The offshore areas are used regularly as winter feeding grounds for grebes, sea duck and divers and for terns during the summer.

There are two internationally designated areas along the coastline from East Cowes to Seagrove Bay, which cover the entire length of the PDZ between them. The western end (Osborne Bay) of the PDZ sits within part of the Solent Maritime SAC, designated primarily for its estuaries and saltmarsh (*Spartina* swards and Atlantic salt meadows). Other qualifying features include vegetated shingle habitats, coastal lagoons, mudflats and sandflats, sandbanks and sand dunes. The central and eastern frontage of the PDZ (Wootton to Seagrove Bay) sits within the Solent and Southampton Water Ramsar and SPA, primarily designated for a number of birds including common tern, little tern, Mediterranean gull, sandwich tern, dark-bellied Brent geese and ringed plover. There are two component SSSIs that cover the same area, King's Quay Shore SSSI and Ryde Sands and Wootton Creek SSSI. In addition, inland of Wootton Creek there are broadleaved woodland areas, Briddlesford Copse, which is designated as a SAC for its provision of habitat for Bechstein's bat.

## 1.2 Key Values

The residential communities, amenity/tourism, and transport links are the key drivers in this area. Both Ryde and the surrounding seafront villages are at risk from tidal flooding and coastal erosion which would lead to a significant impact on the functionality of the east side of the Isle of Wight. In particular the vital transport infrastructure at Ryde and Fishbourne will be affected (ferries, rail and road). Of some importance are the quiet wooded coastal landscapes in the western section of the PDZ; however there are other parts of the Island that hold a much greater nature conservation interest.

### 1.3 Objectives

*Overarching objectives for PDZ2:*

- To sustain and adapt the important centres of economic activity including Ryde and surrounding waterfronts and the transportation gateways to the Island at Fishbourne and Ryde.
- To support adaptation of the communities of East Wight to reduce flood and erosion risks.
- To maintain important access along the seafront and shoreline use of the area.
- To support opportunity for adaptation supporting and enhancing the nature conservation value of the area.
- To sustain the historic landscape and environment where practical.
- To maintain the important landscape subject to natural change.

*Right: Wootton Creek*



### 1.4 Description

The western section of this PDZ from East Cowes to Pelhamfield is relatively inaccessible with scattered development amongst wooded coastal slopes with potential for slope failure and retreat. At Woodside, Quarr and Pelhamfield small communities are located near the coastline. Acceleration in erosion is likely in areas where no defences currently exist, as steep slopes are suffering from undercutting. A small tidal inlet is located at Kings Quay, inaccessible by public road or footpath, where migration of the spits into the estuary is likely. Further east, Wootton Creek is a larger 2km tidal inlet backed by the villages of Fishbourne and Wootton, where the majority of waterfront properties have constructed private defences or waterside access. Mainly residential, there are a few commercial properties including Little Canada education centre. At Wootton-Quarr, numerous archaeological features preserved in the intertidal muds (such as peat beds, wooden trackways and an ancient submerged oak forest) are being revealed and uncovered in the foreshore.

The centre of this PDZ is dominated by the large seafront town of Ryde, an important centre for transport links (including the Ryde to Shanklin rail link) and tourism. Victorian development in



Ryde included sealing off the inlet of Monktonmead stream and construction of houses in the floodplain behind (which have a history of flooding). There is now 7km of continuous defences from Ryde to Seagrove Bay, and a pumping station on the promenade to help manage the flood risk. These defences also form the popular sea front promenade walk from Ryde to Seaview

Ryde Sands is a wide, accessible sandy beach and a regionally significant sediment sink, the largest on the Isle of Wight. At its widest point, near Appley, the sand banks extend up to 2km in width. It remains uncertain whether Ryde Sands continues to accrete, or whether it may become subject to the foreshore erosion that is common to much of the Solent. Local amenity management of the upper beach sands occurs to enhance the use of the beach.

*Above: Ryde Sands are backed by seawalls, Ryde marina and the town of Ryde, view at relatively high tide (Isle of Wight Council).*

*Right: Ryde Sands, view east from Appley at low tide, towards Ryde Pier in the distance, February 2009.*



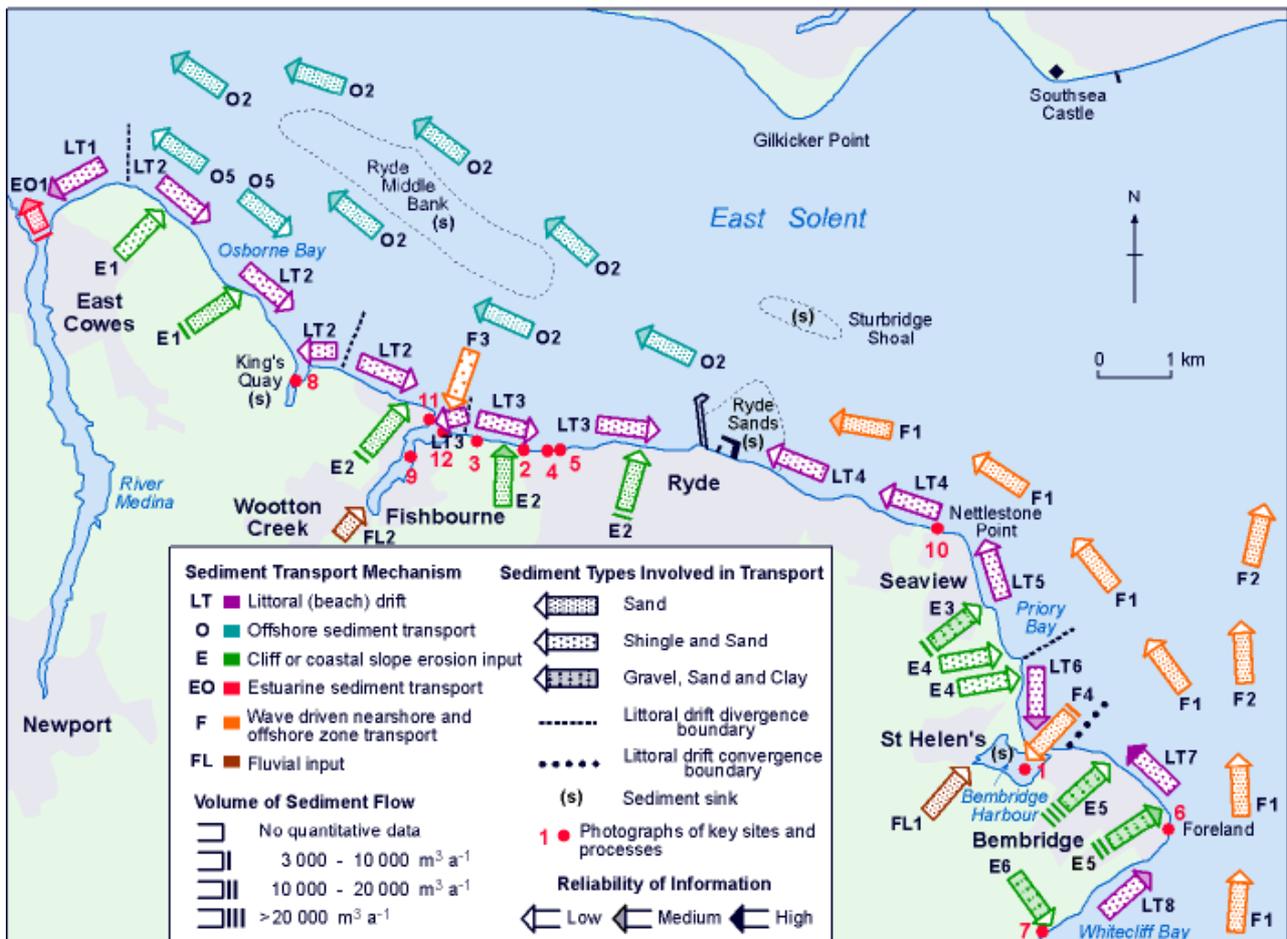
Moving east from Ryde are the seafront communities of Springvale, Seaview and Seagrove Bay which back the hard defence line. These areas are principally residential communities with several hotels and a quieter character. Nettlestone Point (in Seaview) marks the change in coastline orientation from west-east to north-south along this frontage, and from this point south the shore is generally lined by private properties rather than continuous seafront esplanade.

## **1.5 Physical Processes**

### **1.5.1 Coastal Processes** (further details are provided in Appendix C1).

This PDZ includes the coastline between East Cowes and Nettlestone Point, including the communities of Ryde, Wootton, Binstead and Seaview. The following summary outlines the wave climate, tidal flows, geomorphological controls, sediment supplies and coastal processes characterising PDZ2. The general pattern is sediment movement is summarised in the following diagram from the SCOPAC Sediment Transport Study.

NE Isle of Wight (Old Castle Point to Culver Cliff: Sediment Transport Sources, Pathways and Sinks



Sediment transport sources, pathways and sinks on the north east coast, from SCOPAC Sediment Transport Study, 2004.

The north-east coast of the Isle of Wight forms the southern margin of the Eastern Solent and borders the busy shipping lanes. The coast is mostly low-lying, or only of moderate relief. Erosion predominates, resulting in the development of varied cliff forms. The PDZ2 coast includes the inlet of Wootton Creek, and is described from west to east below.

The foreshore at Norris Castle some 1.5km to the east of the Shraps Breakwater is extremely narrow and depleted of sediment. This location is typical of a zone of littoral drift divergence. Various remnant sea-walls, breastwork and groyne structures are in poor repair or breached and allowing erosion to occur in embayments, particularly below Norris Castle. The mean high water mark has been static or slowly retreating, controlled by coastal defences, coastal slopes, or sea cliffs, resulting in foreshore narrowing throughout this frontage. Moving eastwards, re-activations of the lower portions of coastal slopes are in progress behind failures in defences around Osborne Bay. Several minor headlands (narrow depleted foreshore) and bays (sand and shingle beach accumulations) are developed within Osborne Bay. Littoral drift is generally recognised in a net south eastward direction along this segment. Sediment accumulations against the western side of various groyne structures support the notion of south-eastward drift. Further east the spits at King's Quay have migrated and recurved into the estuary. The westward trending spit at the King's Quay inlet suggests the presence of a local drift reversal, possibly associated with the inlet. Rates of littoral drift are believed to be slow due to the low energy inputs and limited sediment availability. Moving east, the north-facing cliffs rise to 15m near Woodside Point.

Wootton Creek Estuary is a sheltered inlet extending inland 2km south-west to the village of Wootton, where an old tidal mill-pond still operates, controlled by a sluice upstream of the roadbridge. There is a small spit on the east side of the mouth of Wootton Creek, and Wootton

Hard on the western side. The spits represent the inner limit of wave action. The estuary tidal limit is at the former mill pond. Although there are extensive sand areas offshore, the beaches on either side of the Creek mouth are narrow and discontinuous. The shoreline to the east of the Creek mouth is set-back compared to the shoreline to the west of the Creek mouth. Tidal flow through narrow entrance to the inlet generates currents which interrupt littoral sediment transport causing local circulation effects and associated changes in coastal configuration. The location is sensitive to variations in sediment supply. Inside Wootton Creek there is a narrow low-angle backshore of clastic material, succeeded seawards by a muddy clay foreshore. At Wootton Creek mouth a baseline survey of the beach and intertidal zone has been conducted as part of the Regional Strategic Monitoring Programme, with profiles commencing in 2007. From 2007 to 2010 the majority of profiles show no significant change. However, there is currently not enough data at this location to provide adequate analysis of coastal processes in the mid to long term. To the east of Wootton Creek the undefended low cliffs exhibit past and currently active basal undercutting fronted by small debris stores of clay and limestone boulders.

West of Ryde, slow eastward net drift predominates on small sand/shingle beaches that are fronted by wide muddy foreshores occupied by occasional limestone reefs, shingle structures, ancient peat beds and eroding clay shore platforms. Wave exposure increases to the east of Ryde and the foreshore is dominated increasingly by sandy sediments that drift in a dominant north-west direction. Two littoral sediment transport pathways thus converge upon Ryde Sands where a major accumulation of sand flats has developed forming a sediment sink extending up to 2km seaward and 3km along the shore. Ryde Sands is a substantial nearshore bank that affords some protection to Ryde from wave attack. The coast to the east of Ryde Sands is open to waves generated in Hayling Bay and also diffracted waves from the English Channel. Wave energy is therefore moderate and approaches from a predominantly east or south-east direction. By contrast, the foreshore at Ryde and to the west is largely protected from incoming south eastward waves by Ryde Sands. The prevailing waves are therefore generated in Southampton Water and the East Solent and are fetch-limited. This coast is therefore subject to low-energy wave action from a dominant north-west direction. Construction of the small harbour at Ryde Marina has led to a build-up of sand to the east, which has resulted in the need to extend the Monktonmead outfall.

East of Ryde Sands the coast has no direct sources of sediment supply and is reliant on the westwards littoral drift system. A relatively sheltered and low energy shore unit extends along the heavily protected coast from Ryde to Nettlestone Point. Accretion on the eastern sides of groyne and outfalls at Springvale indicates net westward drift. This transport pattern is attributable to dominant waves from the east and southeast and to diffracted southerly and south-westerly waves from the English Channel. The hinterland comprises moderately steep coastal slopes between Ryde and Puckpool Point rising to 20m. Between Puckpool Point and Nettlestone Point there is a low-lying marshy infilled valley with lagoons protected by a narrow stabilised barrier beach of sand and shingle (Seaview Duver). Nettlestone Point is a relatively resistant controlling feature formed of Bembridge Limestone. Nettlestone Point itself suffers from sediment depletion and operates as a partial transport barrier within the littoral pathway.

The embayment of Seagrove Bay has been formed by erosion of soft clay strata between rocky (Bembridge Limestone) headlands. The shape of the bay is characteristic of a north westward net drift. The coastal slopes of Seagrove Bay are vulnerable to localised ground movement and slope reactivation due to coastal erosion but the coastal slopes are presently inactive having been protected at their toes by seawalls. There is continuous seawall protection from Ryde around Nettlestone Point and along Seagrove Bay and a coast protection and slope stabilisation scheme was undertaken in 2000 in southern Seagrove Bay. There exists a northward nearshore drift pathway that has the potential to contribute material from this frontage to Ryde Sands.

***Unconstrained scenario:***

The 'unconstrained' scenario provides a vision of how the coast could evolve if not controlled by man-made structures such as coastal defences. This is a key step in understanding the 'natural'

response of the coast.

In Osborne Bay, continuing erosion of the narrow depleted foreshores and coastal slope toes would be likely to remove basal support and re-activate shallow landslides on the steepest sections of the coastal slopes, generating significant recession of cliff scarps within several embayments that could develop as landslide complexes. Wave energy is low so that landslide debris could remain protecting the slope toe for lengthy periods following initial failures. Most recession would therefore result from "one off" re-activations of up to 130m inland, rather than from rapid ongoing processes.

The North East Coastal Defence Strategy Study (2004) anticipates that over the next 100 years the mouth of Wootton Creek and coastal frontage will be at risk from coastal erosion. Spit migration and foreshore lowering may cause variation in the coastal erosion rates. Within the estuary the western shore of Wootton Creek has the potential for recession as landward erosion or inundation of the shoreline occurs. Some of the land near Wootton Bridge is currently prone to limited flooding every few years. With sea-level rise and possible increased wave energy within the estuary due to possible change of geomorphological form at the mouth of the estuary, the probability of flooding here is likely to increase with time.

Without defences, continued cliff erosion is likely at Quarr and continuing re-activations are likely at Binstead. In addition, small areas of the narrow low-lying valleys at Quarr and Binstead could become inundated as sea-levels rise because they possess very little natural upper beach protection and rely upon defences. Their tidal prisms would probably be too small to maintain permanent inlets so brackish lagoons or marshes subject to periodic inundation would be most likely to form.

Under an eroding regime at Ryde Sands, as sea level rises the upper foreshore would be relatively exposed and wave action may begin to cut through the reclaimed land of Ryde Esplanade and back into the steep slopes in front of St Cecilia's Abbey and Appley Park to eventually activate new eroding cliffs. Under an accreting regime at Ryde Sands there could be some initial erosion of the reclaimed areas, but over the medium term, the upper beach would be likely to build up providing some natural protection against storm wave action and the effects of sea-level rise. A thin strip of dunes could form in the medium to long term.

To the east of Puckpool Point, foreshore narrowing is likely to be exacerbated by rising sea levels. Puckpool Point itself would no longer be maintained as a minor headland by its defences and would begin to be eroded. In the longer term Seaview Duver would be likely to become increasingly susceptible to overwashing and breaching and an intertidal lagoon could form. The currents generated at the new inlet could disrupt shoreline sediment transport and generate a small ebb tidal delta of sediment on the lower foreshore, although the tidal exchange is likely to be quite small. Consequently, the inlet could be unstable and periodically re-seal and breach, perhaps seasonally.

There is also potential for the coastal slopes of Seagrove Bay to become re-activated within 30 years by toe erosion occurring in the absence of defences. Rotational failures in southern parts of the bay are likely to resume almost immediately. Sediments yielded by cliff erosion are likely to contribute to local foreshores and contribute towards drift inputs to Ryde Sands.

### **1.5.2. Existing Defences**

The following description of coastal defences outlines the current condition and expected remaining effective life of the defences in the area, if no further maintenance is carried out. In addition to the following summary, individual defences are described in Appendix C2 -Defence Appraisal (areas IW2 to IW12).

From Old Castle Point towards Osborne Bay defences are in varying stages of disrepair and failure. This has resulted in localised erosion of the coastal slope. Along the entirety of the frontage there are the remains of abandoned rock and masonry groynes, some of which are partly submerged.

The coastline at Kings Quay is undefended with a temporary structure constructed at the entrance to prevent marine vessels from entering the brook. At West Woodside a mixture of ad-hoc private defences and timber landing stages are present. From West Woodside to Chapel Corner Cope the frontage is undefended, with the remains of a concrete slipway.

Around Wootton Creek defences are principally private, of various types and condition including lengths of timber breastwork and some concrete and masonry walls. These structures often provide access to the water rather than significant coastal defence. Some short sections are undefended. The only formal defences are at Wootton Bridge and Fishbourne Green. Near the mouth of the estuary there is a shingle spit that narrows the mouth of the Creek from east and west along with the infrastructure associated with the Fishbourne Car Terminal. Fishbourne Green is suffering from low sediment levels undermining defences and the amenity slipway. The A3054 road crosses Wootton Bridge which incorporates sluices that control the water level of the Old Mill Pond inland of the bridge.

Undefended wooded slope with various rock outcrops extend to Quarr. A large shingle bank is visible accumulating at low mean water. A small number of private isolated localised defences interrupt the undefended wooded slope extending east towards Pelhamfield.

The remaining shoreline of the PDZ is defended with continuous seawalls, rock revetment and private defences (with some areas of disrepair and undermining) from Ryde to Horestone Point. At Seaview Duver the recently completed seawall and defences incorporate the outfall and saline inlets for the Hersey Nature Reserve.

### **1.5.3 Potential Baseline Erosion Rates**

The SMP reviewed a wide range of data to define the current and potential rates of coastal erosion and cliff retreat along the Isle of Wight coast using the best available information. Full details can be found in Appendix C3. Future erosion rates are predicted using Walkden & Dickson formula (2008) and allow for future sea level rise –the full methodology is explained in the Appendix. Predicted sea level rise rates of 4mm/yr (to 2025), 8.5mm/yr (to 2055), 12mm/yr (to 2085) then 15mm/yr (to 2105) have been used, in accordance with SMP national guidance by Defra. These rates equate to 7cm of sea level rise (above the 2009 baseline) by 2025, 32cm by 2055 and 98cm by 2105. The IW numbering units refer to lengths of coast for which future behaviour is described and mapped in Appendix C (based on SMP1 and Strategies). These are not SMP2 policy units which are developed in section 3 below.

Potential total erosion over the next 100 years is shown, however it is important to note that this is an estimate that is based on an undefended coastline. Within Appendix C3, these erosion rates are only applied following the predicted failure date of each individual element of the defences within the unit; therefore the resulting erosion amounts shown in the Appendix C3 tables and maps (and used in the development of this SMP) will show smaller erosion totals than the overview provided below.

**Potential coastal erosion rates (all figures in metres/year):-**

Numbering in SMP2 Appendices (2010) (area and name, clockwise)		NE Strategy Morphodynamic Unit No.	Current to 2055	2055 to 2085	2085 to 2105	Potential 100 year erosion (if undefended) -total in metres	Plus potential slope reactivation, triggered by coastal erosion (see North-East Coastal Defence Strategy)
IW2	Osborne Bay	3	0.12	0.14	0.15	13	Plus up to 30m reactivation near end of epoch 1
		4	0.9	1.06	1.16	100	Plus up to 65m reactivation in epoch 1
		5	0.9	1.06	1.16	100	n/a
		6	0.32	0.38	0.41	36	Plus up to 125m reactivation in epoch 1
		7	0.2	0.24	0.26	22	n/a
		8	0.2	0.24	0.26	22	Plus up to 60m reactivation in epoch 1
		9	0.24	0.28	0.31	27	n/a
IW3	King's Quay	9	0.24	0.28	0.31	27	n/a
		10	0.24	0.28	0.31	27	Plus up to 53m reactivation in epoch 1
		11	1	1.18	1.29	111	n/a
		12	0.28	0.33	0.36	31	n/a
IW4	Woodside	13	0.28	0.33	0.36	31	Plus up to 50m reactivation epoch 1
		14	1	1.18	1.29	111	Plus up to 50m reactivation epoch 1
		15	0.3	0.35	0.39	33	n/a
IW5	Wootton Creek	16	0.15	0.18	0.19	17	Plus up to 40m reactivation in epoch 1
		17	0.4	0.47	0.52	44	n/a
		18	0	0.00	0.00	0	n/a
		19	0.4	0.47	0.52	44	n/a
		20	0.4	0.47	0.52	44	n/a
IW6	Quarr & Binstead	21	1	1.18	1.29	111	n/a
		22	0.4	0.47	0.52	44	n/a
		23	0.4	0.47	0.52	44	Plus up to 70m reactivation in epoch 1
IW7	Ryde	24a	0.4	0.47	0.52	44	n/a
		24b	0.4	0.47	0.52	44	n/a
		25	0.4	0.47	0.52	44	n/a
IW8	Appley & Puckpool	26	0.4	0.47	0.52	44	Plus up to 80m reactivation at end of epoch 1
		27	0.5	0.59	0.65	56	n/a
IW9	Springvale	28	0.5	0.59	0.65	56	n/a
		29	1	1.18	1.29	111	n/a
IW10	Seaview Duver	30	1	1.18	1.29	111	n/a
IW11	Seaview	31	0.6	0.71	0.77	67	n/a
IW12	Seagrove Bay	31	0.3	0.35	0.39	33	n/a
		32a	0.3	0.35	0.39	33	n/a
		32b	0.3	0.35	0.39	33	Erosion at 0.3m/yr. Then within a few years of failure reactivation of failure planes leading to landslips of 15 to 100m. 100m max. landslide area shown.
		32c	0.3	0.35	0.39	33	
		32d	0.3	0.35	0.39	33	
		33	0.3	0.35	0.39	33	

**Notes:**

- i) Erosion rates have been determined from monitoring data and examination of historical records and have been calculated to take account of sea level rise. –see Appendix C3 for details.
- ii) The IW numbering units refer to lengths of coast described in Appendix C. These are not SMP2 policy units.
- iii) Epoch 1 is 0-20 years; Epoch 2 is 20-50 years; Epoch 3 is 50-100 years.

## **2. Baseline management scenarios**

### **2.1 Present Management**

Present management of the shoreline is taken as the policy defined by SMP1, modified by subsequent Strategies or studies. It should be noted that in the case of SMP1 the period over which the assessment was carried out was 50 years. SMP2 extends this to an assessment period of 100 years. The table below sets out the current shoreline management policies for Policy Development Zone 2. This SMP2 will assess all the available evidence and update these previous management policies.

The key documents outlining the present management of the shoreline in this PDZ are:-

#### **Isle of Wight Shoreline Management Plan 1 (1997)**

The first Shoreline Management Plan (SMP1) for the Isle of Wight 's coast was published in 1997. It consists of two volumes.

- Volume 1 is the 'Data Collection and Objective Setting', which presents information on a range of topics including coastal processes, natural environment, etc.
- Volume 2 is the 'Management Strategy', which presents information for each Management Unit around the Island's coast and sets a management Policy for each unit.

#### **Coastal Defence Strategy Studies, Isle of Wight:**

Whilst the Shoreline Management Plan provides the risk framework for management of the coast, Coastal Defence Strategy Studies provide a more detailed assessment of particular frontages in order to identify the most suitable type of coastal defence schemes that may be required to fulfil the agreed shoreline management policy and to plan a programme of future works.

#### **North East Coastal Defence Strategy Study, Isle of Wight (2004)**

The North-East Coastal Defence Strategy Study, which extends from the Shraper Breakwater at East Cowes to Culver Cliff, was completed and adopted in 2005. The Plan includes a works programme along the north-east coast frontage for five years including details on costings. The North-East Strategy consists of a summary report and detailed Appendices.

#### **Catchment Flood Management Plan**

The Environment Agency has undertaken a programme of Catchment Flood Management Plans (CFMPs) for the major river catchments in the Southern Region. A CFMP is a large scale plan that covers an entire river catchment or group of catchments that identifies long-term, sustainable policies to manage flood risk within the catchment. These policies form the basis for development of Strategy Plans, covering all or part of the overall catchment area, which will identify in more detail appropriate flood defence measures.

Whilst CFMPs principally address fluvial (river) flooding, SMPs address tidal (sea) flooding, alongside coastal erosion. The boundary between the CFMP and the SMP in this area is the bridge between Wootton Mill Pond and Wootton Creek. The Isle of Wight Catchment Flood Management Plan (Summary Report) was published in December 2009.

- Sub Area 4: Palmers Brook, Wootton Creek and Monktonmead Brook:

*“The issues in this sub-area: This sub-area covers the Palmers Brook, Wootton Creek and Monktonmead Brook catchments and the smaller streams in the north west of the Isle of Wight. This area is largely rural in nature, but notably contains the town of Ryde, the largest urban centre on the Island. Flood flows in the sub-area largely occur on Monktonmead Brook and the risk of flooding elsewhere is limited. These flows can result in relatively fast rises in river discharge and flood events that pass relatively quickly. Flooding in Ryde results from rainfall run-off over predominantly impermeable surfaces combined with tide locked fluvial flows. The*

*pumping station in Ryde helps to evacuate flows during tide locked periods and provides the town a 1% probability standard of protection.”*

Policy Option 4: Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change.

**The previous shoreline management policies set for this PDZ are listed in the table below:**

The IW numbering units refer to lengths of coast for which previous shoreline management policies have been set in SMP1, modified by subsequent Strategy Studies. These are not SMP2 policy units which are developed in section 3 below.

<b>Numbering in SMP2 Appendices (2010)</b>		<b>SMP1 (1997)</b>		<b>North East Coastal Defence Strategy Study (2004)</b> <i>Nb. Trigger governing change in generic policy option: Economic viability of maintaining existing defences.</i>	
<b>Area</b> <i>(clockwise)</i>	<b>Name</b>	<b>Unit</b>	<b>Policy</b>	<b>Strategic Management Unit</b>	<b>Preferred Generic Policy Option</b>
IW2	<b>Osborne Bay</b>	RYD1	Do nothing or Retreat the existing defence line	SMU2	No Active Intervention, but Monitor
IW3	<b>King's Quay</b>			SMU3	No Active Intervention, but Monitor
IW4	<b>Woodside</b>	RYD2	Retreat the existing defence line	SMU4	No Active Intervention, but Monitor
IW5	<b>Wootton Creek</b>	RYD3	Hold the existing line	SMU5	Hold the Line, by Seawall Encasement with Revetment, Floodwalls and Rip-Rap
IW6	<b>Quarr &amp; Binstead</b>	RYD4	Retreat the existing defence line	SMU6	No Active Intervention, but Monitor
IW7	<b>Ryde</b>	RYD5	Hold the existing defence line	SMU7	Hold the Line by Seawall Encasement and Revetment
IW8	<b>Appley &amp; Puckpool</b>			SMU8a	Hold the Line followed by No Active Intervention, but Monitor (trigger governing change of policy option: economic or technical viability of maintaining existing defences)
IW9	<b>Springvale</b>	RYD6	Hold the existing defence line	SMU8b	Hold the Line by Seawall Encasement and Revetment
IW10	<b>Seaview Duver</b>			SMU8c	Hold the Line by Seawall Encasement and Revetment
IW11	<b>Seaview</b>	RYD7	Hold the existing defence line	SMU8d	Hold the Line by Seawall Encasement and Revetment
IW12	<b>Seagrove Bay</b>	RYD8	Hold the existing defence line	SMU9	Northern - GE 31- 32a - Hold the Line by Seawall Encasement and Rock Revetment Central - GE 32b and c - Hold the Line by Seawall Encasement and Rock Revetment Central - GE 32d - Hold the Line by Offshore Breakwaters Southern - GE 33 - Hold the Line by Seawall Encasement and Rock Revetment

## 2.2 Baseline Scenarios for the Policy Development Zone

### Summary of future coastal risks in PDZ2:

Along the western half of PDZ2, continuing erosion will occur with significant potential for erosion triggering slumping of the coastal slopes and reactivating shallow landslides. These failures would only threaten a limited number of properties. Sea level rise around Wootton Creek and near Wootton Bridge will increase the frequency of tidal inundation and overtopping to the local properties behind the current defence line. The key asset losses would include the ferry terminal and the Wootton Road Bridge.

In the eastern half of PDZ2 the low-lying sections of Ryde (which include areas of the main commercial and tourism centres along with some residential properties) are at risk from tidal inundation. The seafront assets in the coastal communities to the east are at risk from both erosion and tidal flooding. Ongoing erosion at Seagrove Bay could lead to the reactivation of landsliding and loss of a large number of residential properties and infrastructure over a 100 year period.

### 2.2.1 No Active Intervention (Scenario 1, NAI)

Under this scenario no further work would be undertaken to maintain defences. Where defences fail they would not be repaired. The principal difference between this scenario and the unconstrained scenario discussed earlier is the residual impact existing defences would have on the behaviour of the coast. A detailed description of this NAI scenario is given in Appendix C3, area by area. The following discussion provides a summary, drawing together an overview with particular focus on how the use of the coast would be affected. In particular, this baseline scenario is discussed with respect to the overarching objectives set out previously in sub-section 1.3 of this PDZ2.

#### *Old Castle Point to King's Quay*

From Old Castle Point to King's Quay (the coast around Osborne Bay) the coastal frontage is mostly undeveloped woodland with pockets of agricultural land. The historic estates of Norris Castle and Osborne House adjoin this frontage. Sea defences along here would fail by the end of the first epoch and would promote coastal slope undercutting. Erosion would lead to possible reactivation of inactive shallow landslides and ultimately generate significant recession of the coast within several embayments. The woodland vegetation of these slopes, however, may bind the superficial layers and delay the onset of these reactivations. In the medium to long term erosion and cliff retreat will continue at increased rates due to the impacts of sea level rise and increased wave attack. Sediments yielded would naturally distribute along frontage. Most recession may result from the 'one-off' reactivations rather than from ongoing processes. This erosion and retreat will impact on the parkland and woodland of Norris Castle and Osborne House and affect localised access to the shoreline below Osborne House. This unit is part of the Solent Maritime SAC, and supports a number of designated features including intertidal mud and sandflats, coastal saltmarsh and vegetated shingle, and seagrass beds immediately offshore. The intertidal flats are used as feeding grounds by Brent geese and other water birds and waders and the seagrass beds are known to support particularly rich communities. As defences fail the coast will roll back naturally, creating an opportunity for the expansion of intertidal and coastal habitats.

The woodland comprises both semi-natural ancient woodland and plantation woodland. An area of vegetated shingle is located in Osborne Bay. The intertidal mudflats are used as feeding grounds for Brent geese and other water birds and waders. Seagrass beds extend all along this stretch of coastline. Those within Osborne Bay have extremely rich associated communities together with interesting interstitial communities in the adjoining sand.

King's Quay is surrounded by low wooded cliffs and coastal slopes which will continue to erode, and possibly trigger cliff reactivation at increasing rates due to the impact of sea level rise. The inlet is protected by narrow sand and gravel spits that are vulnerable to overwashing, recession and breaching. The spits may become naturally maintained by increases in sand and gravel supply following local cliff reactivations updrift. The most likely future evolution is for continued landward migration of the spits. The coast is undefended, although a masonry wall and earth embankment forms a causeway across the estuary which may fail early in the first epoch if unmaintained. This area is not easily accessible, with only a private road with restricted access leading to the foreshore. Limited tidal flooding may occur up to Palmers Brook and near Woodhouse Copse in all epochs and is not expected to adversely affect property or access in the area. NAI will allow King's Quay to evolve naturally; it is expected that a wider creek mouth will develop and spits at the entrance will turn in. This policy will support ongoing estuarine processes and ensure that important SAC and SPA/Ramsar habitats are retained, with opportunities for the creation of further saltmarsh and intertidal flats towards the head of the creek.

#### *Woodside*

The coastal frontage of Woodside is developed on a low slope and interspersed with areas of woodland. The frontage is mainly undefended but includes approximately 180m of ad hoc concrete defences which will fail in epoch 1 with no future maintenance. No Active Intervention will result in erosion of the frontage, leading to reactivation of slip planes in the coastal slope as the stabilising toe weighting is eroded away by wave action. This will place seafront properties around the caravan park and holiday village at risk. The increasing cliff recession will supply sediments to the beach and eastwards which may impact significantly upon Wootton Creek and the ferry channel. Allowing the coast to roll back would support the natural evolution of SAC and SPA/Ramsar habitats (principally intertidal sand and mudflats) and the bird life that they support, and offer opportunities for the expansion of these habitats over time. NAI would also support ongoing natural processes at Chapel Corner which is a geologically unique site, protected as part of the Kings Quay SSSI.

#### *Wootton and Fishbourne*

The predominantly residential villages of Wootton and Fishbourne are located along the banks of Wootton Creek. Access to the creek is limited due to private land ownership and there are numerous recreational moorings and pontoons in the Creek as well as an assortment of private defences of varying condition. Under this scenario by the end of the first epoch the vast majority of the Creek banks will be undefended, and the low shoreline will be exposed to tidal inundation and overtopping leading to some potential erosion and slope destabilisation. The twin spits at Wootton Creek have migrated into the estuary and this trend is likely to continue, and could allow wave penetration further into the Creek.

This area is part of the Solent and Southampton Water Ramsar Site and Solent and Southampton Water SPA and SSSI with the partly reclaimed freshwater pond (Old Mill Pond) at the landward extremity. Historically, saltmarsh has disappeared from the Wootton Estuary owing to a combination of hydrological change and development but small pockets remain. No active intervention may progressively increase the amount of unmodified water frontage, helping support the development of saltmarsh and intertidal mudflats, but will have significant impacts for the residential properties and businesses lining the Creek. The scope for significant intertidal and saltmarsh habitat gain is limited principally by the relatively steep slopes of the valley. Habitat gain would be focused therefore in low-lying pockets, near the holiday village just south of Lambsleaze Copse, at Wootton Bridge village and up the valley beyond the bridge, and in the area just south of the Ferry Terminal. Under NAI, saline intrusion would increasingly influence Old Mill Pond, with resultant changes in habitats.

East of Fishbourne the coastline is largely undefended and naturally evolving with scattered remains of historic sites. The shoreline of the Wootton-Quarr area has been the subject of an intensive archaeological survey funded by English Heritage with exceptionally rich intertidal resource, preserved by, and in recent decades revealed within, intertidal muds. In the centre of the

area there are some privately owned short sections of defence generally in the form of walls, slipways and timber structures providing access to the shore. The natural recession of the shoreline will resume when the limited areas of existing defences collapse during the first epoch. No Active Intervention will result in ongoing erosion of this sparsely developed frontage and may result in shallow landslides and slumping of the coastal slopes as the coast adjusts naturally to sea level rise. Coastal retreat may place several properties on the outskirts of Pelhamfield at risk as well as the flooding of a small lagoon near Quarr Abbey Farm.

The area is designated of international importance (Solent and Southampton Water SPA/Ramsar) for nature conservation as a result of the bird life that intertidal sand and mudflat habitats support. NAI would for the most part benefit these international designations, with the roll back of the coast enabling the extension of intertidal flats. However, on the coastline in front of Quarr Abbey, existing coastal grazing marsh and vegetated shingle habitats may be lost to erosion and tidal inundation with time.

Along the western section of the PDZ, under this scenario two of the overarching objectives; to maintain transportation links to the Island and to support the historic landscape; are not achieved. However, the important natural landscape would be supported and allow development of the natural environment. There would be a gradual increase in flood risk to Wootton Bridge affecting the coastal properties and access (although this is already limited), but given the timeframes there would be scope for community adaptation.

#### *Ryde to Seagrove Bay*

The developed coast behind Ryde, Appley and Puckpool forms one of the largest settlements on the Isle of Wight. The entire coastline is defended, with stone masonry and concrete seawalls lining frontage with residual lives of generally 10-15 years, with sections of wall fronting parts of Pelhamfield in the east and Puckpool in the west lasting 15-25 years and the walls and revetments surrounding Ryde Harbour are expected to last at least 25 years. Several short curvilinear breakwaters and straight groynes fronting the boating lake in the east will assist in retaining beach sands for 5-10 years.

Defences along the majority of the frontage of Ryde town will fail towards the end of the first epoch, allowing wave attack to promote erosion of the exposed shoreline, despite the sediment accumulation forming Ryde Sands. During the 19<sup>th</sup> century, reclamation of the Ryde backshore occurred, isolating the former cliff line from wave attack. Subsequently, the cliff/coastal slope was partly re-graded and incorporated into the urban area of Ryde. This is a difficult area to evaluate, for much of the esplanade is built forward onto the beach and Ryde Sands. The esplanade, a section of the railway line (including tunnel) and the coastal road will be affected by ongoing erosion and should the coast erode in a similar manner to that of adjacent frontages, once exposed slip planes in the coastal slope may be reactivated.

A significant risk increasing through the first epoch and beyond is potential for tidal overtopping affecting the esplanade properties, and extending inland following failure of the coastal defences. Large numbers of residential properties and businesses are at risk along the lower reaches of St. Thomas Street, extending eastwards along the Esplanade and Strand as far east as the boating lake. Flooding could also extend inland along Monktonmead Brook to Ryde St. Johns Station and include lower Monkton Street, Marymead Close, West Hill Road, across Rink Road and Park Road and affect the northern end of St. Johns Wood Road. No Active Intervention will severely affect the functioning of Ryde as a key transport link and tourist resort for the Island.

Ryde Sands is a regional sediment sink, and with the exception of periodic channel dredging to provide access to Ryde Marina, has very little human intervention. The future contribution of Ryde Sands as a control on shoreline behaviour under a No Active Intervention scenario is unclear. Ryde Sands is sensitive to wave climate and will be vulnerable to the rising sea level and increased storminess. Erosion and loss of the foreshore sands would lower beach levels and increase rates of erosion of the stabilised sediments underlying Ryde Esplanade and the coastal

slopes. Sediment input by littoral drift from the south-east and west is likely to increase if adjacent shorelines erode and reactivate under this scenario, but the balance of sediment supply and movement is unclear. NAI would be expected to have consequences for important coastal habitats associated with the Solent and Southampton Water SPA/Ramsar designations; the extent of the intertidal sandflats and offshore seagrass beds is likely to be altered as a result of erosion, with some opportunity for extension of intertidal flats near Ryde Pier. Construction of the small harbour at Ryde Marina led to a build-up of sand to the east and resulted in the need to extend the Monktonmead outfall. Further accumulation of sand in this area whilst the defences slowly deteriorate may cause further disruption to land drainage arrangements.

Appley Park, Puckpool Point and the wide sandy beaches adjoining the esplanade along these frontages are popular recreational areas for both tourists and residents. In this scenario, from Appley to Puckpool, wave attack and erosion will begin at breaches in the seawall towards the end of the first epoch, particularly where the concrete seawall is exposed to undermining by low beach levels, leading to voids under the promenade. The pedestrian seafront promenade will be severed. Erosion would result in the loss of land and recreational amenities along the promenade and in Appley Park, the loss of the trunk sewer, Appley Tower, St Clare's Cottage and Puckpool Battery. In the longer term the potential for reactivation of the Appley Park coastal slope increases as erosion cuts back further into the steep slopes undercutting and destabilising them. Erosion will threaten the operation of the important and newly-renovated Sewage Treatment Works for Ryde. At Puckpool Point, the Fort embankment and structure (a Scheduled Monument) would be undermined and lost to erosion, diminishing this minor headland. Any accretion at Ryde Sands may reduce the potential rate of erosion. The main environmental value in this area and to the east are the sandflats, designated as part of the Solent and Southampton Water SPA/Ramsar sites, which provide important feeding grounds for waders and waterfowl. As a result of erosion and inundation the coastline here would roll back, allowing for the natural development of further intertidal habitat.

The coastal defences at Springvale and Seaview Duver will remain through the first epoch protecting the rows of seafront properties from erosion risk. Into the second epoch under the No Active Intervention scenario there will be the loss of seafront assets including the seafront public highway, residential and commercial properties and a pumping station. Potentially the defences at Seaview Duver built in 2004 to protect properties and the low-lying intertidal brackish lagoon at Seaview Duver could survive until the third epoch, at which point overtopping, erosion and breaching of the barrier may form an open tidal inlet, with the potential for beach depletion and down-drift at Springvale, Appley and Ryde. However, significantly prior to this, lack of maintenance of the outfall and inlet for the lagoon would significantly alter the functioning of Hersey Nature Reserve. Under NAI the lagoons and coastal grazing marsh at The Duver, which form part of Ryde Sands and Wootton Creek SSSI, would ultimately be lost. Properties on the seafront and the edges of the inlet would be at risk from tidal flooding without tidal flows controlled by the barrier.

Seaview village is developed around Nettlestone Point, which is relatively low lying, positioned between Seaview Duver to the west and higher land around Seagrove Bay to the south. Along the Seaview seafront, privately owned defences provide a coast protection function and take a different form, with the narrow, low walkway (footpath) backed by property boundary walls that, despite frequent gate openings, provide additional protection against overtopping. The densely developed village of Seaview is behind. The stone masonry wall is in significantly poorer condition than the Springvale and Seaview Duver frontages and is expected to fail in 10-15 years. There are a number of slipways and landing stages, allowing recreational access for watercraft. In common with those frontages to the west, this area is low-lying with seafront properties at tidal flood risk. No Active Intervention will result in the deterioration and failure of the existing defences in the first epoch and residential properties will be affected by erosion. By the second epoch the seafront properties and the western section of Bluett Avenue behind will also be at risk of tidal flooding, alongside Saltern's Road. In the longer term, erosion of the Bembridge limestone headland will continue, although it is likely to remain a defined headland. The tidal flood risk zone will expand eastwards into the edge of Seaview, potentially affecting additional properties at the western ends

of Bluett Avenue and Fairy Road. The varying height and design of existing defence structures alongside progressive failure of the defences in the coming decades (under a scenario of No Active Intervention) place a number of properties at tidal food and erosion risk and will affect access roads and footpaths in the area.

South of Nettlestone Point rows of large properties line the coast, which will be at risk of erosion following failure of defences towards the end of the first epoch. The shallow Seagrove Bay is backed by a largely developed coastal slope, part of the village of Nettlestone. In these areas several roads and footpaths lead to the coast and provide access to properties. The coastal slope at Seagrove Bay has a long history of land slippage with significant ground movements observed in 2002/03. Once the defences fail, it is likely that the coastal slope will erode and begin to form low cliffs in most of the bay area. Within a few years of failure of the defences the increasing toe erosion of the slopes and antecedent winter rainfall will reactivate the failure planes causing landslips, which could occur in epoch 2 or epoch 3, especially in the southern and central parts of the bay. Over a 100 year period, a large number of residential properties will be lost, along with infrastructure assets. Sediments yielded by the commencement of cliff erosion are likely to contribute to local foreshores, before contributing to drift inputs north-west towards Ryde Sands. Under a No Active Intervention scenario temporary stabilisation of the slope will occur following slope failure/breach of the seawall due to the slump material from the failure acting as toe weighting. A failure cycle will be established as, in time, erosion of the slump material will occur and remove the toe weighting and thus reduce the slope stability causing further failures to occur. No Active Intervention will therefore have serious consequences for the lower parts of the village of Nettlestone surrounding Seagrove Bay, principally due to erosion triggering slope failures. At the southern margin of Seagrove Bay is the transition from the defended shoreline (extending from Ryde) to the naturally evolving and eroding wooded coast at Horestone Point.

In summary, over this section the obvious and dominant impact of this scenario would be on the built environment. The centre of Ryde would be abandoned to tidal flooding, the use of the shoreline would be severely compromised and transportation to and around the Island via the ferry and railway would be disrupted. There would be considerable loss of properties, the ramifications of which for smaller coastal villages are likely to be non-recoverable. There could be marginal gains in terms of nature conservation interests within the Solent Maritime SAC, and Solent and Southampton Water SPA/Ramsar sites, with the restoration of intertidal habitats and associated benefits to feeding birds in the various creeks and larger valleys. As a result of the sediment rich shoreline there is also potential for development of saline lagoons within such areas. The landscape would totally change from that of the typical Georgian seafront to a more natural seascape. There would however be the issue of dilapidation of existing properties under continuing threat of loss and flood risk and there would be significant loss of the historical landscape.

The economic damages due to flooding and erosion are summarised in Table 1, at the end of this sub-section and a summary of impacts with respect to the overarching objectives are set out in Table 2, in comparison with the assessment made for the following 'With Present Management' scenario.

### **2.2.2. With Present Management (Scenario 2, WPM)**

This scenario is defined by current management practice as set out by policy defined in SMP1 and in some areas modified by more detailed examination through subsequent strategies. The various policies and approaches that are in place are summarised in the table at the start of this section 2. In practice, continuing 'with present management' practices means assessing the consequences of maintaining and continuing the presence of existing defence structures.

Overall, the current approach to management in this scenario may be defined as the intent to:

- Retain the natural evolution of the relatively undeveloped and wooded coast from the outskirts of East Cowes along to Ryde, (with the policy of No Active Intervention but monitor) with the exception of Wootton Creek. Local areas of properties will be affected by coastal retreat. The landscape and nature conservation interest of the area will be allowed to adapt naturally to sea level rise.
- At Wootton Creek the existing patchwork of defences would be maintained by a policy of Hold the Line by seawall encasement, although flood risk remains dependent on the levels of individual defences maintained. The ongoing maintenance of these defences would be undertaken by private funds.
- The continuous defences stretching from Ryde to Seagrove Bay would be maintained through a policy of hold the line by seawall encasement and revetment. There is risk of significant tidal flooding extending inland along Monktonmead Brook in central Ryde and at Seaview, which would be dependent of the height and standard of the weakest point of the maintained defence line to minimise this risk. At Seagrove Bay offshore breakwaters have been considered to provide additional protection, but are not current management practice so are not considered in this scenario prediction.

In Osborne Bay management of this largely undeveloped section of coast has been 'No Active Intervention but monitor', under which the consequences of future change would be the same as outlined earlier in the section. However, remnant defences are present in several locations, which if maintained, would produce a patchwork of slope recession scarps but in the long term the outflanking is likely to render remnant defences ineffective. Maintenance of the defended sections would reduce sediment supply to the system and result in increasing foreshore narrowing. Similarly, erosion will continue to cause reactivation and retreat of the low wooded cliffs and coastal slopes surrounding King's Quay, alongside potential landward migration of the entrance spits dependent on availability of sediment supply and localised flood risk. Sections of defences in adjoining frontages would be increasingly outflanked if maintained. At Woodside maintenance of the defence structures will prevent erosion in front of the developed area at the west of the frontage, but the rest of the unit will continue to erode and reactivate in line with the No Active Intervention scenario outlined above. Maintenance of the existing defence structures along this eroding frontage is unlikely to be sufficient to prevent slope failure, as they will be more frequently overtopped, subject to wave attack and higher sea levels, and increasingly outflanked.

At Wootton Creek, erosion of the majority of the shores of the outer and inner Creek would be prevented by maintaining existing defences, although overtopping is still likely to occur if the levels of defences are not raised. Erosion of the small currently undefended frontages within the Creek would outflank adjacent defences. Tidal flooding already affects properties near Wootton Bridge and would occur increasingly frequently if defences are maintained solely at their current levels. Maintenance of existing private defences around the Creek shoreline would impact on the ability of the estuary to adapt naturally to sea level rise and there would be continued loss of saltmarsh and intertidal flats as a result of coastal squeeze in a number of locations on both the east and west shores. The sluices at Wootton Bridge will require maintenance to continue to control tidal flows between the Creek and the Old Mill Pond, which will gradually return to more natural conditions. The tidal limit is at the top of the Mill Pond.

Along the Quarr and Binstead frontage cliff erosion and retreat will result in localised reactivation of the coastal slope in line with the No Active Intervention scenario outlined above, although if existing limited sections of local defences are maintained, significant outflanking of the defences will rapidly occur, especially following erosion reactivation of the coastal slopes in the east of the frontage. At current levels the defences will also be increasingly destabilised by overtopping and wave attack, which may trigger failures in the slopes behind. Important coastal habitats, designated as part of the Solent and Southampton Water SPA/Ramsar, will be largely allowed to evolve naturally with the erosion and succession of the coastline.

In assessing this scenario along the western section of the PDZ against the objectives, individual properties would be defended and protected against flooding and erosion. This would however become increasingly difficult to manage in the long term. The prominence of defence would start to impact on the important natural landscape and would do little and may even cause increased erosion of the foreshore platform to the detriment of important historical features. There would be loss of intertidal flats and saltmarsh habitat within Wootton Creek as a result of coastal squeeze along the majority of the shoreline.

Along the developed frontage of Ryde, Appley and Puckpool if present seawalls and defences are maintained then this, along with the wide dissipative intertidal sand banks, will stabilise the shoreline and prevent erosion from commencing, protect key infrastructure and transport links, and theoretically maintaining amenity use of the area. If the level of the defences were raised, this could affect the access to the shoreline from the coastal road and footpath, as the defences could potentially form a barrier affecting the amenity use of the area. In the longer term, the risk of significant tidal flooding extending inland along Monktonmead Brook in central Ryde remains and would be dependent on the height and standard of the defence line being raised to minimise this risk. As defences along the coastline to the south-east are also maintained, Ryde Sands may suffer sediment starvation and potential erosion, as there would continue to be no direct sediment input to the frontage. However, the quantity of sediment stored at Ryde Sands is testament to significant sediment supplies to this drift convergence zone and relative stability in recent decades, so littoral drift may compensate for lack of local sediment input under a regime of the present a hard defence line being maintained. This area of accretion is also seen as being driven by a broader interaction between the open coast and the Solent. Longshore sediment supply is therefore not necessarily critical to the existence of Ryde sands. It seems probable that the larger scale supply of nearshore sediment would continue. While this remains an uncertainty and while there would be the need for continuing monitoring, the suggested processes support the conclusion that this area would continue to have significant sediment resource. This is further supported by the fact there has been a long history of defence to the east and that this has not diminished the sediment accretion at Ryde.

In Appley and Puckpool the policy outlined in the North-East Strategy Study was Hold the Line followed by potential transfer to No Active Intervention but monitor if there was not sufficient economic viability to maintain the defences. It is believed that the existing defences were originally constructed in order to protect the amenity assets along this frontage from erosion. The fixed defences mean that the coastline currently can not erode naturally or realign to another orientation. If the defences are allowed to fail, Appley Tower, St Clare's Cottage, Puckpool Battery, promenade shelters, a holiday park and its associated properties, a trunk sewer and Sewage Treatment Works for Ryde will be at risk from erosion over the next 100 years. There are also various recreational and amenity areas and activities carried out behind the defences which would be affected if No Active Intervention was adopted as under this with present management approach. Should erosion recommence after failure of the defences the coastal slope would be at a greater risk of slip failure. This hybrid option was been considered as the current defences are in reasonable condition. Intertidal sand and mudflats and nearshore seagrass beds, which are of nature conservation importance, may be altered or lost as a result of coastal squeeze.

Along the low-lying frontage of Springvale, Seaview, Duver and Seaview maintenance of the seawalls will continue to prevent shoreline erosion and retreat, and will protect properties and seafront roads and access. The level of the defences would need to be raised to counteract increasing sea levels and adverse consequences of overtopping and tidal flooding in some areas. Lowering foreshore levels will expose the defences to wave attack. There will be no direct sediment input into this unit, which will be dependent on littoral drift from the south-east, where defences will also be maintained under this scenario. The defences fronting parts of Nettlesome Point and Seaview are narrow and may not have the space to easily raise defence levels. Maintaining defences here will protect areas of grazing marsh and lagoons which are of nature conservation interest (part of Ryde Sands and Wootton Creek SSSI).

In Seagrove Bay, with present management practices continuing and defences maintained, the coastal slopes behind Seagrove Bay are likely to remain inactive. Gradual narrowing of the foreshore is likely to occur with loss of amenity and increasing the exposure of defences to wave attack. Importantly, whilst maintaining seawalls to prevent toe erosion will effectively minimise the risk of slope reactivation, the predicted increase in winter rainfall could also trigger slope failures in the longer term, which could breach or collapse the seawall and expose the ground behind it to erosion.

Maintaining and raising the defence line from Ryde to Seagrove Bay has the potential to protect the communities from flood and erosion risk. However, raising defences may impede access to the shoreline and the landscape views in the medium term. Tidal flood risk will remain for areas of the communities of Ryde and Seaview and the communities will need to adapt to these future risks in the long term.

### Table 1a. Economic Assessment – Erosion damages

The following table provides a brief summary of damages determined by the SMP2 MDSF 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.

#### ASSESSMENT OF EROSION DAMAGES

Epoch	0 -20 year			20 – 50 years			50 – 100 years			
No Active Intervention	Number of properties:		Value	Number of properties:		Value	Number of properties:		Value	PV Damages
Location	Residential	Commercial	x £1000	Residential	Commercial	x £1000	Residential	Commercial	x £1000	(£x1000)
Osborne Bay	0	1	0	0	1	0	3	2	567	61
Woodside	4	6	784	2	2	410	3	10	881	1,056
Wootton Creek mouth	0	10	0	0	9	150	11	7	2,276	266
Quarr & Binstead	1	7	249	3	3	596	4	10	934	538
Ryde	3	33	1,633	21	10	4,220	67	20	13,614	3,946
Appley & Puckpool	0	0	0	1	16	257	0	12	329	140
Springvale & Seaview Duver	0	0	0	10	3	1,915	52	50	11,042	2,311
Seaview & Seagrove Bay	0	4	0	20	2	3,783	123	30	23,457	4,248
<b>Total for PDZ2</b>										12,566
With Present Management	Number of properties		Value	Number of properties		Value	Number of properties		Value	PV Damages
Location	Residential	Commercial	x £1000	Residential	Commercial	x £1000	Residential	Commercial	x £1000	(£x1000)
Osborne Bay	0	0	0	0	0	0	3	0	566	61
Woodside	0	3	0	0	2	33	0	7	180	37
Wootton Creek mouth	0	0	0	0	0	0	0	0	0	0
Quarr & Binstead	0	3	0	3	3	596	3	7	686	264
Ryde	0	0	0	0	0	0	0	0	0	0
Appley & Puckpool	0	0	0	0	0	0	0	0	0	0
Springvale & Seaview Duver	0	0	0	0	0	0	0	0	0	0
Seaview & Seagrove Bay	0	0	0	0	0	0	0	0	0	0
<b>Total for PDZ2</b>										362
Notes										
SMP.										

### Table 1b. Economic Assessment – Flood damages

The following flood damages have been determined through use of MDSF. These figures are aimed to indicate the level and impact of flood risk rather than being a detailed economic appraisal. In many areas substantial numbers of properties would be liable to flooding on the more frequent events both under NAI and WPM, a nominal write off value has been allowed in the table for properties at frequent risk; this generally excludes values at risk at present on a 1:1 year event, in 50 years time for the 1:10 year event and in 100 year time the 1:50 year event.

#### ASSESSMENT OF POTENTIAL FLOOD RISK

No Active Intervention	Flood risk tidal 2010			Flood risk tidal 2060			Flood risk tidal 2110			PVD (£x1000)
	No. of properties		AAD x £1000	No. of properties		AAD x £1000	Number of properties		AAD x £1000	
	< 1:100yr	>1:100yr		< 1:100yr	>1:100yr		< 1:100yr	>1:100yr		
<i>Location</i>	< 1:100yr	>1:100yr	x £1000	< 1:100yr	>1:100yr	x £1000	< 1:100yr	>1:100yr	x £1000	
Kings Quay (F)	1	0	0	1	0	0	1	0	0	0
Wootton Creek (G1, 2 & 3)	109	11	900	122	14	1,726	146	6	3,137	41,196
Ryde (H)	326	186	930	521	87	1,576	699	49	2,854	39,559
Seaview (I)	226	16	3,958	244	11	6,372	271	18	9,834	158,108
Seagrove Bay (J)	0	1	3	1	3	14	15	1	80	420
Agricultural Total			20			22			24	628
<b>Total for PDZ2</b>										239,911
With Present Management	No. of properties		AAD x £1000	No. of properties		AAD x £1000	No. of properties		AAD x £1000	PVD (£x1000)
<i>Location</i>	< 1:100yr	>1:100yr		< 1:100yr	>1:100yr		< 1:100yr	>1:100yr		
Kings Quay (F)	1	0	1	1	0	1	1	0	1	0
Wootton Creek (G1, 2 & 3)	109	11	146	122	14	218	146	6	78	4,786
Ryde (H)	0	186	118	0	87	184	0	49	293	4,654
Seaview (I)	0	16	63	0	11	81	0	18	109	2,187
Seagrove Bay (J)	0	1	5.26	1	3	3	15	1	5	91
Agricultural Total			10			11			12	320
<b>Total for PDZ2</b>										12,038

## Table 2. General Assessment of Objectives

The following table provides an overall assessment of how the two baseline scenarios impact upon the overall objectives agreed by stakeholders. These objectives are set out in more detail within Appendix E. The table aims to provide an initial high level assessment of the two baseline scenarios, highlighting potential issues of conflict. These issues are discussed in the following section, examining alternative management scenarios from which SMP2 policy is then derived.

STAKEHOLDER OBJECTIVE	NAI			WPM		
	Fails	Neutral	Acceptable	Fails	Neutral	Acceptable
To sustain and adapt the important centres of economic activity including Ryde and surrounding waterfronts and the gateways to the island at Fishbourne and Ryde.	Fails					Acceptable
To support adaptation of the communities of East Wight to reduce flood and erosion risks.	Fails			Fails		
To maintain important access along the seafront and shoreline use of the area.	Fails				Neutral	
To support opportunity for adaptation supporting and enhancing the nature conservation value of the area.			Acceptable	Fails		
To sustain the historic landscape and environment where practicable.	Fails				Neutral	
To maintain the important landscape subject to natural change.		Neutral			Neutral	

### 3. Discussion and detailed policy development

The discussion provided above of the two baseline scenarios highlights, foremost, the very large regional economic risk to the area that continued management of flooding and erosion aims to address. In economic terms, the value of assets at risk and the socio-economic impact of No Active Intervention on sustaining the area, the largest developed area on the Island, would justify continued defence of the frontage. This is quite clearly a major driver for policy development over the eastern half of the PDZ.

However, it also highlights the important interaction and dependency, in meeting these social objectives, of balancing this with sustaining and enhancing the natural environmental values. The importance of this not only relates to the essential inherent value of the natural environment, as recognised through the various environmental designations, but also in achieving the aims for an integrated and diverse setting within which social objectives are delivered.

The overall conclusions that may be drawn are that a policy scenario of No Active Intervention fails to address the substantial threat to the economic, social and heritage value of the area. While this management intent could deliver some significant ecological benefits, it fails to deliver a balanced sustainability of values. The identified economic benefits of the With Present Management scenario demonstrates the benefit of maintaining defences to large areas of the coastline and Wootton Estuary - but in specific detail potentially fails to take account of the need to improve the defences to a higher standard against sea level rise and sustain nature conservation/landscape values. Therefore, it is the delivery detail of the existing With Present Management approach that needs to be considered rather than a major change from current practice.

#### *Old Castle Point to Woodside*

The previous management of the open coastline between Old Castle Point and the entrance to Wootton Creek had suggested an approach of doing nothing and/or retreating the existing line. Given the limited risk to infrastructure along this frontage it is sensible to continue this. When considering the village of Woodside and the value of the community, it is reasonable, that short term maintenance of the existing defences continue but that in the longer term with increased sea level rise and erosion, it becomes unsustainable to do so. The implications are the threat of longer term impacts on the functioning of Wootton Estuary through increased sediment supply and the loss of property over the 100 year period at Woodside.

#### *Wootton Creek and Quarr*

The No Active Intervention scenario for most of the estuary would be desirable; however given the location of the important transport links to the mainland and areas of flood and erosion risk this would be unacceptable for the whole of the Creek. To the east at Quarr and Binstead the coastline should be left to evolve naturally with ongoing monitoring. The proposed overall approach for Wootton Creek is based on transferring from the 'With Present Management' approach to more sustainable long-term adaptation to rising sea levels and future risks. Within the majority of the Creek properties are generally set back from the coast and not in the flood risk zone. A policy of No Active Intervention is therefore appropriate here, although this will not preclude the maintenance of existing private defences, which often provide waterside access. There would be a presumption against allowing new areas of defences and significantly raising defence levels. This will allow natural realignment to occur wherever possible to avoid increasing future assets within the flood risk zone, encourage planned retreat and allow habitat adaptation as sea level rises. At the ferry terminal, with increasing sea level rise, there may be a need for further defences towards the end of the first epoch to maintain this critical infrastructure for the Island in the long term. In the outer eastern section of the Creek there are a number of properties at risk from erosion over the next 100 years (in contrast to the flood risk along the margins of the inner and central Creek). This area is currently defended and the SMP proposes allowing the maintenance of private and public defences in the short to medium term, on the basis that in the long term risk levels will continue to increase and planning managed realignment and adaptation to coastal change will be necessary. This defended coast also assists protection of the adjacent ferry terminal. Moving to the inner end

of Wootton Creek, the margins of Wootton and Fishbourne villages reach down to the waterside near Wootton Bridge, with properties at increasing risk of tidal flooding in the south-east corner of the Creek (near the public house, near Pump Lane and in places below Barge Lane). A policy of hold the line is proposed for this area to allow measures to reduce flood risk when required and where economically viable, including the maintenance of private defences. The policy of hold the line is also intended to maintain the functioning of the important Wootton Bridge road link.

#### *Wootton Old Mill Pond*

The Old Mill Pond is situated at the head of Wootton Creek. The pond covers an area of approximately 14ha upstream of Wootton Creek and Wootton road bridge. A mill has existed at Wootton Bridge since the 11<sup>th</sup> century. Water levels in the pond are currently managed through a series of structures at Wootton Bridge. Throughout the 20th century and until the present day, water levels have been controlled in the Mill Pond even though the mill has ceased to be operational. Past management of the pond and the duration of water retention has varied considerably over the past 30 years. The Environment Agency maintains the control structure at Wootton Bridge to prevent flood risk. The pond is an essential element in the character of Wootton Bridge and a valued amenity to the community. People travelling along the A3054, the main road from Ryde to Newport, view it daily. The objectives of management of the Mill Pond stated in the Water Level Management Plan (2008) are: to preserve and enhance the fringe saltmarsh marshland and mudflats towards the southern end of the pond together with the flora and fauna in general by positive control of water levels; preserve the Tentacled Lagoon Worm, by ensuring the right brackish conditions found in saline lagoon habitat; some of the time, maintain water levels for aesthetic purposes within the vicinity of the bridge; protect people and property from flooding; and prevent adverse silting of the pond.

Returning the pond to tidal estuary with inter tidal mud flats in the long term would offer an opportunity to maintain the interests of the adjacent Solent and Southampton Water SPA. It is a clear aspiration of Natural England, Isle of Wight Council and the Environment Agency to return the Mill Pond to estuarine conditions, however there are a number of constraints to this including the potential effect on velocities and geomorphology downstream of the bridge, the visual effect of low tide conditions upstream of the bridge and the concerns of local businesses. This SMP supports this gradual planned adaptation through a policy of managed realignment for the sluices and the Millpond, with the following intentions. The important road link should be maintained (via defence or bridge). In the short term, Briddlesford Copse SSSI (upstream of the Mill Pond) depends on maintaining a minimum of saline conditions and management proposes a water level regime which delivers the minimum saline requirements to Briddlesford Copse SSSI, also designated as a SAC for its provision of habitat for Bechstein's bat; further WLMP objectives are provided above. It is not anticipated that the policy would result in any adverse effects on the SSSI. The intention of management in the medium term is to move towards a more 'natural system' within the practicalities of the structure manipulation and local management constraints. This needs to be gradual change, increasing the salinity level at the upper reaches of the Mill pond to help redevelop the transitional habitats on these upper reaches near to Blackbridge Brook. However these changes in salinity may affect the woodland and this will need to be investigated. In the long term, the aspiration is to re-instate tidal conditions, although this will need careful consideration of whether reducing management would impact upon erosion, damage to property or cause foam downstream in the medium to long term.

#### *Ryde to Seagrove Bay*

The final section of coast within this zone is the main frontage between Ryde extending through to Seagrove Bay. The large scale of damages arising from the No Active Intervention scenario along this section would be unacceptable, having significant regional consequences. The key features of management in this area are associated with maintaining the transport links to the mainland and the economically important use of the foreshore and backshore width. This would provide protection from erosion to the properties along the frontage behind. In the past this has achieved through sea defences and groynes alongside minor amenity maintenance of the upper beach. With anticipated sea level rise, there is likely to be increased pressure on maintaining the present

defences. Alongside seawall maintenance or improvement, typically, the response to increased water levels and potential increased wave energy would be to consider recharge (moving towards recharge or recycling as a defence function alongside amenity value) and increasing the length and height of control structures. Other options would be to construct offshore breakwaters to hold the existing line. These actions would potentially impact on the internationally important nature conservation value of the Ryde Sands area. It is difficult to fully state the influence Ryde Sands has on the long term management of this area, even through it is currently a large accretion zone. The concern, however, is anticipated to be how the accumulated sand would adapt to sea level rise rather than as to whether the sands would be lost in their entirety.

Although the policy advice will be updated as better information becomes available through climate change research, this does suggest that in the future there may be a need to re-examine how the use and defence of the frontage is sustained, both in terms of engineering and possibly funding. The attitude of the Isle of Wight Council has been to carefully examine, through development of such documents as the North East Coastal Defence Strategy, how best use can be made of its shoreline while maintaining existing overall values.

Overall, the recommendations from the SMP2 for the Ryde to Seagrove Bay frontage would be for Hold the Line over the three epochs in all areas. The intent for management from is to maintain protection through hard engineering and sediment movement control, thereby sustaining the essential recreational, amenity and access benefits along with defence of important infrastructure and properties. The SMP, however, recognises the possible difficulties in terms of the potential increased effort required to maintain the existing practice of sea defences and groynes in the long term and access through or alongside a raised defence line. As such, a potential policy within possibly the third epoch could be to advance the line. This approach would intend to constrain sediment drift so as to retain areas of beach between areas of reclamation. This possible policy would need to be taken forward in partnership within a strong integrated framework for development of the whole frontage. Furthermore, this framework would need to define acceptable influence or mitigation with respect to maintaining underlying coastal processes and management of the adjacent areas of coast, and would be constrained by the nature conservation interest of the area.

Within this area, the Appley and Puckpool section of this frontage requires further explanation. Here the Strategy raised the possibility of reducing management following the end of the life of the current defences, based on the economic or technical viability of maintaining defences in the longer term. However, there are additional factors of importance in this decision. Erosion will result in the loss of the trunk sewer and threaten the important and newly-renovated Sewage Treatment Works serving Ryde, located in Appley Park. Alongside the popularity of amenity use of the seawall promenade as part of the continuous defence line to the east and west, the SMP supports maintaining this section of defences in the long term. This will maintain the overall coastal alignment and avoid localised slope failure and erosion cutting back behind or undermining the neighbouring sections of seawall.

## PDZ2 Management Area Statements

- **Old Castle Point to Woodside (MA 2A)** includes two policy units.
- **Wootton Creek and Quarr (MA 2B)** includes three policy units.
- **Ryde to Seagrove Bay (MA 2C)** includes four policy units.

Within these areas a summary of policy is provided below. Management Areas statements are provided in the following sheets, with maps showing each area.

Location reference	Old Castle Point to Woodside
Management Area reference	MA 2A
Policy Development Zone	PDZ 2

The following descriptions are provided to assist interpretation of the maps shown of each Management Area.

\* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical rates and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data (see Appendix C3).

### 100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Preferred Policy” being put forward through the Shoreline Management Plan.

 In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.

- Where there is a difference between With Present Management and the Preferred Policy this distinction is made in showing two different lines:

 With Present Management.  
 Preferred Policy.

-  In some areas, the Preferred Policy either promotes a more adaptive approach to management or recognises that the shoreline is better considered as a width rather than a narrow line. This is represented on the map by a broader zone of management:

### Flood Risk Zones:

All flood risk zones are based upon the current tidal EA Flood Zone 2. This is an extreme flood event (1:1000 year at current levels) meaning that it has 0.1% chance of occurring each year.

 General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk). The maps within this SMP document show where SMP policy might influence the management of flood risk.

 Indicate areas where the intent of the SMP policy is to continue to manage this risk.

 Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the SMP document.

Note: This Management Area corresponds to IW2 to IW4 in selected Appendices.

**Policy Development Zone 2 - Ryde and the North-east Coastline  
Management Area 2A - East Cowes to Wootton (Ch 22 to 29)**

- Key
- Policy Development Zone boundary
  - Management Area boundary
  - Policy Unit boundary
  - Existing Coastline and Chainage (km)
  - Scheduled Monument



This map is based on Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. 100019228/2010.

- Key
- 100 Year Shoreline Position:**
- Preferred Policy would be the same as With Present Management
  - With Present Management where this differs from the Preferred Policy
  - Preferred Policy where this differs from the With Present Management
  - Indicative shoreline zone under Preferred Policy
- Existing Indicative EA Flood Risk Zone 2
  - EA Flood Risk Zone 2 where SMP policy is for continued management of defence
  - EA Flood Risk Zone 2 where under SMP policy there would be increased probability of flooding



I:\977634\Technical\_Data\GIS\Projects\Figures\SMP\_Figures\Baseline\_Location\_Maps

## SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

### PLAN:

The overriding intent of the plan is to maintain the important nature conservation, geological and exceptional landscape quality of the area. The policy for the frontage is for No Active Intervention. At Woodside, a number of properties are at risk from coastal retreat over 100 years and it is reasonable that short term maintenance of the existing defences continue (NAI would not preclude this) but in the longer term with increased sea level rise and erosion, it becomes unsustainable to do so. The area is unlikely to qualify for national funding of coastal defences, particularly as the majority of the coast is undefended, therefore adaptation to coastal change should be anticipated.

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	No Active Intervention
Medium term	No Active Intervention
Long term	No Active Intervention

### SUMMARY OF SPECIFIC POLICIES

Policy Unit (& length)		Policy Plan			
		to 2025	to 2055	to 2105	Comment
PU2A.1	Osborne Bay (5,240m)	NAI	NAI	NAI	
PU2A.2	Woodside (1,297m)	NAI	NAI	NAI	

Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention  
MR – Managed Realignment

### CHANGES FROM PRESENT MANAGEMENT

No change.

### IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages/ Cost £k PV	772	193	152	1,117
	Preferred Plan Damages £k PV	772	193	152	1,117
	Benefits £k PV	-	-	-	-
	Costs of Implementing plan £k PV	0	0	0	0

The economic viability of the preferred plan for this management area is not applicable since the benefits and costs of implementation are both zero. There will be no need to justify any flood and coastal erosion risk management expenditure.

Location reference	Wootton Creek and Quarr
Management Area reference	MA 2B
Policy Development Zone	PDZ 2

**The following descriptions are provided to assist interpretation of the maps shown of each Management Area.**

\* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical rates and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data (see Appendix C3).

### 100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Preferred Policy” being put forward through the Shoreline Management Plan.

 In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.

- Where there is a difference between With Present Management and the Preferred Policy this distinction is made in showing two different lines:

 With Present Management.  
 Preferred Policy.

-  In some areas, the Preferred Policy either promotes a more adaptive approach to management or recognises that the shoreline is better considered as a width rather than a narrow line. This is represented on the map by a broader zone of management:

### Flood Risk Zones:

All flood risk zones are based upon the current tidal EA Flood Zone 2. This is an extreme flood event (1:1000 year at current levels) meaning that it has 0.1% chance of occurring each year.

 General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk). The maps within this SMP document show where SMP policy might influence the management of flood risk.

 Indicate areas where the intent of the SMP policy is to continue to manage this risk.

 Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the SMP document.

Note: This Management Area corresponds to IW5 and IW6 in selected Appendices.

**Policy Development Zone 2 - Ryde and the North-east Coastline  
Management Area 2B - Wootton to Pelhamfield (Ch 29 to 37)**

- Key
- Policy Development Zone boundary
  - Management Area boundary
  - Policy Unit boundary
  - Existing Coastline and Chainage (km)
  - Scheduled Monument



This map is based on Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office. Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. 100019229-2010.

- Key
- 100 Year Shoreline Position:**
- Preferred Policy would be the same as With Present Management
  - With Present Management where this differs from the Preferred Policy
  - Preferred Policy where this differs from the With Present Management
  - Indicative shoreline zone under the Preferred Policy
  - Existing Indicative EA Flood Risk Zone 2
  - EA Flood Risk Zone 2 where SMP policy is for continued management of defence
  - EA Flood Risk Zone 2 where under SMP policy there would be increased probability of flooding



I:\977634\Technical\_Data\GIS\Projects\Figures\SMP\_Figures\Baseline\_Location\_Maps

## SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

### PLAN:

This area includes the Fishbourne Ferry Terminal and the communities of Wootton, Wootton Bridge and Fishbourne. Along the western and eastern banks inside Wootton Creek the majority of properties are not in the flood risk zone, which provides opportunities for the coast to function in line with natural processes. Policies of NAI along these frontages will not preclude maintenance of existing private defences, often providing waterside access. Along the southern section of the Creek, properties are at flood risk and there is a management intent to protect the community where economically viable to do so and to maintain the road link from Newport to Ryde at Wootton Bridge. There is also the intent to gradually adapt the sluice at the Old Mill Pond to allow greater saline intrusion, which supports the nature conservation interest of the area.

At the mouth of the Creek at the Fishbourne Ferry Terminal and the area to the east the intent is to hold the line and protect the mouth of the estuary from coastal erosion and retreat, allowing maintenance of the existing public and private defences where economic to do so, securing the location of the ferry terminal. In the third epoch we recommend looking at opportunities to realign the coast to the east of the terminal to adapt to the ongoing coastal erosion processes. This would provide an ideal transitional zone into Quarr and Binstead where the proposed policy is to not undertake any management along this undefended frontage, fully supporting the nature conservation interests. The principal aim over the whole area is to maintain the important regional and national economic viability of the area. As such the policy throughout the area is to continue to defend the key built and recreational assets, but to allow and encourage natural adaptation to sea level rise along the remainder of the coast and estuary.

PREFERRED POLICY TO IMPLEMENT PLAN:	
<b>From present day</b>	Maintain existing defences but encourage Wootton Creek residents to adapt their private defences and gradually remove the influence of management. Continue NAI on the Quarr shoreline.
<b>Medium term</b>	Maintain and raise existing defences, but working locally to allow scope of some readjustment of defences.
<b>Long term</b>	Maintain and raise existing defences, but working locally to allow scope of some readjustment of defences.

### SUMMARY OF SPECIFIC POLICIES

Policy Unit (& length)		Policy Plan			Comment
		to 2025	to 2055	to 2105	
<b>PU2B.1</b>	<b>Western Wootton Creek</b> (1,911m)	NAI	NAI	NAI	Built properties are generally set back from the shoreline and not in the risk zone, and therefore adaptation to gradual change is encouraged. The SMP recognises the numerous privately managed structures along the shoreline of the Creek, fronting the narrow individual properties and gardens; NAI would not preclude the continuation of existing privately funded, low-key defences sympathetic to the landscape and of low ecological impact, potentially including filling-in short gaps in the current structures, subject to normal approvals and site specific circumstances. This intention will be further defined in a multi-agency advisory note in 2011
<b>PU2B.2</b>	<b>South-west Wootton Creek</b> (550m)	HTL	HTL	HTL	Continue defence to properties from flood risk by HTL with private and public defences.
<b>PU2B.3</b>	<b>Old Mill Pond</b> (upstream of Wootton bridge)	MR	MR	MR	Undertake no specific defence within the Mill Pond and accept gradual increased saline intrusion. Continue to maintain use of the road.
<b>PU2B.4</b>	<b>South-east Wootton Creek</b> (200m)	HTL	HTL	HTL	Continue defence to properties from flood risk by HTL with private and public defences.

<b>PU2B.5</b>	<b>Eastern Wootton Creek</b> (1,738m)	NAI	NAI	NAI	Built properties are generally set back from the shoreline and not in the risk zone, and therefore adaptation to gradual change is encouraged. The SMP recognises the numerous privately managed structures along the shoreline of the Creek, fronting the narrow individual properties and gardens; NAI would not preclude the continuation of existing privately funded, low-key defences sympathetic to the landscape and of low ecological impact, potentially including filling-in short gaps in the current structures, subject to normal approvals and site specific circumstances. This intention will be further defined in a multi-agency advisory note in 2011.
<b>PU2B.6</b>	<b>Fishbourne Ferry Terminal</b> (135m)	HTL	HTL	HTL	HTL with private defences.
<b>PU2B.7</b>	<b>Outer Eastern Creek</b> (397m)	HTL	HTL	MR	Continue defence to properties by HTL with private and public defences; Assist protection of the ferry terminal at the mouth of Wootton Creek; Gradually realigning in the third epoch.
<b>PU2B.8</b>	<b>Quarr and Binstead</b> (2,805m)	NAI	NAI	NAI	
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

#### CHANGES FROM PRESENT MANAGEMENT

There are key changes along Wootton Creek where the previous Strategy proposed to hold the line. We have suggested a management intent to protect the key areas; but wherever possible allow the estuary to function naturally (specifically where there is no risk to properties).

#### IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics		by 2025	by 2055	by 2105	Total £k PV
<b>Property</b>	Potential NAI Damages/ Cost £k PV	11,512	14,878	15,611	42,001
	Preferred Plan Damages £k PV	1,830	2,226	994	5,050
	Benefits £k PV	9,682	12,652	14,617	36,951
	Costs of Implementing plan £k PV	633	284	356	1,272

The preferred plan for this Management Area is economically viable overall. Individual schemes will need to be investigated in further detail to assess their economic viability and affordability.

Location reference	Ryde to Seagrove Bay
Management Area reference	MA 2C
Policy Development Zone	PDZ 2

**The following descriptions are provided to assist interpretation of the maps shown of each Management Area.**

\* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical rates and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data (see Appendix C3).

**100 year shoreline position:**

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Preferred Policy” being put forward through the Shoreline Management Plan.

 In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.

- Where there is a difference between With Present Management and the Preferred Policy this distinction is made in showing two different lines:

 With Present Management.  
 Preferred Policy.

-  In some areas, the Preferred Policy either promotes a more adaptive approach to management or recognises that the shoreline is better considered as a width rather than a narrow line. This is represented on the map by a broader zone of management:

**Flood Risk Zones:**

All flood risk zones are based upon the current tidal EA Flood Zone 2. This is an extreme flood event (1:1000 year at current levels) meaning that it has 0.1% chance of occurring each year.

 General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk). The maps within this SMP document show where SMP policy might influence the management of flood risk.

 Indicate areas where the intent of the SMP policy is to continue to manage this risk.

 Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the SMP document.

Note: This Management Area corresponds to IW7 to IW12 in selected Appendices

**Policy Development Zone 2 - Ryde and the North-east Coastline  
Management Area 2C - Pelhamfield to Nettlestone (Ch 36 - 43)**

- Key
- Policy Development Zone boundary
  - Management Area boundary
  - Policy Unit boundary
  - Existing Coastline and Chainage (km)
  - Scheduled Monument



This map is based on Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office. Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. 100019229 2010.

- Key
- 100 Year Shoreline Position:**
- Preferred Policy would be the same as With Present Management
  - With Present Management where this differs from the Preferred Policy
  - Preferred Policy where this differs from the With Present Management
  - Indicative shoreline zone under the Preferred Policy
  - Existing Indicative EA Flood Risk Zone 2
  - EA Flood Risk Zone 2 where SMP policy is for continued management of defence
  - EA Flood Risk Zone 2 where under SMP policy there would be increased probability of flooding



I:\97634\Technical\_Data\GIS\Projects\Figures\SMP\_Figures\Baseline\_Location\_Maps

## SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

### PLAN:

This area includes the core residential, commercial and heritage centre of Ryde and the surrounding communities. The principal aim over the whole area is to maintain the important regional and national economic viability of the area, including transport links. As such the policy throughout the area is to continue to defend the built and recreational assets. However, this has to recognise the important landscape setting of the town and seafront and the important conservation value of the coast. Also there are important broader issues in this section due to the potential squeeze of habitats and the inability for the shoreline to respond to sea level rise without loss of important nature conservation interest.

The intent for management is to maintain protection through hard engineering and sediment movement control, thereby sustaining the essential recreational and amenity benefits along with defence of important infrastructure and properties along the coast. The SMP, however, recognises the possible difficulties in terms of the potential increased effort required to maintain the existing practice of sea defences and groynes in the long term and access through or alongside a raised defence line. Importantly, however, future defence requirements in this area depend on the evolution of the significant sediment sink of Ryde Sands as sea level rises. It is currently a large accretion zone, and contributes to the protection of the majority of the frontage. The future behaviour of the accumulated sands and drift supply will determine the amount of effort required to assist retention of sands in this management unit. In the east of the unit, at Seaview and Seagrove Bay, the intent of management is to allow continued protection of these communities from flooding and erosion and prevent erosion triggering slope reactivation.

While the need to defend the existing shoreline is well established, there needs to be an underlying aim to consider any opportunity, locally, to allow adjustment of the specific line or design of these defences. Specific areas that would need further consideration include Appley and Puckpool, and in the east of the area there may be smaller scale opportunity in the manner in which private defences are managed.

PREFERRED POLICY TO IMPLEMENT PLAN:	
<b>From present day</b>	Maintain existing defences.
<b>Medium term</b>	Maintain and raise existing defences, but working locally to allow scope of some readjustment of defences.
<b>Long term</b>	Maintain and raise existing defences, but working locally to allow scope of some readjustment of defences.

### SUMMARY OF SPECIFIC POLICIES

Policy Unit (& length)		Policy Plan			Comment
		to 2025	to 2055	to 2105	
<b>PU2C.1</b>	<b>Ryde</b> (2,353m)	HTL	HTL	HTL	HTL by seawall encasement and revetment
<b>PU2C.2</b>	<b>Appley and Puckpool</b> (1,436m)	HTL	HTL	HTL	HTL subject to the economic and technical viability of the maintaining existing defences.
<b>PU2C.3</b>	<b>Springvale to Seaview (including the Duver)</b> (1,314m)	HTL	HTL	HTL	HTL with public and private defences, including HTL by seawall encasement and revetment.
<b>PU2C.4</b>	<b>Seagrove Bay</b> (1,252m)	HTL	HTL	HTL	HTL with public and private defences. Along the majority of frontage HTL by seawall encasement and revetment. Opportunity along the central section to investigate offshore breakwaters.
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

## CHANGES FROM PRESENT MANAGEMENT

No significant change to the 'hold the line' intent of previous management of the area, although the SMP supports maintaining the existing defence alignment at Appley and Puckpool in the medium to long term due to the risk to important sewerage assets for Ryde and amenity value of the continuous promenade link.

## IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics		by 2025	by 2055	by 2105	Total £k PV
<b>Property</b>	Potential NAI Damages/ Cost £k PV	62,628	74,683	71,423	208,734
	Preferred Plan Damages £k PV	2,297	2,512	2,123	6,932
	Benefits £k PV	60,331	72,171	69,300	201,802
	Costs of Implementing plan £k PV	598	913	3,228	4,739

The preferred plan for this Management Area is clearly economically viable overall. Individual schemes will need to be investigated in further detail to assess their economic viability and affordability.