

4 THE PROPOSED PLAN

4.1 Plan for Balanced Sustainability

The SMP is built upon seeking to achieve balanced sustainability, i.e. it considers people, nature, historic and economic realities. The preferred policies proposed for the present-day provide a high degree of compliance with objectives to protect existing communities against flooding and erosion. The proposed long-term policies promote greater sustainability for parts of the shoreline where natural process and evolution provide a practical means of managing the shoreline. However, the protection of the significant assets present along sections of the shoreline remains a strong focus for the long-term sustainability of the economy and communities of this area.

The rationale behind the preferred plan is explained in the following sections of text, which consider the SMP area as a whole. Details of the preferred policies for individual locations to achieve this Plan are provided by the individual Policy Unit statements in Chapter 5.

4.2 Predicted Implications of the Preferred Plan

Direct comparison is made below between the preferred plan/policies and a scenario of No Active Intervention. This scenario considers that there is no expenditure on maintaining or improving defences and that defences will therefore fail at a time dependent upon their engineering design or residual life. This approach defines the benefits of implementing the proposed plan, as it highlights what would be lost under No Active Intervention against what would be gained if the preferred policy was implemented. Where No Active Intervention is the preferred policy then obviously this methodology is not required.

4.2.1 Implications for property, the economy and land use

The implications and consequences of the potential tidal flood and coastal erosion risk to the properties, assets and landholdings, etc. in the North Solent area, were determined under the two baseline scenarios of 'No Active Intervention' and 'With Present Management' policy options.

'No Active Intervention' (NAI) policy scenario assumes there is no expenditure on maintaining or improving existing coastal and flood defences throughout the North Solent SMP area, and that therefore defences will fail at a time dependent upon their residual life and the condition of the fronting beaches and inter-tidal areas. Erosion rates have been applied taking into account the residual life of the existing defences.

'With Present Management' (WPM) policy scenario considers that all existing defence practices are continued, and that defences are maintained to provide

a similar level of protection to that provided at present. The residual risk of tidal flooding remains, even when defences are maintained (i.e. a storm event could generate conditions that exceed defence design; or defences may fail resulting in flooding)

For urban and industrial areas of the SMP shoreline, the recommended plan in the long-term is to maintain and improve existing defences where it is economically viable to do so. This is to minimise risk to property and assets along the extensively developed sections of the estuaries. However, for some significant sections of the shoreline, a change in management policy has been identified in the longer term where a long term Hold the Line policy will not be economically viable, technically sustainable, or environmentally acceptable. In these locations policies of No Active Intervention or Managed Realignment need to be considered. The SMP has identified areas where a more naturally functioning coastline would be to the benefit of the natural environment and to estuarine processes. However, there would be potential changes to land and environmental assets should these policies be implemented.

Within the Solent region, erosion risk is much less of a threat than the risk from coastal flooding. In terms of erosion risk for the SMP region, no properties are expected to be lost in the first epoch, 1 residential property in the second epoch (5B03), and 15 residential and 5 commercial properties in the third epoch (5C16, 5C04 and 5B03). This compares to the No Active Intervention baseline where erosion losses throughout the SMP frontage could total 535 residential, 26 commercial properties, with 2 residential properties in first epoch; 193 residential and 4 commercial in epoch 2; and 340 residential and 22 commercial in third epoch). Consequently the plan provides for protection from erosion to over 500 properties over the next 100 years.

There are, however, significant numbers of assets that could potentially be at risk from tidal inundation under the No Active Intervention baseline. If there were no flood defences (i.e. if they had failed due to no ongoing maintenance or investment), assessments indicate that in the first epoch 22,127 residential and 2,767 commercial properties would be at risk – a total of 24,894 properties; and in the long-term these figures would increase to 46,628 residential and 4,777 commercial properties would be at risk – a total of 51,405 properties. (Please note that only properties included in the National Property Dataset have been included, i.e. properties with an address point. Therefore, properties with no address point, such as out houses, farm buildings, etc. have not been included in these totals. Therefore these totals are indicative and not definitive and are likely to underestimate the number and, therefore, value of properties potentially at risk. Coastal Defence Strategies and other studies arising from the SMP (and identified in the Action Plan) will need to consider approaches for identifying and including such properties and buildings, to determine more detailed economic appraisals of management options). Table 3 details the number and type of properties per Council, potentially within the tidal floodplain and affected by coastal flooding, assuming no defences, for 2007 and 2115.

| Local Authority | Number of properties in tidal floodplain from a 1 in 200 year event (assuming no defences) | | | |
|-----------------------------|--|--------------|---------------|---------------|
| | Commercial | | Residential | |
| | 2007 | 2115 | 2007 | 2115 |
| Chichester District Council | 94 | 189 | 2,113 | 4,583 |
| Havant Borough Council | 136 | 166 | 1,618 | 3,069 |
| Portsmouth City Council | 1,340 | 2,010 | 14,416 | 26,479 |
| Gosport Borough Council | 92 | 308 | 860 | 3,394 |
| Fareham Borough Council | 106 | 258 | 526 | 1,636 |
| Winchester City Council | 0 | 1 | 0 | 3 |
| Eastleigh Borough Council | 82 | 73 | 21 | 67 |
| Southampton City Council | 644 | 1,345 | 1,729 | 5,236 |
| Test Valley Borough Council | 0 | 0 | 0 | 0 |
| New Forest District Council | 273 | 427 | 844 | 2,161 |
| Total | 2,767 | 4,777 | 22,127 | 46,628 |

Table 3: Total number and type of properties per Council, potentially within tidal floodplain, assuming No Defences, for 2007 and 2115.

Table 4 presents the total number of properties, per Council, potentially at risk from erosion within the 0-20, 20-50 and 50-100 year epoch under a No Active Intervention (NAI) (i.e. no defences) and With Present Management (WPM) scenario.

| Local Authority | Number of properties in erosion risk zones per epoch (not cumulative) | | | | | |
|-----------------------------|---|----------|--------------------------|-----------|---------------------------|-----------|
| | NAI | WPM | NAI | WPM | NAI | WPM |
| | Epoch 1 (0-20 years) | | Epoch 2 (20-50 years) | | Epoch 3 (50-100 years) | |
| Chichester District Council | 74 | 0 | 342 | 1 | 762 | 0 |
| Havant Borough Council | 26 | 4 | 279 | 3 | 473 | 0 |
| Portsmouth City Council | 4 | 0 | 97 | 0 | 347 | 0 |
| Gosport Borough Council | 15 | 0 | 66 | 0 | 136 | 0 |
| Fareham Borough Council | 3 | 1 | 54 | 38 | 38 | 5 |
| Winchester City Council | 0 | 0 | 0 | 0 | 0 | 0 |
| Eastleigh Borough Council | 5 | 1 | 2 | 1 | 18 | 1 |
| Southampton City Council | 0 | 0 | 6 | 0 | 93 | 4 |
| Test Valley Borough Council | 0 | 0 | 0 | 0 | 0 | 0 |
| New Forest District Council | 0 | 0 | 2 | 0 | 28 | 8 |
| Total | 127 | 6 | 848 | 43 | 1895 | 18 |

Table 4: Total number of properties at risk from erosion, per epoch, for Local Authorities

Under the recommended policies the great majority of these assets will be protected, through maintenance or improvements to existing defences or, where managed realignment is proposed, through construction of setback or secondary defences. Throughout the Solent region there is a significantly high proportion of privately owned and maintained flood defences that provide protection to extensive areas of agricultural farmland and environmentally important sites. In the long-term, these defences may provide flood protection

to a much wider community, properties, infrastructure assets and facilities, as the risk of coastal flooding increases with rising sea levels. However, continuing to maintain existing defences may become less economically viable or affordable to private owners, and technically less feasible or practical.

Under the proposed No Active Intervention policy, there may be the requirement in the long-term for property-level flood defences, rather than shoreline defences, particularly on currently undefended frontages.

Implementation of HTL policies will reduce the risk of coastal flooding to the main urban centres of Southampton, Portsmouth, Fareham and Gosport, and other residential centres and supporting infrastructure. Continued maintenance and investment in coastal defences will provide benefits and ongoing flood risk management to important commercial and industrial assets; coastal transport and communication links along the coastline including the mainline railway and main roads (M27, M275, A35, A33 and A27); essential service provision assets, such as sewage treatment infrastructure, cross-Solent power and transmission cables/pipelines.

Where the Shoreline Management Plan recommends a final policy of Managed Realignment (MR) of existing defences, the effect on parties currently protected by the defences will be part of the 'management' of that change. The implementation of MR policies at some locations would require setback defences to continue to provide coastal flood risk protection to material assets. The type, location and alignment of setback defences will be determined through subsequent Coastal Flood and Erosion Risk Management Strategies (formerly Coastal Defence Strategies) or other detailed studies, but it is likely that sites, which have a final MR policy, are likely to require setback defences, such as at Medmerry (5A01); East Chidham (5A07); West Chidham (5A08); and Northney (5AHI02).

Proposed NAI policies in the long-term are likely to result in an increased risk from coastal flooding to a small number of assets, as it is considered unsustainable, technically unfeasible and uneconomic to continue to protect in the long term; such sites include water-side and boat yard facilities in the River Hamble, Calshot Activity Centre and local access roads. Private landowners have certain permissive development rights to protect their property and to continue to maintain existing defences, even within a frontage with a preferred NAI policy, provided it does not constitute 'development' of any kind without the need for planning permission, but they should always check with their Local Planning Authority before carrying out any works.

Implementation of HTL policies will have a significant beneficial impact on contaminated land of current and former landfill sites reducing the pollution risk to coastal waters from coastal flooding and erosion. The main areas of contaminated land protected through implementation of HTL policies include; Hayling Island (5AHI01, 5AHI03, 5AHI04 & 5AHI08), Portsea Island (5API01 & 5API02), Langstone and Portsmouth Harbours (5A18, 5A21, 5A22, 5A24 & 5A25), Gosport (5B01 & 5B02), Southampton Water (5C07, 5C10, 5C11,

5C12, 5C14) and West Solent (5C22). However, in the long-term there will be an increased risk of pollution to coastal waters from former landfill sites at Riverside Park (5C11) and Redbridge Lane (5C13) and potentially other sites, under proposed NAI policies. Despite the continued maintenance of existing defences, contaminated land or former landfill sites could potentially cause pollution to coastal waters. Long-term management of such sites will need to be determined following detailed investigations that address the socio-economic, technical feasibility and environmental implications of management options. Sources of public funding for associated remedial works relating to contaminated land and former landfill sites will also need to be investigated and determined, as they are unlikely to be met through the Flood and Coastal Defence Grant In Aid.

Implementation of HTL policies will provide substantial economic benefits to residential, commercial, industrial and agricultural areas. For example, the Port of Southampton handled some 40 million tonnes of cargo during 2009, over 21% of all the UK's non-EU seaborne trade; in addition the Port handled over 500,000 units of ro-ro traffic, some 14% of UK total. The Ports has been identified as a key international gateway and critical component of the nation's transport system (ABP, 2009). Southampton City Council's Core Strategy recognises that the Port is a vital part of the city's economy, the regional economy and of national importance. Such economic drivers have been fully considered during the appraisal and determination of final SMP policies

Implementation of HTL policies will provide protection to significant areas of high grade agricultural land (grades 1-2) at risk from coastal flooding around Chichester and Langstone Harbours (e.g. 5A05, 5A06, 5A07, 5A09, 5A11 & 5A18) on Hayling Island (e.g. 5AHI01, 5AHI03, 5AHI07 & 5AHI08) and in the West Solent (e.g. 5C18, 5C19 & 5C22). In general, implementation of MR policies will result in the loss of high-grade agricultural land; however, the amount of loss will depend on the extent of the MR and will be further assessed at the strategy and scheme level through more detailed studies. Proposed NAI policies will result in an increased risk of coastal flooding to agricultural land in the long-term. These frontages include between Meon Road, Titchfield Haven to Hook Park (5B03); River Hamble (5C04); and between North Shore Road to Newtown to West Lane (5AHI07).

The South East is a highly populated area of the UK with a population of 8.3 million in 2007. This equates to 14% of the entire UK population (ONS, 2009). The most densely populated centres in the North Solent study area are the coastal urban areas of Southampton, Portsmouth and Fareham with population densities of 2,500 or more people per sq km (ONS, 2007). Continued increases in population will lead to increased pressure for new residential development along the North Solent coastline. The South East Plan has identified the need for 32,500 additional dwellings annually between 2006 and 2026 (SEERA, 2009).

4.2.2 Implications for nature conservation

The North Solent shoreline supports an important number of wader and wildfowl species and ecological systems such as mudflat, saltmarsh, saline lagoons, coastal grazing marsh, freshwater, vegetated shingle and sand dune habitat which are protected by multiple international, European and national nature conservation designations. The vast majority of the north Solent defences are fronted and /or backed by European designated sites; therefore, implementation of the SMP policies will have both beneficial and adverse effects on coastal habitats covered by international (Ramsar), European (SPA and SAC), national (SSSI and NNR) and local (LNR, SINC/SNCI) designated sites within the Solent.

Due to the variety of land use in the Solent and level and extent of nature conservation designations within the Solent, implementation of HTL policies will result in a change in land use at a local level, with designated habitats landward of defences receiving protection, whilst continued maintenance of defences will exacerbate the loss of others. For example, maintenance of defences will provide protection from coastal flooding to designated habitats landward of defences including coastal grazing marsh, freshwater grazing marsh, saline lagoons and reedbeds. However, this will generally result in an adverse effect to mudflat, saltmarsh and vegetated shingle habitats backed by a seawall through the process of coastal squeeze as sea levels rise. Conversely, the realignment of defences or cessation of maintenance and subsequent failure of defences will benefit some habitats, such as inter-tidal saltmarsh, but cause a decline or reduction in habitats, such as coastal grazing marsh. Any loss of European nature conservation designated habitats or habitats providing a supporting function to these designated areas, will require replacement habitat, either compensation or mitigation, to be re-created in sustainable locations elsewhere

The intention of the NAI policies for currently undefended frontages is to allow the shoreline to continue to function, evolve and adapt naturally to environmental coastal change, thereby having a beneficial effect on mudflat and saltmarsh habitats and downdrift beaches, spits and cliff toes. These frontages include; Warsash North to Swanwick Shore Road (5C02), Bursledon Bridge to Curbridge to Botley to Satchell Marshes (5C04), Ensign Industrial Park to Cliff House (5C08), Lower Test Valley (5C13), Inchmery to Salternshill (5C17) and Sowley to Elmer's Court (5C20). However, this policy intention does not preclude private owners from continuing to maintain their flood defences, due to their permissive development rights, as previously stated.

Areas identified for MR will create new intertidal mudflat and saltmarsh habitats as they naturally migrate inland; these sites include: Medmerry (5A01); Horse Pond (5A05); East Chidham (5A07); West Chidham (5A08); Hook Lake (5C01); Lymington Reedbeds (5C20) through regulated tidal exchange; and Northney (5AHI02).

However, MR policies may also result in an adverse effect on saline lagoon, coastal grazing marsh and freshwater pastures, reedbeds and saline lagoons through saline intrusion. The majority of these habitats are already protected by international, national and local designations and any loss of habitat, features or function (e.g. high tide roost or feeding sites) they provide will require replacement habitat to be re-created elsewhere ('compensation habitats').

Implementation of the preferred MR policies would result in the requirement for creation of compensation coastal grazing marsh habitats, in advance of the existing defences being managed differently or realigned, at the following sites: Horse Pond (5A05); Hook Lake (5C01); Lymington Reedbeds (5C20); Northney (5AHI02).

(Other sites were proposed but the final policies changed to reflect the landowner's intentions for the future management of their defences; sites included: Ella Nore (5A05); Fishbourne (5A06); Bosham (5A07); Nutbourne (5A10); Conigar and Warblington (5A17); Farlington Marshes (5A20); Beaulieu River (5C18); Verner and Tournbury (5AHI03). Therefore, the continued intention to maintain these defences, albeit through non-public funding sources, results in the continued protection of the coastal grazing marsh habitats and these component elements of the Solent-wide network of high tide roost and feeding sites. Through the development of the SMP, the EA and Natural England have agreed that the loss of inter-tidal habitats resulting from continued maintenance of these defences, through coastal squeeze, will be delivered through the Flood and Coastal Defence Grant In Aid funded Regional Habitat Creation Programme.

The SMP development and consultation process have raised awareness of the residual risk of failure of privately owned and maintained defences and the significant consequences this would have on European designated sites. The Appropriate Assessment of the final referred policies has informed the Regional Habitat Creation Programme of the scale of the risk and quantified the potential habitat losses that may arise if privately maintained defences either failed or were not maintained.

Predicting the effects of the preferred SMP policies on sand dune and vegetated shingle habitats is difficult at the SMP level and hence these impacts will need to be further assessed at the strategy and scheme level where more detailed information will need to be collected. In general, the implementation of a HTL policy is likely to result in a significant adverse impact on vegetated shingle where the habitat is "squeezed" against a sea wall with sea level rise and storm attack or undergoes barrier rollover processes i.e. Bracklesham (5A02). Conversely however, where nourishment or natural accretion is in line with sea level rise there may be a beneficial impact i.e. Hurst Spit (5F01), Browndown (5B02), Hayling Island (5AHI05). At

East Head, (5A04) an adaptive management approach will allow the currently unsustainable shoreline position to adjust to a more natural profile, which may allow the potential for enhancement and creation of vegetated shingle and sand dune habitats.

The range of habitats within the Solent support large populations of national and international waterfowl and waders. Intertidal habitats provide vital feeding areas at low tide while upper saltmarsh and a wide range of terrestrial habitats inland of the coast (including coastal grazing marsh, wet grasslands and arable fields) provide important areas for roost and feeding sites at high tides. Several of these important sites are not included within protected sites such as SSSI, SPA or Ramsar sites. The large sites located at Farlington Marshes (5A20), Saltgrass Lane (5C22) and on Thorney Island (5C12 & 5C15) have been identified as important large and complex sites within the Solent network whose function as a roost and feeding area for birds could not be compensation in the short-term (Cox 2009).

The impact of the final SMP on the integrity of the European designated sites and non-designated sites that support the function and integrity of the designated sites is addressed in the Appropriate Assessment (Appendix J in the final SMP report). Whether a policy has a beneficial effect or adverse effect on a designated European site depends on whether the conservation objectives, for which the site has been designated, continue to be met.

4.2.3 Implications for landscape

The West Solent shoreline is designated within the New Forest National Park, and the eastern side of Hayling Island along with the shoreline between Langstone and West Wittering are within the Chichester Harbour Area of Outstanding Natural Beauty (AONB); many other sections of this coastline are recognised and protected for their landscape quality through various Character Areas and the Special Landscape Areas. There are also many areas designated as being of 'local' landscape value.

The recommended long-term plan for the SMP is to sustain the current urban areas through proactive management of the existing defences, recognising that defences will be need to be upgraded in the long term. However, opportunities for forming a less managed/free functioning dynamic shoreline in other areas have been taken to create a more natural estuary landscape, reducing the extent of manmade structures along the frontages. This is deemed to provide a more sustainable and aesthetically appealing landscape than a policy of defending the existing shoreline, which would involve construction of new, more substantial defences.

In general, implementation of HTL policies in the short-term is likely to not have an adverse impact on the existing landscape both designated (New

Forest National Park and Chichester Harbour AONB) and non-designated, as maintenance of the majority of the current defences under HTL policy will not result in any 'change' to the existing landscape. (This is also the case for privately maintained defences under an NAI policy, where the landowner has indicated their intent to continue to maintain their defences). However, in the long-term maintaining and upgrading defences to maintain the level of protection with rising sea levels may potentially have an adverse impact on the surrounding landscape and visual amenity.

NAI policies for currently undefended frontages will maintain the existing natural landscape and coastal views. These frontages include the shoreline between Titchfield Haven and Hook Park (5B03), along the River Hamble (5C02, 5C04 and 5C05), Beaulieu River (5C17) and between Sowley and Elmer's Court (5C20). Frontages in the West Solent will allow natural change and have a beneficial impact on the existing designated New Forest National Park.

4.2.4 Implications for the historic environment

The North Solent SMP region enjoys an abundance of archaeological and heritage sites resulting from their rich and varied cultural heritage, maritime trading links and historic fortifications and defences; many of which are located on or adjacent to the shoreline. The impacts of the proposed SMP on earth heritage will also be addressed at an appropriate level of detail at the strategy and scheme level.

The majority of statutory designated historic assets including Scheduled Ancient Monuments (SAM), Listed Buildings, Conservation Areas and Registered Parks and Gardens currently at risk from coastal flooding and erosion are located behind current defences where a HTL policy has been proposed. Maintenance and improvements to existing defences will continue to provide flood risk protection.

There are also non-designated historic assets along with many unscheduled sites of importance and areas of archaeological potential that are located behind current defences with a proposed HTL policy. Many listed buildings and Conservation Areas within the urban areas will also be protected under the recommended plan. The policies proposed by the SMP will not have a significant effect on any marine monuments or protected wrecks.

Within the Solent region, the Managed Realignment policy sites may impact upon the historic environment, as the coverage of the coastal heritage resource is so extensive and may result in the permanent loss or damage to both designated and non-designated feature. These increased risks under the recommended long term plan for this SMP must be recognised and

consideration should be given to an appropriate programme of survey, recording and investigation to record these important sites, and those potential features not yet identified. However, following public consultation the final SMP policies were changed to reflect the intentions of those private defence owners that intended to continue to maintain their defences for the long-term. Therefore, the majority of the proposed MR policies have been changed to HTL with a clear statement that no public funding would be available for the maintenance works, as is currently the case.

Heritage sites potentially affected by the final policy of Managed Realignment include those within the Policy Units of Medmerry (5A01) and Hook Lake (5C01). The extent of damage or loss of heritage features will depend on the extent of the realignments and locations of the secondary defences. These additional defences may provide protection from coastal flooding or erosion. The impact of implementing MR policies will be further assessed in detail at the strategy and scheme level.

Under a NAI policy heritage assets may potentially be lost or damaged by coastal flooding and erosion when defences come to the end of their residual lives. Statutory designated heritage features that will be at increased risk from coastal flooding and erosion under a proposed NAI policy include the Conservation Area in Warsash (5C01); Scheduled Ancient Monuments at St Andrews Castle and remains (5C05 and 06), Bitterne Manor (5C11), Luttrell's Tower (5C16) and Calshot Castle (5C15); and a Registered Park and Garden at Royal Victoria Country Park (5C09).

Where a policy results in the loss of heritage features (both known and unknown) it will be important to consider an appropriate programme of survey, recording and investigation to record these important sites and those potential features not yet identified. In general, implementation of HTL policies is likely to have an adverse impact on the geological interest of sites at Bracklesham Bay SSSI (5A02 & 5A03); Hill Head cliffs and Lee-on-the-Solent fossils (5B02); and Calshot cliffs (5C15) by preventing fresh exposures of beds or fossils. However, implementing a HTL policy at Hurst Spit (5F01), which is designated as a key site for coastal geomorphology as part of Hurst Castle and Lymington River Estuary SSSI, will maintain Hurst Spit and its function providing protection to Keyhaven Marshes.

The impact of the Adaptive Management (AM) policy on the geological interest features at East Head GCR site (5A04) is difficult to predict and will depend on how the coastline develops in this complex coastal zone.

An NAI policy covering Lepe beach and Stone Point GCR site (5C16) will allow natural process to continue and is likely have a beneficial impact on the geological interest features through maintaining exposures.

4.2.5 Implications for amenity and recreational use

Recreational facilities may be affected by the policies set out in the SMP. At a number of sites beach management activities are considered and implemented in conjunction with maintenance and improvement to defences. Along with maintaining the defence function of the beach through maintaining the existing beach profile width, height, slope etc, beach replenishment works also consider access to and along the shore and continue to provide amenity beaches. However, if revetments and seawalls are maintained and beach recycling or replenishment operations are not effective or implemented, the amenity beach and the function of the beach will diminish. This could have significant implications to the local and regional economy and coastal communities.

Coastal footpaths within the Solent, along the tidal rivers and harbour shores are often located atop defences. Some sections, e.g. Hayling Billy and Bunny Meadows, the footpath is along the shoreline and may have structures to protect the footpath from deteriorating. These have not been classified or considered as coastal or flood defence structures. Due to shoreline erosion and increased inundation, duration and frequency of flooding and sea level rise, sections of footpaths will be lost at varying times along frontages where No Active Intervention or Managed Realignment are proposed. Where these policies are proposed, adaptation studies are either in progress or planned to determine the longer-term management and provision of access to and along the shore; there may be potential for footpaths to be realigned as the shoreline realigns and/or incorporated into defence design when defences are realigned.

Within estuaries and harbours, the continued loss of saltmarsh may impact on the hinterland, with the shoreline and defences to landward becoming more exposed to waves resulting in increased rates of erosion. This may affect coastal access along shore, or access points to the shore, such as slipways, etc. The decreasing area of natural flood defences such as saltmarsh, will also result in increased fetches within harbours, increased nearshore water depths, changes in direction and velocities of nearshore tidal currents, which will affect wave climate conditions in currently relatively sheltered areas. This may impact on navigation, areas of safe manoeuvring and marine leisure activities within harbours and estuaries.

Changes to the mosaic, composition and distribution of coastal habitats and loss of nearshore and inter-tidal habitats will affect the function of the affected sites and the network of sites, and therefore, affect society's usage and value of the sites, for recreation, walking, birdwatching, wildlife watching and nature conservation related pursuits.

The continued maintenance of defences will provide protection to significant numbers and variety of heritage and archaeological features and sites, sporting and recreational facilities, green open spaces and a wide variety of land uses, such as agricultural. Coastal access and land use are key elements that need to be considered through subsequent Coastal Defence Strategies and other studies (identified in the Action Plan), which will undertake more detailed economic, environmental and socio-economic assessments when determining management approaches and implementation of SMP policies.

4.3 Recommendations

Achieving this plan may require changes in planning and policy at local, regional and national government levels. Regional planning needs to consider the messages being delivered by this Plan, and ensure that future proposals for regional development and investment are made accordingly. Such planning needs to be looking beyond the current 20 year horizon. Local Development Planning should consider the risks identified in this plan and avoid approving development in areas at risk of flooding and erosion. Local Development Planning also needs to consider that relocation of displaced people and property may require land to be made available within the same settlements, in order to maintain the same level of community and may need to become increasingly flexible to enable this. Locations for new developments may need to be identified.

Environmental and funding bodies will have to make some difficult decisions in developing a long-term vision for a dynamic coastal environment. However, in the short-term there is the need to ensure that conservation interests within designated sites, or in the wider environment, are appropriately addressed by coastal and estuarine management. The findings of the Appropriate Assessment will be fundamental to the implementation of the SMP. In order for long-term solutions to be sought, public and local communities must be involved. Natural England published a Maritime Strategy entitled 'Our Coasts and Seas: making space for people, industry and wildlife' to help raise awareness of the issues.

Where policies may result in an increased risk to property and assets, whether due to coastal erosion or flooding, the effect on property owners should be managed through exit strategies for publicly funded and maintained defences, and through landowner management plans for privately owned and maintained defences. These will need to address the removal or relocation of buildings and other facilities well in advance of any loss. The plans for relocation of people also need to be established as does the basis on which mitigation should be funded. However, mitigation measures do not fall solely upon national and local government, and should not be read as such within this plan. Business and commercial enterprises will need to establish the measures that they need to take to address the changes that will take place in the future. This includes providers of services and utilities, which will need to

make provision for this long-term change when upgrading or replacing existing facilities in the shorter term. They should also consider how they will relocate facilities that will become lost to erosion or flooding, and the need to provide for relocated communities. Other parties needing to consider mitigation measures will be the local highways authorities and bodies responsible for local amenities (including churches, golf clubs etc).

In England and Wales the Environment Agency operates a flood warning service in areas at risk of flooding from rivers or the sea. Rainfall, river levels and sea conditions are monitored continually to forecast the possibility of flooding. If flooding is forecast, warnings are issued using a set of four easily recognisable codes; All Clear; Flood Watch; Flood Warning; Severe Flood Warning. Each of the four codes indicates the level of danger associated with the warning. The codes are not always used in sequence; for example in the case of a flash flood, a Severe Flood Warning may be issued immediately, with no other warning code preceding it.

A range of information is also available from the Environment Agency and Local Planning Authorities regarding temporary flood protection measures and contingency planning to help those potentially at risk to prepare for a flood, during a flood and after a flood. More information on flood warnings and contingency planning is available via www.environment-agency.gov.uk

The roles of flood warning and contingency planning are important considerations with respect to managing and reducing the impact of the residual risk, but do not reduce the probability of flooding. Integrated with flood and erosion risk mapping, these measures will aid the definitions and potentially influence the policies for Coastal Change Management Areas. Private land and property owners will need to consider how they will deal with changes to the shoreline that affects their property. Currently, maritime authorities have 'permissive powers' to undertake coastal flood and erosion works, but there is no obligation for the operating authorities or national government to assure protection against flooding or erosion. There is no reason, at present, to assume that this will change in the future or that individual losses would be compensated from central funds.

The final Plan provides a long lead-in time for the changes that may take place at the coast at some point in the future, as advised by the Action Plan. This long-term vision for management of the coastal zone has continued the process of informing and engaging with those parties that are likely to be affected by coastal change and enables all parties to work more closely together to adapt and plan ahead accordingly. The further detailed studies to be undertaken to reduce the uncertainties identified regarding economic appraisals and funding sources, environmental objectives and compensation habitat and mitigation requirements, and integrated technical management options that are pragmatic and feasible for delivering the SMP policy and

addressing coastal community concerns. To manage these changes effectively and appropriately, the approach put forward in the SMP needs to be considered now, not in several decades time.

