

4 The Preferred Plan

4.1 Plan for Balanced Sustainability

The Shoreline Management Plan (SMP) is built upon the aim of achieving balanced sustainability, i.e. it considers people, nature, historic and economic realities.

The proposed short term (0 to 20 years) policies for the North Devon and Somerset SMP coastline provide a high degree of compliance with objectives to protect existing communities against flooding and erosion. The preferred long term (50 to 100 years) policies promote greater sustainability for parts of the shoreline and focus on sustaining and possibly enhancing the natural character of this coast. Long term policies that continue to defend the shoreline in the present-day manner would produce a change in the nature of the coast, with a prominence of large concrete seawall and armoured revetment structures and fewer beaches. However, there is the social-economic justification to maintain these defences in the short to medium term, with opportunities to optimise management techniques to sustain those coastal assets important to the community in the longer term, where appropriate.

The rationale behind the proposed policies is explained in the following sections of text, which consider the SMP area as a whole. Details of the preferred policies for individual locations, including associated mapping, are provided by the individual policy statements in **Section 5**.

4.1.1 Sustainable management

One of the main objectives in developing an SMP is the definition of sustainable long term management policies for the coast. In Defra's 2006 procedural guidance for the production of shoreline management plans this is defined as: *"those which take account of the relationships with other defences, developments and processes, and which avoid, as far as possible, committing future generations to inflexible and expensive options for defence"*. Given sea level rise predictions, this would be best achieved through the creation of a naturally functioning coast; allowing it to move landwards or seawards at rates dictated by the natural processes of waves and tides. Along this SMP frontage, there are large areas of natural, undefended coastline and the policy selection in these areas has been driven by sustaining this situation.

However, on the North Devon and Somerset coast, there are many areas that have a long history of coastal defence intervention to reduce the risk of flooding and erosion. This means that the shoreline today is, in places, in an 'unnatural' form and position, and one which would not necessarily revert to 'naturally functioning' if simply allowed to develop unmanaged. Indeed, it is likely that the removal of defence along parts of the SMP frontage would result in the breakdown of beaches, with little or no protection of the land behind from erosion and flooding. The consequences of this, given the extent of development along parts of the coast, would be catastrophic, in socio-economic terms, as thousands of homes and businesses lie within the potential risk areas. The 'No Active Intervention' flood and erosion risk maps provided in **Appendix C** demonstrate the potential risk if no further intervention occurs along the SMP frontage.

As such, it is the social and economic sustainability of the SMP area which has driven policy selection for the majority of the developed areas of this frontage, although policies leading to a more 'natural' shoreline in the long term have been identified where feasible.

4.1.2 Lundy

Lundy is located in the Bristol Channel, mid-way between South Wales and North Devon, sited approximately 18km off Hartland Point. The island is a horizontal plateau of granite 5km-long by 1km-wide, surrounded by 15km of coastline of steep slopes and cliffs rising approximately 110m from the sea.

The land and waters of Lundy are ecologically rich and contain sites of national and international importance including a Site of Special Scientific Interest and Special Area of Conservation. It is also has a marine nature reserve with an established zoning system including Britain's first ever 'no take' zone; a marine protected area where fishing or the collection of wildlife is against the law. The North Devon UNESCO Biosphere Reserve's transition zone also stretches out to Lundy.

People have lived on Lundy since prehistoric times providing an abundance of archaeological history throughout the ages, much unrecorded. Lundy has 13 Scheduled Monuments and two nationally protected ship wrecks. Agriculture is the dominant land use of the island and Lundy is a popular visitor destination throughout the year, which supports the Island's economy.

The long term plan for Lundy is to continue allowing it to evolve naturally, while maintaining sea defences that protect the access via Landing Bay.

4.1.3 Hartland Point to Westward Ho!

This covers the southern half of Bideford Bay, starting at the prominent headland of Hartland Point and finishing 20km northeast at Westward Ho!.

Hartland Point is renowned for its spectacular folded and faulted rock composed predominantly from sandstone and mudstone laid down about 320 million years ago during the Carboniferous (Devon County Council website). The cliff tops from Hartland Point to Clovelly support a mosaic of habitats and, together with the geology, form part of the wider Marsland to Clovelly Coast Site of Special Scientific Interest and Tintagel-Marsland-Clovelly Coast Special Area for Conservation. Further along the coast, adjacent to Bideford between Mermaids Pool and Rowdens Gut, is the only complete sequence of the Bideford Formation. This notable geology is a designated Site of Special Scientific Interest. This area also forms part of the wider North Devon UNESCO Biosphere Reserve buffer and transition zone.

This picturesque coastline attracts many visitors and has national status as the North Devon Area of Outstanding Natural Beauty and Hartland heritage coast. Hartland, Clovelly and Bucks Mills are Conservation Areas and there are Scheduled Monuments sparsely spread along the coast including hill forts and earthworks.

This largely undefended coast is at very little risk of erosion or flooding. The plan for the long term is therefore to continue allowing the coast to evolve naturally along much of its length.

The exception is at Clovelly where continued defence is required to retain its important tourism value that is also of benefit to the economy of the wider area. Retention of Clovelly's defences is likely to be economically viable and unlikely to affect wider coastal processes provided the current annual transfer of pebbles from the west to east continues. Retaining defences at Bucks Mills is also unlikely to affect wider coastal processes, but is unlikely to attract public funds from the flood and coastal defence budget, so continued defence here would depend on the availability of other funds.

4.1.4 Westward Ho! to Saunton Down

This section of coast is approximately 10-miles long, encompassing the northern and eastern part of Bideford Bay and the outer part of the Taw and Torridge Estuary system. Westward Ho! is a significant coastal resort located at the southern-most point of the estuary with Saunton Down headland forming the northern-most point.

This area is characterised by a wide-range of habitats influenced by the coastal landforms and the processes that shape them, and contains a number of nationally and internationally important designated sites. Northam Burrows Site of Special Scientific Interest is a dune system protected by a pebble ridge located within the southern extent of the estuary. Braunton Burrows is a Sites of Special Scientific Interest, Special Area of

Conservation and part of the North Devon UNESCO Biosphere Reserve forming the northern extent of the estuary and is the largest dune system in the UK. Set back from the dunes are the Braunton Swanpool and the Greenaways and Freshway marshes, both designated Sites of Special Scientific Interest. The North Devon UNESCO Biosphere Reserve's core is based upon Braunton Burrows Special Area for Conservation, beyond this core the buffer zone stretches between Westward Ho! and Croyde, encompassing the Taw-Torridge Estuary up to Barnstaple and Bideford.

Key to this area is the future of Northam Burrows. Here the long term plan is to allow the Pebble Ridge to roll landward and align itself to the dominant wave direction. This realignment will be managed by extending defences at Westward Ho! parallel to the shoreline as it retreats eastwards and continuing to protect the former landfill site in order to prevent release of contaminants into the environment. The Skern frontage will be held in place to ensure Northam Burrows continues to protect the inner estuary but allowing tidal incursion into the eastern side of Northam Burrows to help the wider Burrows adapt to sea level rise in a way that does not result in landfill material entering the environment.

The dune system of Braunton Burrows will continue to evolve naturally. These are expected to continue to provide a robust natural defence for low-lying areas of the Taw Estuary behind the Burrows over the next century.

Although retaining current defences at Saunton would not have any wider implications for coastal processes, providing future defence here is unlikely to attract public funds from the flood and coastal defence budget so will depend on the availability of alternative funding.

4.1.5 Taw-Torridge Estuary

The estuary has two main tributaries: the River Taw and the River Torridge. The River Torridge runs in a southerly direction parallel to the coast and the port town of Bideford has developed along both banks approximately 5km upstream from its mouth. The River Taw runs in an easterly direction perpendicular to the coast, with the small tributary of the River Caen joining it at Braunton. The river meanders inland with the historic market town of Barnstaple located along both banks of the river, approximately 5km from the mouth.

The intertidal habitats within the estuary are a designated Site of Special Scientific Interest. This area features a wide range of habitats influenced by the coastal geomorphology and includes a number of nationally and internationally important designated sites. Northam Burrows Site of Special Scientific Interest is a dune system protected by a pebble ridge located within the southern extent of the estuary. Braunton Burrows is a Site of Special Scientific Interest, Special Area of Conservation and UNESCO Biosphere Reserve forming the northern extent of the estuary and is the largest dune system in the UK. Set back from the dunes are the Braunton Swanpool and the Greenaways and Freshway Marshes, both designated Sites of Special Scientific Interest. The North Devon UNESCO Biosphere Reserve's core is based upon Braunton Burrows Special Area for Conservation, beyond this core the buffer zone stretches between Westward Ho! and Croyde encompassing the Taw-Torridge Estuary up to Barnstaple and Bideford.

The far-reaching views available within the estuary are underpinned by its national status as the North Devon Area of Outstanding Natural Beauty and North Devon Heritage Coast. There are also 14 Conservation Areas located along the banks of the Taw-Torridge Estuary and five Scheduled Monuments within this section of coast.

The South West Coast Path running along the North Devon coast becomes the Tarka Trail between Saunton and Northam. The Tarka Trail follows the Taw and Torridge Rivers, providing a path from the coast into the mainland via a river. A railway runs from Barnstaple to Exeter along the southern bank of the River Taw within the SMP study area.

The long term vision for the Taw-Torridge Estuary is to manage the flood risk to people, property and infrastructure while allowing the estuary, where possible, to evolve naturally in response to climate change and rising sea levels.

The Torridge Estuary is steep-sided in many places and unlikely to alter significantly whether defended or undefended, although there are areas of low-lying land along the eastern side. Any changes in policy can generally be managed locally without significant wider impact.

The Taw Estuary has several potential areas for managed realignment that could provide floodwater storage, benefiting other parts of the estuary, and the potential to create habitat. However, there is much uncertainty about the individual and cumulative impacts of realignment schemes on sediment transport and tidal current regimes in the estuary and adjacent open coast. Implementation of managed realignment at any site in the outer Taw Estuary could alter flow regimes and thus coastal features at the mouth of the estuary which could in turn increase flood risk from the sea in the estuary itself. Therefore, the approach in the short term is to maintain existing defences while more detailed investigations are undertaken to support moving towards the long term vision.

4.1.6 Saunton Down to Morte Point

This mostly undefended coast is approximately 10km long and characterised by headlands at Saunton Down, Baggy Point and Morte Point encompassing the largely self-contained bays and dune systems of Croyde Bay and Woolacombe Bay.

There are four Sites of Special Scientific Interest in the area, notable for their geology and nature conservation value – Saunton to Baggy Point Coast, Barricane beach, Mill Rock and Morte Point. This section also forms part of the wider North Devon UNESCO Biosphere Reserve transition zone. This impressive landscape is within the nationally important North Devon Area of Outstanding Natural Beauty and heritage coast. Woolacombe, Croyde and Georgham are Conservation Areas and there are numerous archaeological sites, but no Scheduled Monuments.

This stretch of coast is a major attraction to bathers and surfers. A series of holiday parks and camping sites are located on farmland along the coast, benefiting the local village economies of Woolacombe, Croyde and Braunton. The South West Coast Path hugs the peninsula providing access to the coast.

The long term vision is to continue to allow this coast to evolve naturally, thus conserving its important landscape character. Continued protection at discrete locations such as Putsborough Sands and Middleborough Hill, may be acceptable, as retention of the existing seawall-type defences in these areas will not adversely affect coastal processes in a wider area. This is however unlikely to attract public funds from the flood and coastal defence budget, and will therefore depend on availability of alternative sources of funds.

4.1.7 Morte Point to Minehead

This 50km stretch of coast extends from the promontory at Morte Point and stretches to Minehead. It includes several bays, such as Combe Martin, Lynmouth and Porlock; large headlands including Foreland Point and Hurlstone Point; and numerous smaller bays and rocky headlands.

Exmoor Coastal Heaths are a designated Site of Special Scientific Interest and Special Area for Conservation. This coastline is rich in geological and ecological features and contains five designated Sites of Special Scientific Interest, namely Morte Point, Hele Samsons and Combe Martin Bays, Napps Cave, West Exmoor coast and woods, and Porlock ridge and saltmarsh. The coast between Morte Point and Lynton also forms part of the wider North Devon UNESCO Biosphere Reserve transition zone. This stunning stretch of coastline includes

the nationally designated Exmoor National Park, North Devon Area of Outstanding Natural Beauty and heritage coast as well as 12 Conservation Areas and numerous Scheduled Monuments.

This largely rural coastline is mostly undefended, although localised defences are present at numerous small settlements. These areas are characterised by steep river valleys leading to historic fishing or trading ports including Ilfracombe, Combe Martin, Lynton, Lynmouth, Porlock and Minehead.

The long term vision for this area is to continue to allow it to evolve naturally, thus conserving its important landscape character. It is recognised that there is a need to continue to protect some discrete locations, but this will not adversely affect coastal processes over the wider area. Therefore, existing defences will be retained into the long term at places such as Lee, Ilfracombe, Combe Martin and Lynmouth.

In some locations such as at Porlock Weir, future defence provision is unlikely to attract public funds from the flood and coastal defence budget, and retention of defences through other funding would impact on a wider coastal area. Therefore, it is proposed to move towards no active intervention in these circumstances. Currently defended areas would face increased flood and erosion risk in the medium to long term and measures will need to be put in place to manage this increased risk and reduce the impact on people and infrastructure.

4.1.8 Minehead to Blue Anchor

This coastline extends from Minehead for approximately 8.5km to Blue Anchor. There are three Conservation Areas within this stretch. Dunster Castle is a nationally important Scheduled Monument, and is one of many within the area. The West Somerset Railway serves this area, following the line of the coast around Blue Anchor Bay for much of its length. It is in close proximity to the shoreline at Ker Moor before turning inland towards Watchet.

Minehead is a popular holiday resort with its sandy beaches, holiday park and local attractions and is also a Conservation Area. The Minehead seafront forms the beginning of the South West Coast Path, which continues along the South West Peninsula to Dorset, as well as the West Somerset Way. The coastline beyond Minehead to the east is largely rural.

The long term plan here is to continue to reduce flood and erosion risk to Minehead by maintaining the town's defences. To achieve this objective, the risk of 'back-door' flooding from east of Minehead, via The Warren/Dunster Beach/Ker Moor frontage on Blue Anchor Bay, needs to be addressed. This would be achieved through a secondary defence line landward of The Warren/Dunster Beach/Ker Moor frontage in the short-term, and in the long-term to manage the realignment of this coast towards this set-back position. It is thought that any realigned position would have to be seaward of, or incorporate in some way, the West Somerset Railway so that this important economic resource is retained. Through adopting this approach more beach would be retained at Dunster and salt marsh may develop in front of the set-back defence. Retention of beach material and development of salt marsh would provide additional natural defences.

The long term plan for Blue Anchor is to move towards 'no active intervention'. Maintaining defences along the present line will become increasingly difficult and unlikely to attract public funds from the flood and coastal defence budget. This could mean that the access to the coast road will need to be re-routed, but alternative access routes are available.

4.1.9 Blue Anchor to Hinkley Point

This coastline stretches approximately 17km from Blue Anchor to Hinkley Point.

The section between Blue Anchor and Lilstock is noted for its geology and geomorphology and is designated as a Site of Special Scientific Interest. It contains one of the thickest successions (layers of geology) of the Jurassic

period, which is probably the best example of this feature in north-west Europe. The Quantock Hills rise steeply from the coast and have national nature conservation and geological interest, designated as both a Site of Special Scientific Interest and Special Area for Conservation. The distinctive and attractive nature of the landscape is also recognised by its designation as an Area of Outstanding Natural Beauty.

There are two Conservation Areas. Daw Castle is a nationally important Scheduled Monument and there are also numerous non-designated archaeological features within the area.

The coastline is largely rural, with the exception of Watchet. East of St Audries Bay there are hamlets and farms looking out onto Bridgwater Bay. Hinkley Point at the eastern end of this stretch is the location for a nuclear power station of strategic importance to the national electricity grid. The West Somerset Railway lies at close proximity to the shoreline at Watchet and Doniford before continuing inland towards Taunton.

The long term plan for the majority of this coast is for it to evolve naturally and thus retain its important landscape character. Continuing to protect some areas may not be detrimental to coastal processes but is unlikely to attract public funds from the flood and coastal defence budget. Therefore, some currently defended areas may experience increased flood and erosion risk in the medium to long term as existing defences deteriorate and fail and approaches for adapting to the increased risk may be needed for these areas. The long term plan for Hinkley Point and Watchet is to continue to defend these areas against the risk of flooding and erosion. In the case of Hinkley Point, the SMP policies have been developed on the basis of expansion of the Nuclear Power Station. However, at the time of finalising policies no definite plans for this expansion were available and so the policy reflects this uncertainty.

4.1.10 Parrett Estuary (Hinkley Point to Burnham-on-Sea)

This covers the southern coastline of Bridgwater Bay and encompasses the Parrett Estuary. It fronts the extensive low lying area of the Somerset and Bleadon Levels and will become increasingly susceptible to flooding as sea levels rise. The River Brue discharges into the Parrett Estuary, as does the Huntspill River, via a sluice control structure to control flood risk upstream.

The southern shore of Bridgwater Bay is rural, with a couple of hamlets at Stolford and Steart, while the eastern shore includes the coastal towns of Burnham-on-Sea and Highbridge. Other settlements along the banks of the Parrett Estuary include Combwich, Dunball Wharf and Bridgwater.

Bridgwater Bay is ecologically important for its succession of intertidal habitats and contains two national and three international designations including a National Nature Reserve, Site of Special Scientific Interest, Special Protection Area, Special Area of Conservation and Ramsar Site. This forms part of the wider Severn Estuary which is of international importance for its wetlands, waders and waterfowl. Inland, the River Parrett meanders between the Stert and Berrow flats. The Huntspill River is a man-made channel joining the Parrett Estuary to the Somerset Levels and Moors Site of Special Scientific Interest and Special Protection Area for Birds; providing an important wildlife corridor for migrating waterfowl and waders and is designated as a National Nature Reserve.

There are two Conservation Areas within this section of coast at Bridgwater and Burnham-on-Sea, but no landscape designations. There are also numerous archaeological sites within the Parrett Estuary. The Parrett Trail follows the western bank of the River Parrett inland towards Bridgwater.

The long term plan for the Parrett Estuary is to provide sustainable flood defence to people, property and infrastructure, while allowing the estuary to evolve as naturally as possible in response to climate change and rising sea levels. There are several areas in the outer Parrett Estuary where continued provision of defences along existing alignments may not attract funding in the long term, as larger and more expensive defences

would be required to contain the flood risk. These areas also offer opportunities for managed realignment involving construction and maintenance of more sustainable defences and bringing habitat gains.

There are potential implications of realignment in one or more parts of the Parrett Estuary in conjunction with a no intervention policy for the Steart Peninsula, both on the open coast and in upstream areas such as Bridgwater. Any potential increase in flood risk to the upper Parrett Estuary at Bridgwater and Dunball could be minimised through constructing a surge barrier, as already identified as being required to address future sea level rise in the Parrett Estuary Flood Risk Management Strategy (Environment Agency, 2009b).

Implementation of a surge barrier would be subject to more detailed appraisal of both technical aspects and environmental impacts.

Towards the open coast, changes to the estuary regime could alter the low water channel which needs detailed consideration. Impacts of any such changes might be managed at Burnham-on-Sea and Highbridge by retaining defences through ongoing maintenance and eventually replacing these with larger structures as the existing structures reach the end of their effective life.

4.1.11 Burnham-on-Sea to Brean Down

This section of coast between Burnham-on-Sea and Brean Down covers the eastern and northern limits of Bridgwater Bay. It fronts the extensive low lying area of the Somerset and Bleadon Levels and will become increasingly susceptible to the risk of flooding as sea levels rise. At the southern end is the coastal town of Burnham-on-Sea, north of which are sand dunes at Berrow and Brean. The sandy beaches located along this frontage are important in attracting tourists to this area and are therefore crucial to the future of Burnham-on-Sea as a tourist destination, as well the beaches, holiday parks, caravan and camping sites at Brean and Berrow.

Bridgwater Bay is ecologically important for its support of numerous ecosystems and contains two national and three international designations including a National Nature Reserve, Site of Special Scientific Interest, Special Protection Area, Special Area of Conservation and Ramsar Site. Bridgwater Bay forms part of the wider Severn Estuary, which is of international importance for its wetlands, waders and waterfowl. The Berrow Dunes are of national conservation importance and designated as a Site of Special Scientific Interest. There is a Conservation Area within this section of coast at Burnham-on-Sea, but no landscape designations. There are also several Scheduled Monuments, including Brean Down headland and Brent Knoll.

The long term plan is to continue to provide reduce flood risk to the Somerset Levels and Moors, while maintaining the natural character and beaches along much of this frontage which are important in attracting visitors and in terms of the regional economy. The most sustainable way to achieve this is to appropriately manage the well-established natural dune systems such as those at Berrow.

Where dunes have been degraded by development or eroded through recreation, for example at Brean, the objective will be to encourage re-establishment of the dunes to provide protection. To achieve this, some properties at Brean that have been built on the dunes may have to be relocated, although this would be subject to more detailed study and monitoring. If dunes narrow in the long term and become at risk from breaching and thus widespread flooding of the Somerset Levels and Moors, then set-back defences would be needed landwards of the dunes to minimise this risk. The location of any set-back defences would need to be determined by more detailed study prior to implementation.

Between Brean and Brean Down (and along the west bank of the River Axe), the long term plan for no active intervention could result in the mouth of the River Axe switching to discharge south of Brean Down.

Flood risk to Burnham-on-Sea and Highbridge would continue to be reduced by retaining defences through ongoing maintenance and eventual replacement as the existing structures reach the end of their effective life.

4.1.12 Brean Down to Anchor Head

This short section of coast extends 7km from Brean Down to Anchor Head where Birnbeck Island lies a hundred meters from the coast. It encompasses Weston Bay and the estuary mouth to the River Axe.

The River Axe forms part of the Severn Estuary Site of Special Scientific Interest, Special Protection Area for Birds, Special Area of Conservation and Ramsar site. Brean Down is a peninsula of carboniferous limestone of geological and biological national importance and is a designated Site of Special Scientific Interest. There is also a local nature reserve at Uphill. The prominent limestone hills of the Mendip Hills Area of Outstanding Natural Beauty form a backdrop to Weston-super-Mare with access into the Bleadon Hills. There is one Scheduled Monument near the River Axe.

Weston-super-Mare is a traditional seaside resort and designated Conservation Area forming a townscape to the northern mouth of the Axe up to and beyond Anchor Head. It is fronted by wide sandy beaches and is a popular tourist destination with many traditional seaside attractions.

The long term plan is to continue to minimise flood risk to the Somerset Levels and Moors in the most technically, environmentally and economically sustainable way, while maintaining the natural character and beaches that attract many tourists contributing to the regional economy.

At Uphill, the most sustainable way to achieve this is to appropriately manage the well-established natural dune system. Along parts of the east side of the River Axe there is potential to achieve this through implementing managed realignment.

Along the west bank of the River Axe (and between Brean and Brean Down on the adjacent open coast), the long term plan for no active intervention could see the mouth of the River Axe move to the south of Brean Down. The risk of flooding to the wider Somerset Levels and Moors as a result of this policy change would need to be managed by constructing set-back defences.

Flood risk to Weston-super-Mare would continue to be reduced by maintaining the recently constructed sea defences, possibly supported in the future by beach recharge.

4.2 Predicted Implications of the Preferred Policies

In the longer term, there will come a point when preventing coastal erosion and flooding at some locations can no longer be justified, in economic, technical or environmental terms. We need to begin planning for this situation. Accepting that it is not possible or justified to continue to provide defences on the national scale that we have in the past century, it is necessary to consider any potential implications. These are presented below.

Direct comparison is made between the proposed policies and a no active intervention approach – this being the position if no money was spent on coastal defence. This comparison defines the benefits of the proposed policies.

4.2.1 Implications for property and land use

The preferred policy for much of the North Devon and Somerset coastline is to maintain existing defences where economically viable in the long term. This is to minimise loss of, or damage to, property and assets along the developed parts of the coastline, as far as possible. However, for some sections of the coast, a change in management policy has been identified for the medium to long term where a hold the line policy is

no longer acceptable or sustainable in terms of economics, technical sustainability or the environment. The SMP has identified areas where a more naturally functioning coastline would be to the benefit of the natural environment which may also lead to potential losses of assets if implemented.

The main areas of management change are: Brean, parts of the Parrett Estuary, Steart Peninsula, Lilstock, Doniford, Blue Anchor Bay, Porlock Weir, Lee Bay, Putsborough and Vention, Croyde Bay, parts of the Taw-Torrige Estuary and Bucks Mills. At these sites the long term technical sustainability and economic viability of a hold the line policy is questionable. These management policy changes are based on comprehensive consideration of many factors, including best technical knowledge and understanding of coastal evolution.

Under the preferred policies, the total loss of housing to coastal erosion through the whole SMP area up to year 2025 is up to about 12 residential and commercial properties. This compares to the no active intervention baseline, when potential erosion losses of about 14 residential and commercial properties could possibly occur.

In the medium term – by year 2055 – the difference in losses between using the policies and not using them is greater. Residential and commercial property losses as a result of coastal erosion could still cumulatively total 12, with cumulative losses of about 19 houses by the year 2105. This compares to the no active intervention baseline, under which cumulative house losses could be up to 87 by 2055, and over 325 by 2105 if the protection measures were not used. The preferred policies could deliver coastal erosion protection to over 300 'at risk' residential and commercial properties over the next 100 years. These figures relate to losses through coastal erosion only. As significant parts of the SMP frontage are very low lying, overtopping, overflowing or breaching of defences, even where flood defences are maintained, could lead to wide-spread flooding, with over 26,900 residential properties and over 3,700 businesses at risk from flood damage.

While the preferred policy for many of the areas along the shoreline is to hold the line in the long term, there may still be a detrimental impact on tourism through loss of beaches at places such as Westward Ho!, Minehead, Burnham-on-Sea and Weston-super-Mare, where it will become increasingly technically difficult to retain beaches as sea levels rise causing beaches to narrow. Tourism and recreation is an important economic sector for this area with key centres located along the SMP frontage including those at Clovelly, Westward Ho!, Braunton, Croyde, Woolacombe, Ilfracombe, Combe Martin, Lynmouth, Minehead, Dunster, Blue Anchor, Doniford, Burnham-on-Sea, Berrow, Bream and Weston-super-Mare. Along some of these frontages there will be losses of a number of properties as a result of policies to undertake realignment or no active intervention along parts of these frontages. Some re-routing of major infrastructure may also be required in the longer term under this SMP. Along frontages where some properties will be lost due to coastal erosion in the medium to long term, the preferred policy includes provision for management of the retreat at some of these locations. This could allow for relocation or mitigation measures to be implemented should there be available funding.

Agriculture and grazing also represents a share of the local economy and along the coast there are various grades of agricultural land. This land along much of the North Devon and Somerset coast is in the undeveloped stretches between the towns and within the estuaries. There is insufficient economic justification for maintaining or constructing defences, which would also be technically and environmentally inappropriate in many places. Under the preferred policies there could be loss or damage to approximately 14,800 hectares of agricultural land (over half of which is Grade 1 to 3 land) which will remain at risk of flooding, even where low-level defences are present, by year 2105. Some of this agricultural land will be actively managed under Managed Realignment where improved agricultural land will become intertidal, compensating for areas lost to coastal squeeze.

4.2.2 Implications for nature conservation

Parts of the shoreline management plan (SMP) frontage, are designated under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) and the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007 and as such if there is a change in extent or conservation value as a result of SMP policy, then a Habitats Regulations Assessment would be required. This is particularly relevant in a long section of the SMP that borders the Severn Estuary Special Area of Conservation (SAC), Special Protected Area (SPA) and Ramsar sites, as well as Lundy SAC, Tintagel-Marsland to Clovelly Coast SAC, Braunton Burrows SAC, Exmoor Coastal Heaths SAC, Quantock Hills SAC and Mendips Limestone Grasslands SAC, There are potential losses associated with the implementation of SMP policy. This is through the loss of intertidal habitat due to coastal squeeze against control structures. Where this is an issue it is likely to be exacerbated through sea level rise and may require compensatory habitat to be provided. However, natural processes of coastal erosion and flooding are also responsible for the loss of habitat. Conversely, coastal processes can also be of benefit to the natural environment as in Porlock Weir. As the coast is allowed to naturally rollback, supported by SMP policies, there is the creation of intertidal habitat which is of benefit to birds and benthic communities, this will be achieved through either no active intervention or managed realignment and potential areas for this are actively sought to offset intertidal losses due to coastal squeeze.

Much of the SMP coast is characterised by a variety of cliff types, which are nationally and internationally important for their geology and geomorphology. The most significant threat to the sites of geological interest is the creation of artificial structures that would affect the natural processes of erosion or obscure the exposed geology. The proposed plan therefore seeks to balance the protection of these natural features with the maintenance and protection of property and material assets wherever possible. The preferred policies of no active intervention or managed realignment have been recommended in areas where there are limited human assets or along areas of undeveloped coastline to ensure the preservation of the geological interests. In general, the SMP is not recommending the construction of new defences to maintain economic assets in areas where none are currently present.

Careful management of the shoreline on Lundy Island and between Hartland Point and Anchor Head is necessary to sustain the designated habitats already in place, while managing for the impact of sea level rise. The conflicting objectives of a more dynamically functioning coastline coupled with conserving existing habitat will rely on the adoption of the appropriate management policy. By making step changes based on analysis of monitoring data, changes to management policy can be made slowly, with limited impact on the habitat.

4.2.3 Implications for landscape

The preferred long term policies in this SMP are intended to sustain the current urban areas through proactive management of the existing beaches and defences, whilst recognising that new linear and shoreline control defences may be needed in the longer term. However, in general the plan is not to construct new defences in currently undefended areas so much of the coastline will remain as today. Where appropriate, opportunities for forming a free functioning natural coastline in some areas have been taken, to create a more natural coastal landscape and reducing piecemeal man-made structures on the beach. This is more beneficial to the landscape than a policy of defending the whole coastline, which would involve construction of new, more substantial defences, which in some places would also be unlikely to be technically sustainable or economically viable. However, it is recognised that loss of some coastal properties, to which the Area of Outstanding Natural Beauty designation refers, may affect the quality of the landscape should they be of special character. An example of this would be the harbour walls at Bucks Mills. SMP policy does not recommend a policy of HTL but retains the flexibility to allow privately funded defences.

4.2.4 Implications for the historic environment

There are a wide range of Historic Environment sites along the coast and many more of these will be protected through the preferred policies than would survive a no active intervention policy. However, along some stretches of coastline, there may be possible damage to or loss of historic environmental features in the longer term due to erosion and potential in the short term due to flooding including:

- Scheduled Monuments including Barnstaple Castle (at risk from flooding) and Daw Castle (at risk of erosion);
- Small areas of Registered Parks and Gardens e.g. Tapeley Park; and
- Grades I, II* and II Listed Buildings.

Along this stretch of coast the Scheduled Monument are located evenly in town or along open sections of coast. Some Listed Buildings and Scheduled Monuments are located in areas where changes in long term policy are proposed, and in these areas there is a risk of these being lost or damaged as a result of erosion or flooding in the medium to long term. Where there may be possible damage or loss to the historic environment mitigation measures are proposed. In the case of non-designated site mitigation measure should be considered a scheme or project level as appropriate.

4.2.5 Implications for amenity and recreational use

The coast is an important area for tourist and recreation use, with key interests concentrated along the coastal strip in many of the settlements in this area. The preferred long term policies will protect the key centres of tourism and recreation such as at Clovelly, Westward Ho!, Ilfracombe, Combe Martin, Lynmouth, Minehead, Burnham-on-Sea and Weston-super-Mare maintaining assets currently protected by the existing defences. However, this will be at the expense of beaches along many of these frontages, which are unlikely to be retained as the frontages become more susceptible to narrowing beaches and exposed to stronger waves as sea levels rise. Preserving beaches, where possible, will be of increasing value to tourism and recreation within the region as more and more beaches become lost as sea levels rise.

In the long term there are losses of beach expected from rising sea levels and potential access issues, with existing access to the beach becoming lost or redundant. There is potential and, in some places, a necessity due to safety issues, for access to be re-established if funding is available.

4.3 Managing the Change

Long term views are needed in managing any coastline and it is inevitable that many past policies will need to be changed. Continuing to defend the coastline by following the same approach that has been taken in the past is unsustainable in the very long term for particular frontages. It is unrealistic to present proposed policies that indicate continued defence of an area where this is unlikely to be sustainable or economically justifiable.

Consideration of the consequences at various levels of planning and government is needed to achieve successful changes. There will be matters that need to be debated at a national level, as the issues that have been identified by this SMP will exist elsewhere in the UK. It is not possible to achieve complete sustainability from all perspectives and quite probably national policies will need to be developed to help resolve the dichotomies.

4.3.1 Recommendations

It is expected that implementing this SMP may require changes at local planning, regional and national government levels. At a time when regions are being charged with increasing the national housing stock, there may need to be compensatory provisions made to offset the losses that will result from this plan and others.

These provisions may, for example, include making other land available for building. **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 planning should consider the risks identified in this SMP and avoid approving development in areas at risk of flooding and erosion. It also needs to consider that relocation of displaced people and property may require land to be made available within the same settlements 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.

In the short term the need to **ensure that conservation interests within designated sites or in the wider environment are appropriately addressed by coastal management should be done in a way that engages the public and involves local communities in finding long term solutions to issues.**

To help deliver this objective Natural England has published a maritime strategy entitled 'Our coasts and seas: making space for people, industry and wildlife', available from the Natural England website (<http://naturalengland.etraderstores.com/NaturalEnglandShop>).

To accommodate coastal change and associated potential loss of property and assets, whether due to coastal erosion or flooding, local operating authorities will need to develop action plans.

These will need to address the removal of buildings and other cliff-top facilities well in advance of their loss to erosion. The plans for relocation of people also need to be established and clear for all affected.

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 measures 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. 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 and golf clubs.

Private land and property owners will need to consider how they will deal with these changes.

There is currently no general obligation on the part of operating authorities or national government to assure protection against flooding or erosion, and there is no reason to assume that this will change in the future, or that individual losses would be recompensed from central funds.

The SMP provides a long lead time for the changes that will take place at some point in the future. However, to manage these changes effectively and appropriately, the approach put forward in this SMP needs to be considered now. Refer to the action plan in **Section 6**.